Introduction

Tools, TV, and trust: Introduction to the special issue on imitation in typically-developing children

Man is a toolmaking animal. Certainly, as with other traits once considered to be solely human domains, we cannot claim exclusive right to the “toolmaker” moniker. Yet we use tools with a depth, breadth, and remarkable inventiveness that no other animal comes close to showing. Our environment, no matter where that might be, is saturated with tools, and one way or another, children must learn to use these tools. One of the most efficient ways they can do so is by copying others. It thus came as no surprise to us that the vast majority of manuscripts that were submitted for publication in our special issues on the functions and mechanisms of imitation in childhood presented studies of children learning to use tools and other artifacts. Some manuscripts were more explicitly about this topic than others, but it is clear that learning to use tools and artifacts is inextricably linked to the developmental study of imitation.

In the first special issue we introduced a series of papers focused on imitation in children with autism (Journal of Experimental Child Psychology, 101(2) November 2008). The present issue comprises three papers on imitation in typically-developing children. Each of these papers offers novel insights into how young children learn about the objects they are confronted with, day in and day out. Each touches on some or all of three main trends that have emerged in the developmental imitation literature in recent years.

One of the more fascinating and perhaps the most pervasive of these trends is the growing body of experimental evidence that characterizes children as selective, flexible imitators on the one hand (e.g., Carpenter, Akhtar, & Tomasello, 1998; Gergely, Bekkering, & Király, 2002; Meltzoff, 1995) but as high-fidelity over-imitators on the other (e.g., Lyons, Young, & Keil, 2007; Nagell, Olguin, & Tomasello, 1993; see Nielsen, 2006). Thus one of the primary challenges currently facing imitation researchers is to determine when children will copy others’ actions and when they will choose to perform their own alternative actions instead.

This leads us to a second trend. Picking up on Užgiris’ (1981) distinction between the two functions of imitation, recently several researchers (ourselves included) have begun to focus on less instrumental, more social reasons for copying others (e.g., Carpenter, 2006; Nielsen, 2008; see Rogers & Williams, 2006). Both are themes that run through the articles in this issue. A third trend is that demonstrations in imitation studies are being increasingly presented on video, and this is happening for a number of reasons. There is an obvious practical utility to using video: It is a mechanism by which demonstrations can be standardized across participants while also allowing specific aspects of the demonstration to be edited (e.g., Huang & Charman, 2005). Further, because the demonstrator cannot be interacted with, video affords a means of investigating social functions of imitation more directly (e.g., see Nielsen, Simcock, & Jenkins, 2008). Finally, documenting what and how children learn from television and videos has become critical in certain cultures where children spend considerable portions of their day watching these (e.g., see Anderson & Pempek, 2005). This, too, is a theme that runs through two of
the articles in this special issue. Below we briefly summarize each of the articles; then, we finish by speculating on the role of children's imitative behavior in the development of our propensity for tool use and the transmission of cultural information.

In the first article, Flynn and Whiten explore children's ability to imitate in a complex tool-use task with multiple component actions. Expanding on their previous studies (e.g., Whiten, Flynn, Brown, & Lee, 2006), Flynn and Whiten investigate developmental differences in 3- and 5-year-old children's ability to imitate hierarchical action structure, and they look for relations between this kind of imitation and imitation of the demonstrator's action styles. They use a video demonstration in this study and compare their results to those of a previous study that used a live demonstration. Their findings emphasize several key points. The first is that children are not slavish copiers, mindlessly reproducing everything they see an adult do. Rather, they are capable of making judgments about what to replicate based on what they consider to be the overall structure of the demonstration. This work also shows that children are able to acquire relatively complex skills from a videotaped model, though the fidelity of their reproduction is diminished when compared with learning from a live model.

In the second article, DiYanni and Kelemen investigate children's imitation of an adult's tool use when the adult's choice of tool is not an optimal one for achieving her goal. This study thus pits children's understanding of others' intentional action and their motivation to copy others against their understanding of causal efficiency and design. DiYanni and Kelemen find interesting developmental differences in children's choices of tools in 2-, 3-, and 4-year-olds across their three studies. These results contribute not only to the imitation literature, in highlighting once again the tension between copying others and doing things one's own way, but also to the growing literature on reliability and selective trust (see Harris, 2007, for a review) and children's understanding of the design stance (e.g., see German & Johnson, 2002).

Finally, in the third article, Strouse and Troseth investigate the conditions under which 2-year-olds are able to learn from video demonstrations. In a series of three studies, Strouse and Troseth examine contextual factors (i.e., whether the video was filmed in the same versus a different setting as that in which the test took place), whether "cuts" in the videos negatively affect children's imitation, whether the duration and number of repetitions of the demonstration affect children's performance, and whether children learn equally well from video demonstrations when they are presented in their own home versus in a laboratory. In all cases, children's responses to video demonstrations are compared with their responses to live demonstrations. These results provide important information for researchers considering using video demonstrations in imitation tasks.

Together, these studies show that children do not copy others without processing a host of variables that determine exactly what they will reproduce. These papers document how the hierarchical structure of the modeled actions, the logic of the actions given their intended outcomes, and the nature of the presentation medium affect what children copy. Clearly, children do not blindly mimic. If we return to the issue of human tool use, this may prove a crucial point.

Consider the suggestion that tool use, per se, is not what separates us from other species but rather it is the proliferation, adaptation, complexity, and variation of our tools and the ways we use them that distinguish us. The seemingly contradictory findings of selective imitation and overimitation in children—a combination that our nearest primate relatives lack—may help explain our species-specific approach to the use and development of tools. That is, past research has established a strong propensity in children for faithfully imitating others' object-directed actions, sometimes even when this results in a failure to bring about the demonstrated outcome (for a review see Flynn & Whiten, this issue). Though at first glance such behavior may seem maladaptive it likely reflects the value of adopting imitation as a default strategy: It affords the rapid acquisition of novel behaviors while at the same time avoiding the potential pitfalls and false end-points that can come from trial-and-error learning. Along with its instrumental skill-acquisition function, imitation also has a crucial social–cultural function: Faithfully copying others is absolutely indispensable in the acquisition of arbitrary, conventional/cultural skills and when identifying with and aligning oneself with one's cultural in-group. Overimitation thus serves many important functions for human children. However, if children only overimitated, opportunities for adaptation, reinvention, and improvement would be limited. In this context, selective imitation is crucial for prior information to be refined and built upon. As previously alluded to, the papers included in this issue show that children do not always blindly imitate. They are keen
replicators, but they are flexible too. They attend to and prioritize different aspects of a demonstration and adjust their imitative behavior accordingly. This combination of selective imitation and overimitation is precisely the kind of approach we would want if we were to build a premium tool-using organism.

The study of how and why children copy others’ object-directed actions is critical to our broader understanding of children’s social and cognitive development. It can tell us much about strategies for learning, teaching, communicating, and much more. It may also provide insight into the origins of our astonishing propensity for using and developing tools, a trait that has no doubt impacted immeasurably on our colonization of the planet. The papers featured in this special edition make a fine foundation for work that can continue to do this.

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References


Malinda Carpenter

*Department of Developmental and Comparative Psychology, Max Planck Institute for Evolutionary Anthropology, Deutscher Platz 6, 04103 Leipzig, Germany*

Fax: +49 341 3550 444.

E-mail address: carpenter@eva.mpg.de

Mark Nielsen

*University of Queensland, School of Psychology, Brisbane, QLD 4072, Australia*

Fax: +61 3365 4466.

E-mail address: nielsen@psy.uq.edu.au