

Northumbria Research Link

Citation: Defeyter, Margaret Anne (Greta) (2009) Children's understanding of object function: Design or convention? In: British Psychological Society Developmental Section Annual Conference, 9 - 11 September 2009, Nottingham, UK.

URL:

This version was downloaded from Northumbria Research Link:
<http://nrl.northumbria.ac.uk/5622/>

Northumbria University has developed Northumbria Research Link (NRL) to enable users to access the University's research output. Copyright © and moral rights for items on NRL are retained by the individual author(s) and/or other copyright owners. Single copies of full items can be reproduced, displayed or performed, and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided the authors, title and full bibliographic details are given, as well as a hyperlink and/or URL to the original metadata page. The content must not be changed in any way. Full items must not be sold commercially in any format or medium without formal permission of the copyright holder. The full policy is available online: <http://nrl.northumbria.ac.uk/policies.html>

This document may differ from the final, published version of the research and has been made available online in accordance with publisher policies. To read and/or cite from the published version of the research, please visit the publisher's website (a subscription may be required.)

www.northumbria.ac.uk/nrl



Children's Understanding of Object Function: Design or Convention?



Margaret Anne Defeyter, Northumbria University
BPS Developmental Psychology Section Conference



Introduction

- Researchers have increasingly begun to focus on the dual questions of what information is at the core of early artifact representations and to what extent this information changes over development.
- Some researchers argue that adults and even young children represent information about an object's **'designed function'** (e.g. the use intended by the designer) as central to artifact representation (e.g. Disendruck, Markson & Bloom, 2003; Casler & Kelemen, 2007).
- Others have stressed the importance of **shared conventional use** (Siegal & Callanan, 2007); and **non-accidental use** (Matan & Carey, 2001).
- Whilst other researchers propose that **any non-accidental use** might form the core property of artifact representations, **even those occurring just once by just one social agent** (Truxaw, Krasnow, Woods & German, 2006).
- Furthermore, German & Johnson (2002) showed a **dissociation** between deciding the kind to which an item belonged (categorization) versus deciding what an item is for (function judgement).



Aim

The aim of the current two experiments is to provide further evidence for a dissociation between categorizing artifacts versus determining the function of artifacts (German & Johnson, 2002). Two studies investigated the relative importance of information about intended design and current use on judgements about function (Experiment 1) or category (Experiment 2) of novel artifacts.

Experiment 1

Method

Participants

40 adults (mean age 23 years, range 18-25), 40 4-year-olds (mean age 4-6, range 4-1 to 4-9) and 40 6-year-olds (mean age 6-3, range 5-7 to 6-8) were randomly assigned to either a conventional function condition or an idiosyncratic function condition.

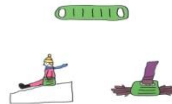
Materials and Procedure

Conventional Condition: In this condition design was pitted against convention by telling participants in which novel artifacts were designed by A for X but now used by *everybody* for Y.



"See this? Everyone uses this for carrying bottle and it is really good for this. Look, this is where you put the bottles so you can carry them. So what does everyone use it for? However, Jack made it for catching goldfish and it is really good for this too. Look this is where the fish swim in so you can catch them. What did Jack make it for? So what is it really for? Is it for carrying bottles or catching fish?"

Idiosyncratic Condition: In this condition design was pitted against idiosyncratic function by telling participants stories about artifacts that were designed by A for X but now used by B for Y.



"See this? Sally made this for sliding down hills and it is really good for this. Look, this is where you sit so you can slide down hills. So what does Sally make it for? However, Jill uses this for carrying sticks and it is really good for this too. Look this is where you put the bundle of sticks. What does Jill use it for? So what is it really for? Is it for sliding down hills or carrying sticks?"

Results & Discussion

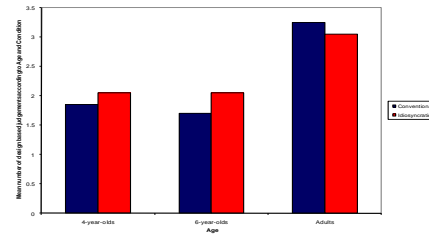


Figure 1: Mean number of design based judgements (from 4) for each age group in conventional and idiosyncratic conditions when judging function.

A 2 x 3 ANOVA revealed a main effect of age group ($F_{2,120} = 11.71, p < 0.0001$). Analysis of each condition against chance indicated that whilst children were at chance, adults in both conditions assigned functions on the basis of information about design ($t_{119} = 3.40, p < 0.001$).

Experiment 2

Method

Participants

40 adults (mean age 22:4 years, range 18-23), 40 4-year-olds (mean age 4-5, range 4-0 to 4-9), and 40 6-year-olds (mean age 6-2, range 5-8 to 6-8) were randomly assigned to either the conventional function condition or the idiosyncratic function condition.

Materials and procedure



"See this? Everyone uses this for carrying bottle and it is really good for this. Look, this is where you put the bottles so you can carry them. So what does everyone use it for? However, Jack made it for catching goldfish and it is really good for this too. Look this is where the fish swim in so you can catch them. What did Jack make it for? So what is it really for? Is it a bottle carrier or a fish catcher?"

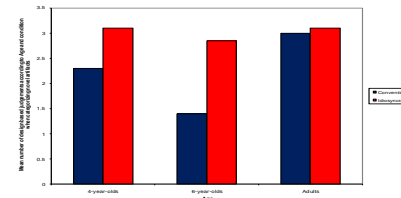


Figure 2: Mean number of design based judgements for each age group in conventional and idiosyncratic conditions when categorizing novel artifact.

A 2 x 3 ANOVA revealed main effects of condition ($F_{1,120} = 13.22, p < 0.0001$) and age group ($F_{2,120} = 2.58, p < 0.005$). Analysis of each condition against chance indicated that adults selected the category based on design in both idiosyncratic and conventional conditions. In the idiosyncratic function condition, children selected the category of the object based on the intended use. In the case of Conventional function condition, children were split between the two candidate functions.

General Discussion

Adults

Information about the intentions of an artifact's maker determines adults' judgements of both what function an artifact has and what category it belongs to.

Children

Judgements about artifact function are not the same as judgements of artifact category.

Children's judgements of artifact function are influenced by the current goals to which an artifact is put.

By contrast, children's judgements of artifact category appear to be sensitive to information about designer's intentions when those intentions are pitted against the intentions of a single idiosyncratic alternative goal.

Suggests that children can infer category from designer's intended goals, just as they infer function from designer's intended category (Jaswal, 2005).

However, the design → category inference in children appears to be disrupted by information that the current alternative use is shared by many people rather than being idiosyncratic.



References:

Casler, L. & Kelemen, D. (2007). Reasoning about artifacts at 24 months: the developing teleo-functional stance. *Cognition*, 103, 120-130.

Disendruck, G, Markson, L., & Bloom, P. (2003). Children's reliance on creator's intent in extending names for artifacts. *Psychological Science*, 12(2), 164-168.

German, T.P. & Johnson, S. (2002). Function and the origins of the design stance. *Journal of Cognition & Development*, 3, 279-300.

Matan, A., & Carey, S. (2001). Developmental changes within the core of artifact concept. *Cognition*, 78, 1-26.

Siegal, D.R. & Callan, M.A. (2007). Artifacts are conventional objects. *J. Cogn. Dev.*, 8, 183-203.

Truxaw, D., Krasnow, M., Woods, C., & German, T.P. (2006). Conditions under which function information attenuates name extension via shape. *Psychological Science*, 17, 367-371.

Acknowledgements

This research was funded by a grant from the British Academy (SG-38509). Many thanks to Tim P. German and S. E. Avons for their creative thoughts and suggestions.