



Short Communication

The emerging causal understanding of institutional objects



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ABSTRACT

Institutional objects, such as money, drivers' licenses, and borders, have functions because of their social roles rather than their immediate physical properties. These objects are causally different than standard artifacts (e.g. hammers, chairs, and cars), sharing more commonality with other social roles. Thus, they inform psychological theories of human-made objects as well as children's emerging understanding of social reality. We examined whether children ($N = 180$, ages 4–9) differentiate institutional objects from standard artifacts. Specifically, we examine whether children understand that mutual intentions (i.e., the intentions of a social collective) underlie the functional affordances of institutional objects in ways that they do not for standard artifacts. We find that young children assimilate institutional objects into their intuitive theories of standard artifacts; children begin to differentiate between the domains in the elementary school years.

1. Introduction

Institutional objects, such as money, drivers' licenses, and borders have functions because of the roles they are assigned. An extensive body of research has examined how children conceptualize human-made objects (e.g., Gelman, 2003; Keil, 1989; Margolis & Laurence, 2007; Matan & Carey, 2001), but this work has focused on *standard artifacts*, such as simple tools and household objects. Because institutional objects operate by different causal processes, they warrant further investigation. We examine here whether and when these sets of human-made objects are conceptualized differently in children's causal theories.

Standard artifacts have functional affordances that stem from their physical structure, such as the way a hammer's form allows it to deliver force. The functions of institutional objects, by contrast, emerge from the social norms and institutions they are embedded in (Lewis, 1969; Roversi, Borghi, & Tummolini, 2013; Searle, 1995; Searle, 2010). To illustrate, take the example of money. Money's value is not determined by the paper it is printed on. Rather, people cooperatively assign dollar bills their value; known as a *status function* (Searle, 1995, 2010), dollar bills attain value by being collectively recognized as valuable. Status functions confer social powers to their rightful owners. In the case of money, it confers the right to engage in exchange within an economic community. Broadly then, institutional objects seem to comprise a distinct class of objects.

All human-made objects require human beings to come into existence; they do not exist naturally. For standard artifacts, humans *cause*

them to exist and *cause* them to have the properties they possess through an intentional design process, but the role of intentions is *historical* (Bloom, 1996; Diaz-Leon, 2015; Matan & Carey, 2001). That is, once created, the functions they afford stem from their physical structure and so no longer directly depend on human intention. For example, after a hammer has been created, its ability to deliver blows is not affected by its intended use within a cultural context.

Institutional objects, on the other hand, are socially constructed in a more sustained manner (Diaz-Leon, 2015). Their functional properties are constituted by a community's *ongoing* mutual intentions. If the community changes its intentions, the object no longer affords the same function. When, in late 2016, India's government elected to invalidate 500 and 1000 rupee notes as a hedge against corruption, the former money because mere paper – even though nothing had changed about its physical form or historical origins.

Theories developed to account for standard artifacts are insufficient to explain the causal processes that govern institutional objects. Previous theories emphasize original intended kind (Bloom, 1996, 1998), design (Kelemen & Carey, 2007), physical structure (Keil, 1989; Malt & Johnson, 1992; Nelson, Frankenfield, Morris, & Blair, 2000), or some combination of the above (Chaigneau, Barsalou, & Sloman, 2004). All fail to capture the unique dynamics of institutional objects. Here we take a developmental approach, exploring children's intuitions about institutional objects. For children to have a mature sense of institutional objects, they need to understand that their functions are based in mutual intentions: a community's intention to assign an object a social role (Searle, 1995).

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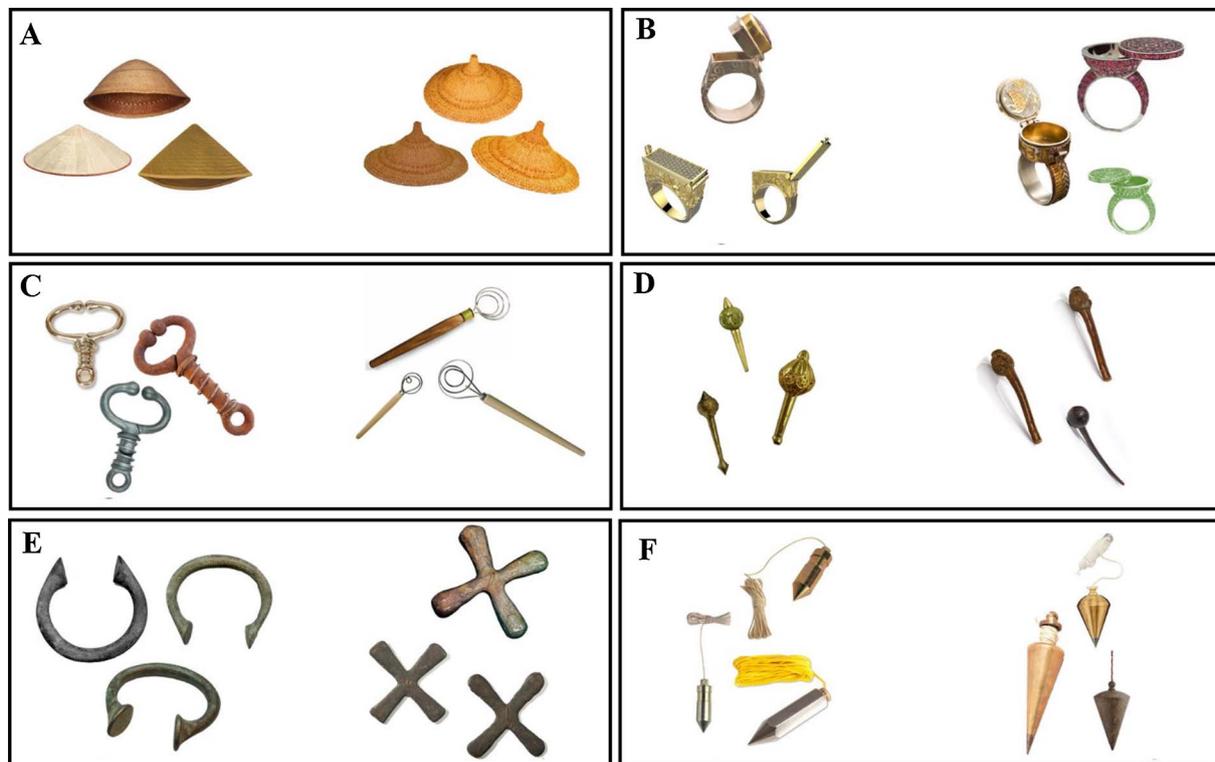


Fig. 1. Novel objects that children were presented with. Each panel (e.g. A) represents an object class (e.g., yukku) and its two subsets.

Some evidence suggests children recognize that mutual intentions constitute social reality early on. For example, young children understand how pretense works, which has many of the properties of mutual intentions: pretend statuses, like institutional statuses, are applied to objects via ongoing, cooperative intentions (Rakoczy, 2008; Rakoczy, Tomasello, & Striano, 2004; Wyman, Rakoczy, & Tomasello, 2009). Children also understand that mutual intentions underlie arbitrary rules (Schmidt, Rakoczy, Mietzsch, & Tomasello, 2016). Children often participate in the creation of pretense and game rules. It has been suggested that the more active role they play in this domain might lead to early competency in recognizing the causal underpinnings of games and rules (Kalish, 2005). Supporting this, young (5-year-olds) children understood that rules were changeable when they helped to create them but not when they were only taught the rules (Hardecker, Schmidt, & Tomasello, 2017). Older children (7-year-olds), however, understood that both types of rules were changeable. Thus, children's early competency with pretense and rules may not generalize to other types of social facts.

Children also recognize the role of mutual intentions in creating social groups (Noyes & Dunham, 2017). Children's insight here may be supported by early emerging beliefs about groups. Social groups are composed of human beings, which children understand as intentional agents early on (Wellman & Gelman, 1992). Young children also believe that group members cooperate and form allegiances (Rhodes, 2013; Shutts, Roben, & Spelke, 2013), and believe that social groups mark obligations (Kalish & Lawson, 2008; Rhodes & Chalik, 2013). Thus, special insight into the intentional and normative structure of groups may help them recognize that groups are based in human intentions. Again, this competency may or may not generalize to other domains that lack the support of human- and group-specific beliefs.

We suspected institutional objects would be more challenging to grasp. Children do not participate in the construction of institutional objects. Objects like money are based in complex institutional channels (e.g., dollar bills are assigned legal status by the U.S. Federal Reserve, which gains its authority from congressional legislation, and so on). Second, institutional objects are assigned to physical tokens (e.g., coins)

that generally resemble standard artifacts. Children encounter far more standard artifacts in their daily life (e.g., tools, toys, furniture, etc.), which might encourage them to over-generalize their normal understanding of standard artifacts to institutional objects.

We hypothesized that young children would treat institutional objects like standard artifacts. We expected their ability to distinguish the domains to emerge slowly over development. Specifically, we expected this intuition to emerge among school age children, in accordance with prior research on children's beliefs about the flexibility of rules (Hardecker et al., 2017). To assess children's intuitions, we employ a novel adaptation of the classic transformation paradigm (Keil, 1989). We present children with vignettes where a community changes its intentions about a set of objects and asked children whether the object's functional affordances changed (Study 1 and 2).

2. Study 1

2.1. Method

2.1.1. Participants

90 children (female = 58, male = 32; White = 73%, multi-racial/other = 13%, Black = 10%, Asian = 4%) participated, evenly split across three age ranges: 4–5, 6–7, and 8–9. An additional six children were excluded: 5 failed to pay attention or were disrupted; one because of experimenter error.

2.1.2. Design, stimuli and procedure

2.1.2.1. Design. We employed a within-subject design, presenting children with objects from two domains: institutional objects and standard artifacts. For each object, children were asked to provide a *function assignment*, i.e. to say whether the object's functional affordances changed after the community changed its intentions about the artifact's status. As a secondary measure, we elicited *categorization judgments*, i.e. judgments about whether the object's category changed after a community changed its intentions about its status. Because possible ambiguities with this question were noted

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