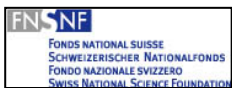


# The role of actions in object conceptualisation: A developmental study



Katia Duscherer, Guénaél Moy, Sandrine Perraudin & Pierre Mounoud

Université de Genève, Geneva, Switzerland

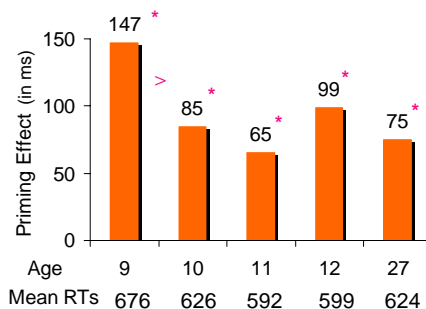
Poster presented at the British Psychological Society, Developmental Section Conference, London, UK, September 2006.

## Aim and Methodology

- ☞ The aim of the present study is to investigate how action representations relate to object representations at a conceptual level and how these relations evolve through childhood.
- ☞ Using a primed object naming task, we examine at different ages to what extent object recognition can be primed by a related action
- ☞ In a previous experiment, we observed large priming effects on object naming from action pantomime primes (cf. Box A).
- ☞ The present cross-modal experiment explores whether an object naming task can also be primed when the action is not presented in the form of a pantomime, but simply evoked by the auditory presentation of the corresponding action verb (cf. Box B).

## A. Pantomime priming

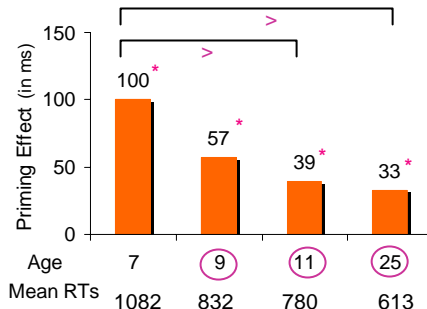
- ☞ Five age groups of 10 participants each, average age of 9, 10, 11, 12 and 27 years.
- ☞ Picture naming task.
- ☞ Pantomime prime, tool picture target.
- ☞ Relatedness proportion of 0.25, 400 ms ISI, 1200 ms SOA.
- ☞ Each target picture (e.g., **SAW**) was preceded once by a
  - related action pantomime (**SAWING A LOG OF WOOD**),
  - unrelated action pantomime (**POUNDRING IN A NAIL**).



- ☞ Significant pantomime priming for all age groups.
- ☞ The largest effect is observed for the youngest participants, independent of overall performance level.
- ☞ Could this action priming be a pure perceptual-motor effect?

## B. Cross-modal priming

- ☞ Four age groups of 16 participants each, average age of 7, 9, 11 and 25 years.
- ☞ Picture naming task
- ☞ Spoken verb prime, object picture target.
- ☞ Relatedness proportion of 0.33, 0 ms ISI, mean SOA of 623 ms.
- ☞ No verbal associations between verb prime and target noun.
- ☞ Each target picture (e.g., **PEAR**) was preceded once by a
  - related action verb (« **PEEL** »),
  - unrelated action verb (« **BLOW** »).



- ☞ Significant verb priming for all age groups.
- ☞ Linear decrease of priming amplitude with increasing age, with the youngest participants inducing the largest priming effect. This modulation of action priming with increasing age is partly independent of overall response latency.



## Discussion

- ☞ Object naming can be primed both by a pantomime and a verb, suggesting that action priming relies, at least in part, on conceptual representations.
- ☞ For comparable age groups, larger effect sizes are observed for pantomime than for verb primes: additional processes, conceivably entailing perceptual-motor pathways, may underlie pantomime priming.
- ☞ In both reported experiments, participants had to name the target object. In an additional pantomime priming experiment we asked participants a manual categorisation response to the tool targets: pantomime priming was only found for children between 5 and 8 years of age. For older children and young adults, no pantomime priming on object categorization was

observed. At least in older participants, pantomime priming effects may thus be mediated by language, be it through a verbal encoding of the pantomime at the time of presentation or a direct activation of the tool noun when perceiving the pantomime.

- ☞ With each prime format or target task, the largest action priming effects were observed for the youngest participants. We interpret these results as reflecting the crucial roles played by actions in conceptual development. By acting on various objects, children grasp the different functional properties of both objects and actions and attribute them their meaning. Once detailed object and action representations have been acquired, the role of actions in the attribution of meaning considerably diminishes in influence.