Developmental Psychology
2008, Vol. 44, No. 3, 875–881

0012-1649/08/$12.00 DOI: 10.1037/0012-1649.44.3.875

The Sources of Normativity: Young Children's Awareness of the Normative Structure of Games

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In two studies, the authors investigated 2- and 3-year-old children's awareness of the normative structure of conventional games. In the target conditions, an experimenter showed a child how to play a simple rule game. After the child and the experimenter had played for a while, a puppet came (controlled by a 2nd experimenter), asked to join in, and then performed an action that constituted a mistake in the game. In control conditions, the puppet performed the exact same action as in the experimental conditions, but the context was different such that this act did not constitute a mistake. Children's normative responses to the puppet's acts (e.g., protest, critique, or teaching) were scored. Both age groups performed more normative responses in the target than in the control conditions, but the 3-year-olds did so on a more explicit level. These studies demonstrate in a particularly strong way that even very young children have some grasp of the normative structure of conventional activities.

Keywords: cultural learning, social cognition, conventionality

Supplemental materials: http://dx.doi.org/10.1037/0012-1649.44.3.875.supp

Human social life is organized by cultural practices and institutions with conventional and normative structures. The conventional dimension of cultural activities specifies what one typically does in this context, whereas the normative dimension specifies more forcefully what one ought to do.

A number of interview studies have demonstrated that preschool children have some understanding of conventionality. For example, 5-year-olds distinguish conventional rules (e.g., "one can't take a bath in clothes") from laws of nature (e.g., "humans cannot fly") and know that the former but not the latter can potentially be broken (Kalish, 1998). Preschoolers also distinguish conventional rules from moral prescriptions, saying that conventional rules are more alterable and context relative (e.g., Nucci & Nucci, 1982; Smetana, 1981; Smetana & Braeges, 1990; Turiel, 1983).

Preschoolers also understand something of the conventionality of artifact functions. Although both natural and artificial objects can have many *affordances*—they can be used for many purposes—artifacts are what they are because they are designed and conventionally used for specific purposes. Artifacts are "for" something; they are thus to be used in specific ways and are "broken" when they cannot fulfill their function. In interview studies it has been found that from at least 5 years of age children distinguish mere affordances from the proper, conventional functions of objects—what they are "for" (e.g., German & Johnson, 2002; Kelemen, 1999; Matan & Carey, 2001).

Interview methods such as these cannot be used with younger children, however, and so other measures are required. Some researchers have therefore used imitation as a measure of young children's understanding of conventional normative practices. From around 9 to 12 months of age, infants imitate simple instrumental actions with objects (e.g., Carpenter, Nagell, & Tomasello, 1998), and from around 14 to 18 months of age, imitation of instrumental acts becomes highly systematic and rational. For example, infants of this age differentially imitate intentional, but not superficially similar, accidental acts (Carpenter, Akhtar, & Tomasello, 1998), and they interpret one and the same behavior either as a rational means to an end only or as a rational end in itself, depending on the context, and differentially imitate accordingly (Gergely, Bekkering, & Király, 2002). In the course of the 2nd year, infants also begin to imitate both symbolic pretense acts (e.g., Rakoczy, Tomasello, & Striano, 2004, 2005) and conventional linguistic acts (e.g., Tomasello, 2000), and they expect others to use these symbols and words in the same conventional ways (e.g., Baldwin & Tomasello, 1998).

Although young children's imitation of conventional action forms is suggestive, it is not enough to establish that they are aware of the normative dimension as well. They might simply copy what they see someone else doing with an object, or what is usually done with it, without understanding the act as what is to be done conventionally, that is, without understanding that there are "right" and "wrong" ways to do it (Tomasello, 1999; Tomasello & Rakoczy, 2003). Casler and Kelemen (2005) thus used a new measure

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This work was supported by a Dilthey Fellowship of the Volkswagen and Thyssen Foundations to Hannes Rakoczy. We would like to thank Claudia Salomo, Antonia Misch, Manja Teich, Elena Rossi, Berenike Herrmann, and Maxim Bannack for helping in recruiting children and collecting data. Thank you to all daycare centers and children for their friendly cooperation.

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that went beyond mere imitation of actions with artifacts. They found that children as young as 2 years of age not only imitated instrumental actions with novel artifacts but also showed functional fixedness to the imitated usage and expected others to use the same object for the same purposes. Potentially even stronger evidence for early normative awareness comes from anecdotal reports by Kagan (1981), who found that during the 2nd year children begin to be concerned with deviations from normative standards applied to artifacts and that they actually comment on this verbally, for example, by calling malfunctioning objects "broken."

However, although such things as *functional fixedness*, or an expectation that others will use objects in similar ways, and commenting on malfunctioning go beyond simple imitation in important ways, they still leave open the question of whether children this young really grasp the functions of the objects in the strong normative sense ("This is what it's for," "This is how it should be used") or whether they are merely tracking statistical regularities ("This is how such objects are usually used"). To address this question, more direct, active indexes of the child's normative awareness are needed, such as protest against deviant usage of the artifacts by others ("This is not what it's for!").

In the current studies, therefore, we used a new action-based methodology to investigate young children's awareness of the normative structure of noninstrumental, game-like acts involving the assignment of conventional functions to objects. Games are the standard example of activities that involve the assignment of specific, strongly conventional functions to objects or actions, typically called *status functions*, which are based on constitutive rules (Searle, 1969, 1995). That is to say, whereas tools have *usage functions*—causal functions we ascribe to objects when we design them or use them instrumentally—objects and actions can also have status functions, which are assigned to them as a matter of convention only (i.e., not on the basis of their causal properties), and without this assignment they could not fulfill that function.[1] A certain shape of wood, for example, counts as a queen in the game of chess, and moving the queen in certain ways counts as attacking another piece. An object or action thus has a certain status function only by virtue of the collective agreement that it does in a certain context, the formula that expresses this being "*X* counts as a *Y* in context *C*" (as in "This piece of wood counts as a queen in chess" or "Moving this piece in such ways counts as attacking in chess"). The normative dimension of status functions is that the object ought to be treated and the actions performed appropriately in the context of the game.

In our studies, an adult showed 2- and 3-year-old children simple game actions, which they played together for some while. A third person (a puppet) then entered and (in the target condition) performed an action which was inappropriate given the structure of the game (i.e., a mistake). Children's responses to these acts, in particular protest and correction, were investigated as indicators of their awareness of the normative structure of the game. Control conditions were administered in which the puppet performed the same behavior, but this did not constitute a mistake. Comparing children's responses to the exact same behavior in the experimental conditions (where it was a mistake) and control conditions (where it was not a mistake) thus allowed us to rule out that children intervened due to irrelevant reasons (e.g., simple preferences for one action).

Study 1

Method

Twenty-four 3-year-olds (35–38 months, mean age = 36 months; 10 boys, 14 girls) and twenty-four 2-year-olds (25–28 months, mean age = 26 months; 12 boys, 12 girls) were tested. In this and all other studies, children were recruited from urban daycare centers, came from mixed socioeconomic backgrounds, and were native German speakers. In a within-subjects design, each child received two experimental and two control tasks in alternating order. Across children, the order of the tasks and the assignment of a given task to the control or experimental condition were counterbalanced. Before the four main target tasks, children were given three warm-up tasks in which the puppet, Max, made instrumental mistakes (e.g., forgot to use a necessary means to an end), in order to familiarize them with the puppet and with situations where mistakes happen and they can intervene. Children's interventions were coded and scored as *explicit* when the child told Max what to do, what not to do, or what was missing (such as "Take that one" or "Not this way!") and as *implicit* when the child just pointed to or gave Max the missing object (reliability: κ = .95). Over the three tasks, for each child sum scores (0–3) for implicit and explicit responses were computed.

The common structure of the target tasks in the experimental and control conditions was as follows (see Table 1; see the supplemental materials for movies of the different conditions). In the absence of Max, the first experimenter brought out some partly novel objects and performed two actions (A_1 and A_2) with them (model phase), whereupon it was the child's turn (action phase). Then Max came back and performed an action (A_2) with the objects (test phase). The crucial differences were as follows: (a) In the experimental condition, A_1 was marked as the correct game action (labeled by a novel verb), and A_2 was marked as an accidental mistake. In the control condition, in contrast, both A_1 and A_2 were marked neutrally as equally possible options and not labeled as any specific game actions. (b) In the experimental condition, before his performance of A_2, Max announced that he was going to join the game as well (by using the novel verb), whereas in the control condition he neutrally announced that he was going to show the child something. In one game called *daxing* (modeled on pool), for example, the objects were a Styrofoam board with a gutter at one end, a building block, and a wooden

[1] It is notoriously difficult to draw the line between instrumental and conventional activities, as many have both instrumental and conventional elements. Board games are paradigm examples of conventional games, but games like pool are somewhat instrumental—the goal is to get the ball in the hole and using the queue is the means—but pool has conventional rules designating the status of different balls, for example, as well. For present purposes we thus assume a continuum of activities ranging from purely instrumental ones to clearly conventional ones and a corresponding continuum of functions ranging from clear usage functions to clear status functions. Although the actions used in Study 2A are more like board games and thus involve clear status functions, those in Studies 1 and 2B are more like pool and thus more intermediate cases.

Table 1
Schematic Structure of the Tasks in Studies 1, 2A, and 2B

Study and phase	Experimental condition	Control condition
Study 1		
Model phase	1st experimenter performs A_1 and A_2. A_1 is marked as "daxing," A_2 as an accidental mistake.	1st experimenter performs A_1 and A_2. A_1 and A_2 are both marked neutrally.
Action phase	Child's turn	Child's turn
Test phase	Max's announcement: "I'm gonna dax now!"	Max's announcement: "I'm gonna show you something!"
	Action: A_2	Action: A_2
	$\rightarrow$ = mistake	$\rightarrow \neq$ mistake
Studies 2A & 2B		
Baseline phase	Object used in usual way (e.g., building)	Objects used in usual way (e.g., building)
Game phase	1st experimenter and child play the "daxing" game	1st experimenter and child play the "daxing" game
Test phase	Max's announcement: "I'm gonna dax as well"	Max's announcement: "I'm not gonna dax. I'm rather gonna build"
	Action: Usual action with object (e.g., building)	Action: Usual action with object (e.g., building)
	$\rightarrow$ = mistake	$\rightarrow \neq$ mistake

Note. A_1 = first action; A_2 = second action.

stick and a small piece of wood that could be put together to form a kind of roulette rake or bat. One action (A_1) was to put the wooden pieces together to form a bat, put the building block on the Styrofoam board, and push the block across the board with the bat so that it falls into the gutter. The alternative action (A_2) was to lift the board at one side so that the block slid into the gutter. In the test phase Max performed A_2 twice, with each performance lasting approximately 15 s.

All sessions were coded from videotape by a single observer. A second independent observer coded a random sample of 20% of all the sessions for reliability. For coding, the test phase of each task was divided into 6 subphases (before, during, and after each of Max's act tokens). For each phase, all relevant responses and utterances of the child were carefully described and given one of the following codes. A code of 1 was given for a *normative protest*: The child clearly intervened in a normative way, making use of normative vocabulary (e.g., "No! It does not go like this!"). A code of 2 was given for an *imperative protest*: The child expressed an imperative to Max without using normative vocabulary, either in the negative (e.g., "No! Not in this hole!") or in the positive (e.g., "Take the stick!"). (For reliability, the weighted κ = .88.) Each task then got as its code the highest category code that appeared in its subphases.

The logic of the coding scheme is the following: Whereas normative protest itself (by definition) applies to distinctively normative interventions, imperative protest as such is more ambiguous and, in itself, does not present conclusive evidence for normative awareness. For example, imperative protest might simply reflect children's preference for certain actions over others. However, if children produce this kind of protest in response to the exact same behavior more in the experimental condition (when the behavior was a mistake) than in the control condition (when it was not a mistake), this plausibly constitutes more indirect evidence that children do not intervene just due to preferences but specifically in response to mistakes.

Results and Discussion

The mean sum scores over the two tasks per condition for the different response categories are depicted in Figure 1. First, a 2 (age) $\times$ 2 (condition) analysis of variance (ANOVA) on the mean sum scores of normative protest was computed. It yielded a main effect of condition, $F(1, 46) = 11.83$, $p < .01$, $\eta_p^2 = .21$; a main effect of age, $F(1, 46) = 18.55$, $p < .01$, $\eta_p^2 = .29$; and an Age $\times$ Condition interaction effect, $F(1, 46) = 5.26$, $p < .03$, $\eta_p^2 = .10$. Planned comparisons revealed that only the 3-year-olds, $t(23) = 3.32$, $p < .01$, $\eta_p^2 = .32$, but not the 2-year-olds, $t(23) = 1.14$, $p < .26$, $\eta_p^2 = .05$, performed more normative protest responses in the experimental compared to the control condition.

On a more liberal measure (mean sum score of tasks per condition in which children produced normative protest or imperative protest responses), a 2 (age) $\times$ 2 (condition) ANOVA yielded only a main effect of condition, $F(1, 46) = 11.98$, $p < .01$, $\eta_p^2 = .21$.

In sum, the 3-year-olds showed a clear understanding of the normative structure of joint game actions: When a puppet made a mistake in the game context (experimental condition), they often explicitly corrected him, but they did so rarely (and significantly less) when the puppet performed the same behavior in a context where it was not a mistake (control condition). The 2-year-olds showed a similar pattern of responses but on a less explicit level.

The number of experimental trials with normative or imperative protest (0–2) was correlated with the number of warm-up trials with explicit or implicit intervention (0–3; $r_s = .46$, $p < .01$; partial correlation controlling for age, $r = .32$, $p < .02$). That is, part of the variance of children's protests in the target tasks, both within and across age groups, reflects not only variance in normative protest ability as such but variance in children's general willingness to intervene in response to the puppet (as measured in a simpler context in the warm-up tasks) as well. In particular, children who protested little in the target tasks might have noticed the puppet's mistakes but refrained from protesting because of a general (e.g., shyness-related) reluctance to interfere with others.

Study 2A

In Study 1, young children indicated an awareness of the normative structure of simple joint game-like actions. However, these actions had only a rudimentary game structure and were rather intermediate cases on the continuum between clear conventional game acts and instrumental acts. One aim of Study 2A, therefore,

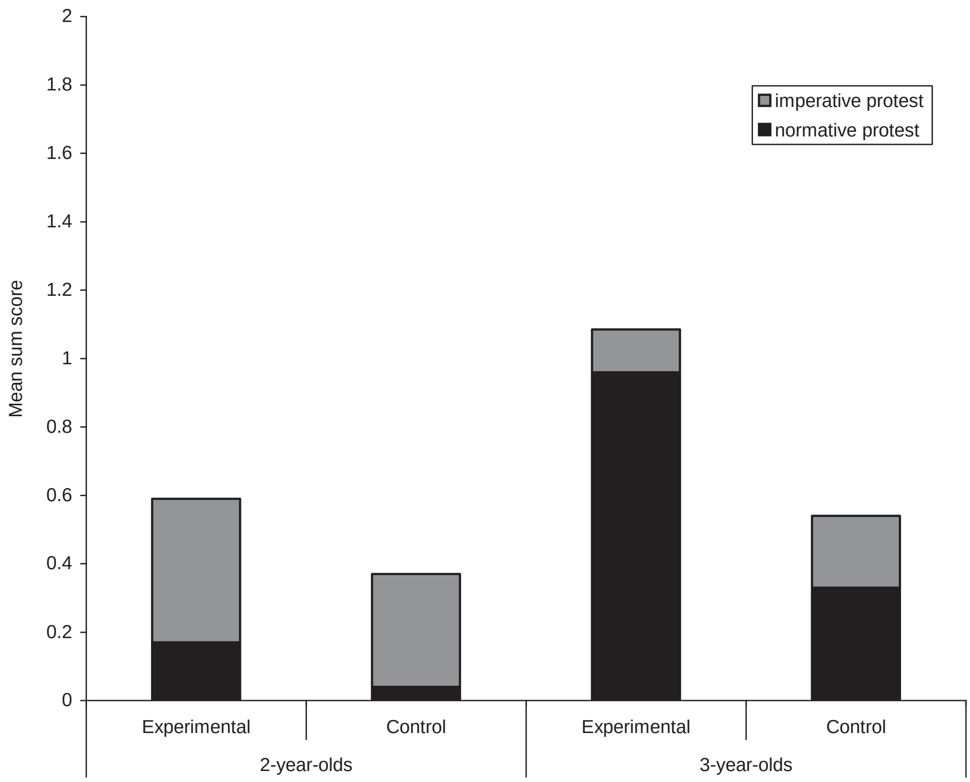

Figure 1. Mean sum scores (0–2) of the different forms of protest in the test phase of Study 1.

was to test children's normative interventions with actions that on the instrumental game continuum are more clearly on the conventional game side (clearly involving status and not only usage functions). Furthermore, children's understanding of the context-specificity of the normative implications of game rules was tested in tasks with a more complex structure. In Study 1, the model phases of the two conditions were different; the experimental condition set up a normative framework, labeling one act as the game act, and so forth. The control condition, in contrast, did not set up a normative framework or label the acts but just presented two actions as equal possibilities. Thus, in the experimental condition the children were put in a normative game context, whereas in the control condition they did not learn a game rule at all. Formally speaking, "an *X* counts as a *Y* in context *C*" (e.g., "This act counts as daxing in the context of the game") is the formula of status function assignment. That is, only in the context *C* do the normative implications of the status rule hold; that is, only in the context is it mandated to perform an act that counts as daxing. In the experimental condition the children learned the rule and were kept in context *C* (the game) all the time during a given task. In the control condition, in contrast, they did not learn any rule and were never in any context *C*. That is, children never had to take into account the context-specificity of status-function creation: In the control condition there simply was no status. In the experimental condition, however, children did not have to take into account the context-specificity of status either, because there they were always in the relevant context.

The present study thus went one step further: Both experimental and control conditions had the same game phase in which a rule game was introduced and played. In both conditions, Max performed the same act, inappropriate to the game context. The crucial difference was now in Max's announcement: In the experimental condition, he wanted to play the game, that is, put himself into context *C*, and thus made a mistake. In the control condition, in contrast, he announced that he did not want to play the game but rather to do something else, that is, put himself out of context *C* and thus not make a mistake (see Table 1). If children grasp the context-relative normativity of game rules, they should protest in the experimental condition but not in the control condition.

Method

Twenty-four 3-year-olds (35–39 months, mean age = 37 months; 11 boys, 13 girls) were included in the final sample. The same within-subjects design as in Study 1 was used, with four tasks per child. For each task, there were three phases. In the first phase, the baseline phase, the first experimenter brought out some known objects (e.g., in one game called *daxing*, she brought building blocks: one was half red and half blue, the others were all blue), and she and the child performed the usual actions with them (e.g., building). In the second phase, the game phase, the first experimenter announced "I am going to show you a game now, it's called daxing," brought out additional material (in the daxing case, a Styrofoam wall with holes of different sizes into which blocks could be put), and explained the rules (use the red/blue block as a die; only when blue is up can one put a block into the corresponding hole in the wall). The first experimenter and the child then played the game, taking turns for a while. In the third phase, the test phase, Max appeared and performed the action usually done with the object (in this case, building) twice. The only difference between the conditions was this: In the experimental condition, Max announced to play the game, to "dax as well," whereas in the control condition he announced to not join the game but rather to build. The same coding procedure as in Study 1 was used (reliability: weighted κ = .92)

Results and Discussion

The mean sum scores for the different response categories are depicted in Figure 2 (left side). Both for the strict criterion (only normative protest) and for the more liberal criterion (normative or imperative protest), the 3-year-olds performed significantly more protests in the experimental than in the control condition: strict, $t(23) = 4.73$, $p < .01$, $\eta_p^2 = .49$; liberal, $t(23) = 7.40$, $p < .01$, $\eta_p^2 = .70$.

Study 2B

The aim of this study was to test for 2-year-olds' understanding of the context-relative normativity of game acts with an analogous design as that used in Study 2A. However, as pilot testing had revealed that the tasks used in Study 2A proved too complex for the 2-year-olds, simplified versions were used.

Method

Twenty-four 2-year-olds (25–29 months, mean age = 27 months; 12 boys, 12 girls) were tested. The design was exactly the same as in Study 2A. Only the games were simplified for the 2-year-olds: Instead of multistep sequences (throw a die → results determine next step → perform next step), the game actions consisted of one step only. For example, in the daxing game, Step 1 (where players used one block as a die) was omitted, and the game consisted of the players only taking turns in putting one block at a time into the corresponding holes in the Styrofoam wall. (See Appendix 3 in the supplemental materials for details.) The same coding scheme as in Study 2A was used (reliability: weighted κ = .85).

Results and Discussion

The mean sum scores for the different responses in the test phase are depicted in Figure 2 (right side). Due to a lack of normative protests, only the more liberal criterion (normative or imperative protest) could be used. In this analysis, the 2-year-olds performed significantly more protests in the experimental than in the control condition, $t(23) = 2.63$, $p < .01$, $\eta_p^2 = .23$. In sum, the 2-year-olds in this study showed the same pattern of responses as did the 2-year-olds in Study 1 and a similar pattern as did the 3-year-olds in Studies 1 and 2A, albeit on a less explicit level.

General Discussion

The 3-year-olds in both studies revealed a highly consistent response pattern. In response to the puppet's mistakes (in the experimental condition) they produced both distinctively normative interventions (e.g., "No! It does not go like this!") and imperative ones (e.g., "No! Don't do it that way!"). But they hardly did so when the puppet performed the same act in the control conditions. That is, that did not disapprove of the action just generally and for irrelevant reasons (e.g., personal preferences) but specifically only when it was a mistake. And this pattern was found both with actions that were somewhere in between purely conventional game acts and instrumental acts (Study 1) and with clearly conventional game acts (Study 2A). The 3-year-olds in both studies thus revealed a clear awareness of the normativity created in simple conventional rule games: In the context of the game, the assignment of status to objects and actions licenses certain acts and makes others mistakes. Furthermore, the same act in a different context does not necessarily count as a mistake—even if the context is indicated only by the actor's announcement (to play or not play the game). The fact that the 2-year-olds showed a qualitatively similar response pattern, though with less distinctively normative interventions, is plausibly interpreted as showing an analogous normative awareness as in the 3-year-olds, though perhaps in embryonic form only.

These findings are, in our view, the strongest evidence to date that young children understand the normative structure of simple conventional acts involving the creation of status functions. They

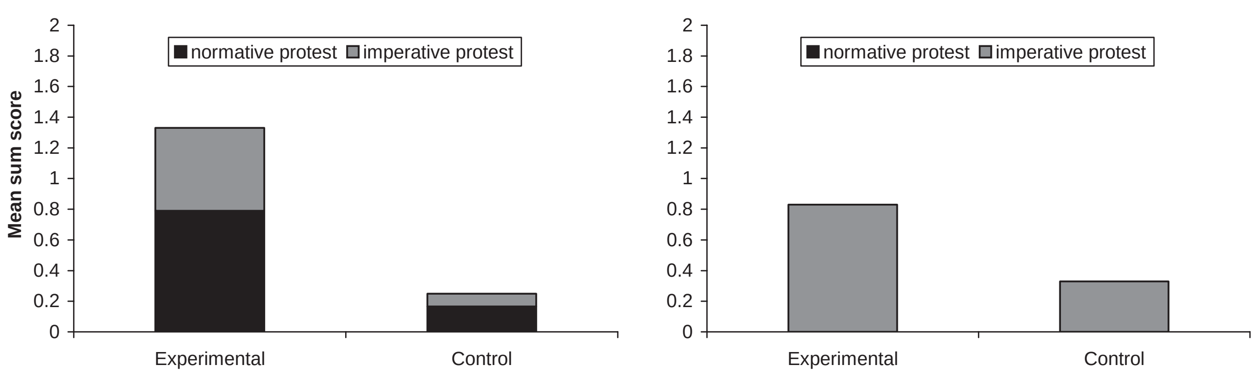

Figure 2. Mean sum scores (0–2) of the different forms of protest in the test phase in Studies 2A (left side) and 2B (right side).

go beyond findings that children from their 2nd year imitatively learn to use novel words or to handle novel tools in conventional ways and expect others to do so (e.g., Casler & Kelemen, 2005; Tomasello, 2000). Beyond requiring children to imitate and expect others to act in usual ways, we required children not only to do as others did, or to be surprised by deviations from the statistical norm, but to understand the normative space of warranted and incorrect acts created in a game context and consequently to explicitly criticize and/or protest against others' mistakes.

That is, early in ontogeny, we find the rudiments of what lies at the heart of uniquely human societal and institutional reality: the ability to collectively act and treat objects in certain ways, thereby assigning functions to them and installing a normative framework of appropriate acts and mistakes (Searle, 1995).

It remains a question for future conceptual and empirical work as to how exactly young children's awareness of the normativity in collective practices is to be characterized. In particular, an outstanding question in this context is how the present findings relate to older findings in the Piagetian tradition suggesting that understanding societal life is an achievement of middle childhood. Apart from methodological differences (complex interview questions in the Piagetian tradition vs. spontaneous action measures in the present studies), one difference regards potential aspects and levels of understanding: Piaget (1929, 1932) and much research following him focused on children's understanding of the modal logical structure of conventionality—that something is conventionally the way it is, is contingent ("Could cows could have been called horses?"—Yes, if history had been different). Younger children tend to fail such questions (e.g., Brook, 1970; Homer, Brockmeier, Kamawar, & Olson, 2001; Piaget, 1929; Rosenblum & Pinker, 1983), but arguably this might be due to task demands related to counterfactual reasoning. The focus of the present studies, in contrast, was not on the counterfactual side of conventional practices ("Daxing could have been a different game") but on the normative side of them ("This is how daxing goes"). One possibility is that young children understand the normative structure of conventional practices but initially fail to understand the arbitrariness and contingency of such practices (see Kalish, 2005).

Finally, it might be relevant in this context that the practices used here were games—in contrast to "serious" conventional practices such as naming or property issues, which were the target of many studies in the Piagetian tradition (see Rakoczy, 2007; Rakoczy & Tomasello, 2007). It has been suggested that games might be special compared to serious conventional practices in that they are more isolated activities that do not depend on the rest of social reality in such holistic ways as does, for example, property (which is incomprehensible without many juridical and economic notions; see, e.g., Searle, 1991). Future empirical work is needed to further explore this suggestion.

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Received July 5, 2006
Revision received February 2, 2007
Accepted March 1, 2007 ■