

Graduate Student Research Day 2011

Florida Atlantic University

CHARLES E. SCHMIDT COLLEGE OF SCIENCE

When a “Useful” Tool is Not Enough: Preschoolers Prioritize Preference over Utility while Problem Solving

Sarah Bidmead and Marissa Greif

Department of Psychology, Charles E. Schmidt College of Science, Florida Atlantic University, Boca Raton, FL

While some have argued that adults' positive emotion towards objects influence children's object-interactions (Mumme & Fernald, 2003), others suggest that children are most attuned to how useful a tool is (Csibra & Gergely, 2009). Given these differing suggestions, what communicative content is most influential for children's tool use? Two studies examined performance in a tool-selection task following a model's emphasis of either positive emotion toward a tool or the utility of a tool.

Forty-five preschool children and 52 adults participated. Half watched a video where a model grasped a tool and said “*I really like this!*” The other half watched the model use the tool for an unrelated task and say, “*I can use this.*” Then, participants chose from five tools to attain an out-of-reach toy. Results revealed that children chose the modeled tool more when 'liking' was expressed (modeled tool chosen on 67% of "like" trials) than utility (modeled tool chosen on 25% of "use" trials). In contrast, adults chose the modeled tool equally often regardless of expression.

In study 2, 56 preschoolers and 49 adults watched a model (a) fail or (b) succeed at the lure-retrieval task. Additionally, half of the videos emphasized liking and half emphasized using. Participants then chose between two tools (one novel, one from the video) to retrieve a toy. Results showed that (especially younger) preschoolers relied on preference information (and ignored utility information), even when the model was shown failing at the same task they would attempt. Discussion focuses children's learning from media.

When a “useful” tool is not enough: Children prioritize preferred tools for problem-solving

Sarah Bidmead & Marissa L. Greif
Florida Atlantic University

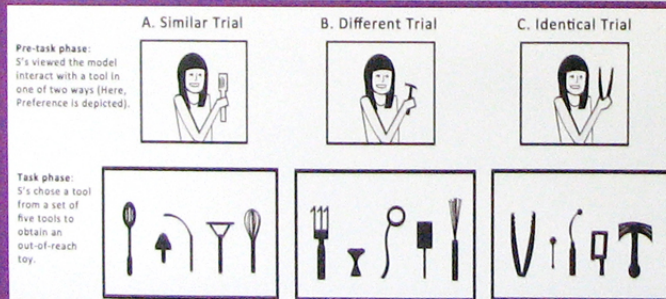
Abstract

One way children may learn about tools is by considering others' statements about them. In two studies, we investigated preschoolers' ($N = 104$) and adults' ($N = 101$) tool choices after viewing a model either express preference for a tool, or make a statement about a tool's utility. In study 1, children, but not adults, were more likely to choose a tool preferred by the model than a tool the model deemed useful. In study 2, participants watched a model express either preference or utility regarding a tool, and then succeed or fail at a task. Children (especially younger ones) chose the preferred tool, regardless of whether the model succeeded or failed. However, when the model made statements about the tool's utility and then failed at the task, children tended to avoid the modeled tool. Discussion focuses on children's reliance on adults' preferences.

Study 1 Method

- Forty-eight preschool children (25 boys) and 52 adults participated.
- Participants watched sequences of 3 videos. In each video, a model interacted with a tool either identical to, similar to, or different from a Target tool the participants would later see in a tool selection task.
- The *Identical* tool was identical to the target tool. The *Similar* tool was perceptually and functionally similar, though not identical, to the target tool (for example, when the target tool was a plastic, slotted spoon, the Similar tool was a slotted, wooden spatula). The *Different* tool was perceptually and functionally divergent from the target tool.
- Half of the participants were in the **Preference** condition, in which the model expressed preference for the tool by smiling at it and saying “I really like this!”.
- Half of the participants were in the **Utility** condition, in which the model said, “I can use this” and completed an unrelated task using the tool.
- After each video, participants had to choose from a different set of 5 tools to obtain an out-of-reach toy. Only the target tool was functional for retrieving the toy.

Figure 1. Schematic depiction of an experimental session in Study 1



Study 1 Results

- Children were more likely to choose the identical, modeled tool when she expressed preference for the tool than when she emphasized its utility, while adults were unaffected by model expression.
- Children's choices were unaffected by the model's expression when she interacted with a tool different from, or only similar to, the target tool in their toolsets.

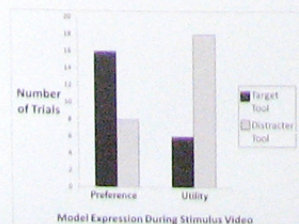


Figure 2. Children's choices when the modeled tool was identical to the Target Tool in their toolsets.

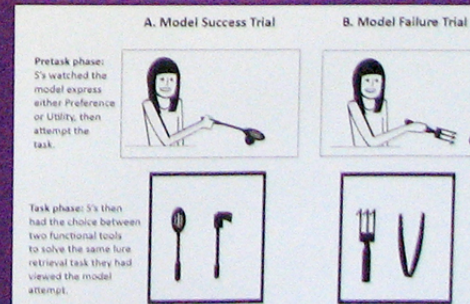
Study 2

- It was not clear whether the difference in children's tool choice during Study 1 was due solely to the model's expression:
 - In the **Utility** condition, the model completed an action, but it was unrelated to the task participants had to perform themselves.
 - In **Preference** condition, the model was not shown completing a task.
- To further investigate tool choices following different model expressions, we devised a study where the model's actions, other than her statement of Preference or Utility, were identical in both conditions.
- The model failing at the task should deter children from choosing the modeled tool, unless the communicative cue (Preference or Utility) was considered more important than her failure.

Method

- 56 preschoolers (24 boys) and 49 adults participated in study 2.
- Participants viewed two videos in which the model used a tool to try to retrieve a toy from a clear plastic container. Participants would also attempt this task later.
- For half of the participants, she expressed preference in both videos. For the other half, she emphasized the tool's utility in both videos.
- One of the videos showed the model succeeding at the task with one tool, while the other video showed her failing the task with a second, different tool.
- Here, participants had the choice between only two tools: the one the model used, and a different but equally functional tool.

Figure 3. Schematic depiction of an experimental session in Study 2.



Study 2 Results

Differences within experimental conditions emerged during the second experimental trial. Here:

- In the **Preference** condition, children (especially younger ones) chose the tool the model used, regardless of whether she succeeded or failed.
- In the **Utility** condition, children were sensitive to whether the model had succeeded, choosing the modeled tool only when she was successful.

Study 2 Results

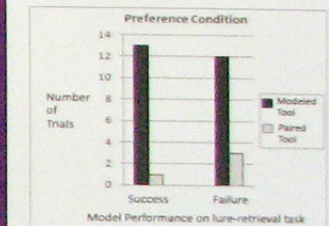


Figure 4. Children's choice of tool during Study 2 in the Preference condition

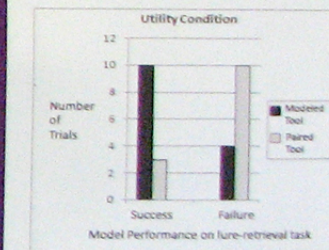


Figure 5. Children's choice of tool during study 2 in the Utility condition

Conclusion

- Preschool aged children are strongly influenced by adults' statements of preference when they choose a tool to solve a task – even when the tool was used unsuccessfully.
- In contrast, statements of utility were not considered useful cues, especially when the model (a) failed at a task or (b) used the tool for an unrelated task.
- Future research may investigate:
 - Which features of another person's preference children consider relevant to solving goals; for instance, does the speaker matter?
 - Whether children would continue to be influenced by preference statements when a “preferred” tool is visibly ill-suited to solve a task.

References

- Casiro, G., & Gergely, G. (2009). Natural pedagogy. *Trends in Cognitive Sciences*, 13(4), 148-153.
- Gergely, J. M., & Borke, D. F. (2005). Sex differences in young children's use of tools in a problem-solving task. *Human Nature*, 16(2), 211-232.
- Lockman, J. J. (2000). A perception-action perspective on tool use development. *Child Development*, 71(1), 132-144.
- Murnie, D. L., & Fernald, A. (2003). The mirror as observer: Learning from emotional reactions observed in a television scenario. *Child Development*, 74(1), 267-287.

Introduction

Learning about tools is crucial for successful interaction with the environment. One way children learn about tool function is by exploring their physical properties (e.g., Gredlein & Bjorklund, 2005; Lockman, 2000). Another way is by watching others use them; however, there is debate as to which elements of tool use displays are most important for children's learning. For example, Csibra and Gergely (2009) argue that children attend primarily to goal-related elements of a tool-use sequence. Others have shown that adults' emotional attitudes towards objects (e.g., “happy,” “fearful”) influence children's object-interactions (Mumme & Fernald, 2003).

Given the variety of social input that may affect object use, which communicative displays are most influential for children's learning about tools? We focused on two types of communicative cues: (1) statements of preference and (2) statements of utility. Statements of preference may tell us about a person's feelings toward an object, but following others' preferences may not be a reliable strategy for choosing tools. On the other hand, a statement of utility should draw attention to the tool's capacity to achieve a goal. In study 1, we examined preschoolers' and adults' performance in a tool-selection task after watching a model display either a statement of preference (smiling and saying, “I really like this!”) or an expression of utility about a tool (saying “I can use this” and using the tool to accomplish a task). We further examined tool choices following differing communicative cues in study 2, where we manipulated the success or failure of the model as she attempted a problem with a tool.