**Children's high-fidelity imitation of tool vs non-tool actions**

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**Introduction**

**Faithful imitation:** Young children will copy both the goal and the means of a novel action (e.g., Metzoff, 1988)

**Over-imitation:** Older children and adults tend to copy all actions demonstrated by a teacher, even when these actions are not necessary to accomplish the goal (e.g., Horner & Whiten, 2005).

In short, children copy actions demonstrated by others with high fidelity.

**Natural pedagogy:** Ostensive cues signal to the learner that the teacher is showing generalisable, culturally relevant information, increasing imitation behaviour (Csibra & Gergely 2006).

**Tools:** Tools are cultural artifacts. The uniquely human approach towards tools may be the evolutionary root of imitation (Csibra & Gergely 2006).

**Our main research question:** Are tool actions imitated more faithfully than non-tool actions?

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**Study 1: Faithful Imitation**

**Research Questions:**

Are novel tool actions imitated more often than novel body actions? Is this faithful imitation affected by ostensive communicative cues?

**Tool demonstration**

- Proportion of trials on which children imitated novel tool actions with or without ostensive cues averaged over two trials of each type.

**Body demonstration**

- Number of behaviours: imitation vs emulation scored the total number of behaviours emitted across two trials of each type.

**Results:**

- More likely to faithfully imitate tool than body actions.
- More often imitated tool actions and emulated body actions cues increased imitation of body actions but not tool actions.

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**Study 2: Over-Imitation**

**Research Question:**

Are actions performed with a tool over-imitated more than actions performed with the hand?

**Over-imitation materials**

- Over-imitation: rate of overimitation

**Results:**

- Very high rates of over-imitation.
- Equivalent over-imitation for tool vs body demonstrations.

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**Details of Study 2: Over-Imitation**

**Participants:** 68 3- to 5-year-olds (37-63 mos, M=50)

**Design:** 2 boxes: one using tool for all actions, one using hand for all actions (within participants, counterbalanced).

**Procedure:**

Demonstrate Box A (x2): two unnecessary actions (e.g., tapping the top, moving a lever) and one necessary (opening the box) to retrieve goal (removing a toy).

Child is told, "now it's your turn".

Repeat for Box B.

**Coding:** All behaviours were recorded and coded offline.

Over-imitation: number of unnecessary actions performed.

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