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Brief Report

Young children understand the normative force of standards of equal resource distribution

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ABSTRACT

Much recent research has shown that children are sensitive to basic principles of fair distribution of resources much earlier than previously assumed. Under appropriate circumstances, toddlers and sometimes even infants both expect that others will follow principles of equal distribution of resources and do so themselves. But from these findings it remains unclear whether young children understand and follow such principles of fairness as normative rules. The current study tested for such an understanding of the normative force of principles of resource distribution with a novel method. In the study, 3- and 5-year-olds witnessed how a (puppet) agent distributed resources jointly earned by herself and a fellow agent in equal or unequal ways. In one condition, the child herself or himself was this fellow agent, and in another condition it was an unrelated third party. Children spontaneously protested frequently against unfair distributions both when they themselves were affected and when another third party was affected (and never did so after fair distributions), with 5-year-olds doing so in more explicitly normative terms than 3-year-olds. These findings suggest that young children indeed understand principles of fair distribution as normatively binding regardless of whether they are personally affected or not.

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Introduction

Children's developing understanding of fairness in resource distribution has long been studied in research on social-cognitive development (Damon, 1977). Many traditional studies interviewing children about how to distribute resources in hypothetical situations have suggested developmental progress through an ordered, stage-like sequence of successively more complex fairness principles; children first reason about resource allocation in purely egocentric ways, then (from around 5 or 6 years of age) they do so according to equality principles, and finally, only from around 8 to 12 years of age, they begin to take into account more complex factors such as merit and personal need (Damon, 1977; Hook & Cook, 1979).

More recently, this research has been revolutionized in two ways (see Blake, McAuliffe, & Warneken, 2014, for a review). First, by investigating children's intuitions about how to distribute resources in simplified ways (often involving real interactions with real resource distribution rather than purely verbal interviews about hypothetical situations), new research suggests that children are sensitive to principles of fair distribution much earlier than previously assumed. Under suitable conditions, in particular when resources were jointly earned in a collaborative task, even 3-year-olds do not distribute egocentrically but rather according to equality, sometimes even according to merit (Baumard, Mascaró, & Chevallier, 2012; Hamann, Bender, & Tomasello, 2014; Kanngiesser & Warneken, 2012; Schmidt, Svetlova, Johe, & Tomasello, 2016). Second, by confronting them with real-life resource distributions by other agents, new research suggests that, similarly, young children expect others to act fairly much earlier than previously assumed (Geraci & Surian, 2011; Schmidt & Sommerville, 2011; Sloane, Baillargeon, & Premack, 2012). These two kinds of measures, first-person action and third-person expectation, were found to be related in some recent work; to the extent that children expected others to follow certain fairness principles, they tended to act on these principles themselves (or at least to act prosocially in general) (Paulus & Moore, 2014; Schmidt & Sommerville, 2011).

Thus, what these findings show is that, when it comes to children's expectations of how others will act as well as to their own acts, sensitivity to principles of fair distribution emerges already during the preschool years, with some roots perhaps even during infancy. But what these findings leave open is whether and how young children understand such principles. For adults, principles of fair distribution not only are descriptive regularities reporting what usually happens but also constitute prescriptive rules stating what ought to be done with corresponding normative force; concerning our own actions, we not only act in ways that are consistent with such principles but also actively follow and are normatively guided by them (for the distinction between merely acting in accordance with a norm and actively following a norm, see, e.g., Kripke, 1982; Quine, 1972; Wittgenstein, 1953). Concerning our observation of third-party behavior in relation to these principles, we not only expect that others will act in accordance with the principles (in the descriptive sense), and correspondingly show surprise in cases where they do not, but we also expect them to follow the norms in the prescriptive sense, insisting that they "ought to" do so. We react to deviations from the principles not only with surprise but also with normative responses such as critique and protest. Another crucial feature of normative principles of fair distribution as adults understand them is that they apply in agent-neutral ways (Nagel, 1970); any agent is subject to the norm in much the same way when distributing in relation to any other agent. We see it as normatively wrong if someone distributes in deviation from such principles (say, favoring oneself) when we ourselves are personally affected as the recipients as much as when a third party is the recipient and we have no personal disadvantage.

The central empirical question from a developmental point of view, then, is when children develop an understanding of principles of fair distribution as agent-neutral prescriptive norms. To address this question, it is not sufficient to record the two above-mentioned types of measures: children's own distribution behavior in accordance with the principles and their descriptive expectations of how others will act in such accordance. Rather, more direct indicators of the perceived normative force of the principles in question are required. Such indicators can be of two kinds. First, especially with older children, explicit discourse, either spontaneously or elicited by questions, about the normative status of some distributive action yields more direct and conclusive evidence (Dunn, 1987). Research using

such methods shows that children explicitly and reliably talk about fairness norms, use them to justify their own actions, and use them to normatively evaluate others' acts from middle childhood (Gummerum, Keller, Takezawa, & Mata, 2008; Keller, Gummerum, Canz, Gigerenzer, & Takezawa, 2013). One recent study showed that under some circumstances even 3-year-olds make explicit verbal judgments about how an agent (a third party of themselves) "should" distribute some resources—even if they themselves do not actively follow these principles in practice but rather distribute egocentrically (Smith, Blake, & Harris, 2013).

Such findings suggest that from early on children can report fairness norms (in the sense of stating what someone "ought to do"). However, it is of the essence of norms that they not only figure in verbal judgments but also provide standards of evaluation, critique, and sanction in responding to others' actions. Therefore, a second class of measure is crucial for investigating whether children not only pay lip service to fairness principles but also recognize their normative force and actively use them in normative reactions such as critique and protest toward third-party performances. Such measures of spontaneous normative protest, critique, teaching, and the like in response to others' actions that do or do not adhere to the principles in question are well suited and have recently been widely used with children from around 2 or 3 years of age (Rakoczy & Schmidt, 2013; Rakoczy, Warneken, & Tomasello, 2008). The underlying logic here is as follows. Purely descriptive expectations that people will follow certain principles, on the one hand, and prescriptive expectations that they ought to do so, on the other, yield very different responses in cases of violations of those expectations. Surprise is the appropriate response in the case of unfulfilled descriptive expectations. But unfulfilled prescriptive expectations license critique, protest, outrage, and the like.

One recent line of research suggests that school-aged children might show such spontaneous normative reactions in responses to unfair offers in game-theoretic interactions such as ultimatum games (in which a proposer is given an amount of resources and the chance to decide how much of this amount to offer to a responder; the responder can then accept this offered distribution or reject it—in which case none of the players gets anything). Children, in the role of the responder, reacted to unfair offers with rejections—acts that inflicted material costs on the other player (and on themselves). In a wide sense, such acts can be conceptualized as a form of a normatively guided response, namely punishment (Gummerum & Hanoch, 2012; Jordan, McAuliffe, & Warneken, 2014; McAuliffe, Jordan, & Warneken, 2015; Robbins & Rochat, 2011). Conceptually, however, it is unclear whether such acts constitute punishment in a more narrow sense—rather than, for example, expressions of being annoyed. In the strict sense, it is not enough for an act of ours to count as punishing that someone else's action annoys us, which in turn leads us to inflict a cost on her or him. Rather, punishing in the strict sense is an intentional and normative action of intentionally inflicting a cost to someone *because of* a violation of a normative standard. So, conceptually, it remains somewhat unclear whether the act of inflicting costs in these studies constitutes punishment in the strict sense or something simpler. Empirically, we do not know from these studies about the understanding of the normative status of distributional principles in children before school age.

Another line of research has looked at younger children's spontaneous emotional responses to fair versus unfair distributions in order to explore earlier forms of understanding the normative status of distribution principles (LoBue, Nishida, Chiong, DeLoache, & Haidt, 2011). The crucial finding was that children responded with broadly negative emotional expression to unequal distributions made by another agent (as long as the inequality was disadvantageous to the children). Now, this might in fact indicate children's normative disapproval of the distribution as normative violation. However, this rather gross measure of general emotional expression is clearly too ambiguous and inconclusive, leaving open whether children objected to it as normatively inappropriate or merely disliked the unfair distribution—in particular because children were always first-personally involved as the recipients of a distribution.

All in all, thus, we know from much recent research that children—at least under certain circumstances—act in accordance with principles of fair resource distribution from a much younger age than previously thought and expect (descriptively) that others will act so as well. Much less is known, however, about whether young children understand principles of fair distributions as prescriptive norms that govern how agents ought to distribute resources—with the clearest indicator of such an understanding being a third-party critique and other normative reactions in response to deviations from

the principles. Relatedly, little is known about what young children understand about the agent-neutral force of norms of distribution—the fact that they apply equally to everyone regardless of one's own first-person involvement and interests.

The main aim of the current study, therefore, was to investigate young children's grasp of the agent-neutral normative force of principles of fair resource distribution. To this end, 3- and 5-year-olds, in a simple "giving game" (McCrink, Bloom, & Santos, 2010), witnessed fair versus unfair distributions of resources by an agent (the distributor) to herself and another agent (the recipient). To test for children's grasp of the normative force of the fairness principles, the crucial measures were children's spontaneous normative responses such as protest and critique in response to the act of distributing. To test for children's understanding of the agent neutrality of such a normative force of fairness principles, in some cases the children themselves were the recipients (first-person condition), whereas in other cases it was another agent (third-person condition). If children of this age operate with an agent-neutral normative conception of standards of equal distribution, they should spontaneously object to (e.g., protest, criticize) unfair distributions, but not to fair distributions, and should do so regardless of whether they themselves or another third party is affected as a recipient.

Method

Participants

The final sample consisted of 24 3-year-olds (mean = 41 months of age, range = 37–47; 10 girls and 14 boys) and 24 5-year-olds (mean = 64 months of age, range = 60–69; 11 girls and 13 boys). An additional 6 children were tested but excluded because they were uncomfortable during the testing phase. All children were tested individually in a psychological laboratory and were recruited from a database of families from a medium-sized German city. Socioeconomic backgrounds were mixed. Informed consent, in written form, was obtained from the parents of all children who participated in this study.

Design

The study employed a 2 (Age Group: 3- or 5-year-olds) \times 2 (Distribution: unfair conditions or fair baseline) \times 2 (Recipient: first or third person) design, the former two as between-participants factors¹ and the latter as a within-participants factor. Each child received a block of two trials per first-person and third-person recipient conditions, respectively (order counterbalanced), resulting in four trials per child.

Procedure

Each test session was conducted by two experimenters in a quiet room at the laboratory and lasted approximately 40 min. At the start of the session, the first experimenter (E1) introduced a hedgehog hand puppet that was animated by the second experimenter (E2). During a short warm-up phase, E1, the hedgehog, and the child played with some conventional toys on which the hedgehog demonstrated some basic instrumental incompetence in order to familiarize the child with the puppet and with situations where mistakes happen and the child can intervene.

Then the tasks began. For each task, there were three phases. During the first phase, E1 brought out one of four games (sticker album, magnetic fishing game, marble run, or bracelet) with some items to use (sticker, magnetic fishes, marbles, or beads, respectively). The child and the hedgehog in the first-person condition or the hedgehog and another hand puppet (the skunk) in the third-person condition used the available items for the game. During the second phase, E1 instructed both to clean up the room in order to get more items. Then he brought out four additional items to use in the current game,

¹ The fair baseline conditions were conceptualized as a baseline control in which no protest whatsoever was to be expected so that we could make sure that any form of protest found against unfair distributions in the unfair conditions would not simply reflect some general tendency of children to protest in distribution scenarios such as the ones used here. Therefore, only 8 children were tested in each of the fair baseline conditions compared with 16 children in the unfair conditions.

instructed the hedgehog to distribute them between himself and the other player, announced that he had important paperwork to do, and turned away. During the third phase, the test phase, the hedgehog distributed the four items slowly. He took each object individually, looked at it, and said, “One for me, yes, this one is for me!” or “one for you/the skunk, yes, this one is for you/the skunk!” Then the hedgehog said nothing and looked at the distribution for 5 s. After this pause, E1 turned back and asked what happened.

The difference between the first-person condition and the third-person condition was as follows. In the first-person condition, the child acted with the hedgehog during all three phases. In the third-person condition, the child observed the skunk and the hedgehog acting together during the first two phases, whereas during the test phase the child needed to pay attention to the distribution of the hedgehog while the skunk was absent.

The difference between the unfair conditions and the fair baseline was as follows. In the fair baseline the hedgehog gave himself and the other player two items, whereas in the unfair conditions the hedgehog gave himself three items and gave the other player one item.

Coding

All sessions were coded from videotape by a single observer. All relevant responses and utterances of the child were carefully transcribed and given one of the following hierarchically ordered codes. A given response was coded as “explicit normative protest” if the child clearly intervened in normative ways using explicit normative vocabulary (e.g., “No! This is not fair!”, “This is not right”, “You have to do it differently!”). A given response was coded as “implicit protest” if the child expressed an imperative to the hedgehog without using normative vocabulary (e.g., “No! I need one more!”, “But we do not have the same!”, “Look, there is one missing here!”). Each task then got as its code the highest category code that appeared in its course.

The logic of the coding scheme is as follows. Whereas normative protest itself (by definition) applies to distinctively normative interventions, implicit protest as such is more ambiguous and, in itself, does not present conclusive evidence for normative awareness. For example, implicit protest might simply reflect children’s preference for certain actions over others. A second independent observer coded a random sample of 20% of all the sessions for reliability. There was perfect agreement between the two raters ($\kappa = 1$).

Results

Fig. 1 depicts the mean number of trials (0–2) in which children showed some form of protest in the unfair conditions and the fair baseline conditions. As can be seen from Fig. 1B, no child ever protested in any way in any of the fair baseline conditions. Due to this floor effect, no inference statistics comparing protest unfair conditions and fair baseline could be computed. Table 1 depicts, on an individual level, how many children produced the different forms of protest in the unfair conditions.

To test for effects of age group and recipient condition, first a 2 (Age: 3 or 5 years) \times 2 (Condition: first or third person) analysis of variance (ANOVA) on the mean sum scores of any form of protest (explicit or implicit) in the unfair conditions was computed. It yielded a main effect of age, with 5-year-olds protesting more ($M = 1.66$) than 3-year-olds ($M = 0.84$), $F(1, 30) = 14.12$, $p < .001$, $\eta^2 = .32$, and a main effect of condition, with more protest for the first-person condition ($M = 1.44$) than for the third-person condition ($M = 1.06$), $F(1, 30) = 6.31$, $p < .05$, $\eta^2 = .17$. No interaction between age group and condition was found, $F(1, 30) = 0.175$, $p = .68$, $\eta^2 = .006$. These results were confirmed by non-parametric analyses; the 5-year-olds protested more than the 3-year-olds ($Z = 2.17$, $p < .05$), and there was more protest in the first-person condition than in the third-person condition ($Z = 2.36$, $p < .05$).

A second, more conservative analysis, looking at children’s use of explicit normative protest only, yielded a main effect of age, with 5-year-olds ($M = 1.19$) protesting more than 3-year-olds ($M = 0.25$), $F(1, 30) = 28.36$, $p < .001$, $\eta^2 = .49$. There was no main effect of condition, $F(1, 30) = 0.48$, $p = .49$, $\eta^2 = .016$, and no interaction between condition and age group, $F(1, 30) = 0.48$, $p = .49$, $\eta^2 = .016$. Again,

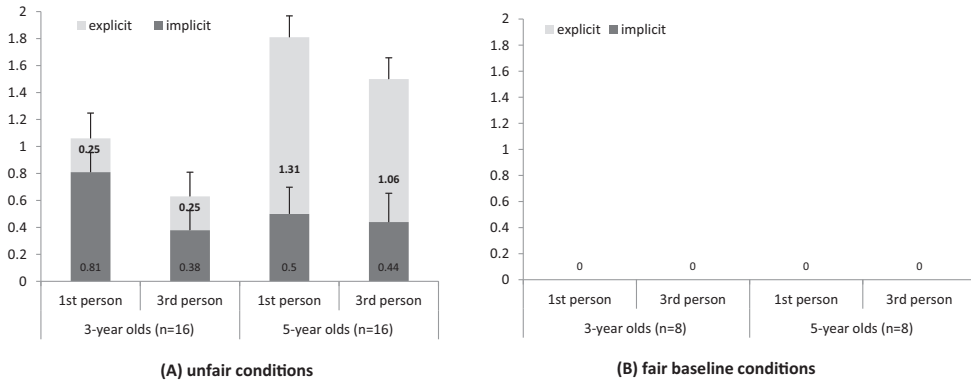


Fig. 1. Mean numbers of trials (0–2) in which children showed implicit or explicit normative reactions in response to the puppet's distributive actions in the unfair conditions (A) and the fair baseline conditions (B).

Table 1

Numbers of children showing implicit or explicit protest in any of the two trials of the unfair conditions.

	3-year-olds		5-year-olds	
	First person	Third person	First person	Third person
Explicit	3	3	13	11
Implicit	8	3	3	3

these results were confirmed by non-parametric analyses; the 5-year-olds protested more than the 3-year-olds ($Z = 3.35$, $p < .001$), and the first- and third-person conditions did not differ ($Z = 0.60$, $p = .55$).

Discussion

The current study investigated the early development of children's understanding of the agent-neutral normative force of principles of fair resource distribution. The participants, 3- and 5-year-olds, were confronted with scenarios in which an agent distributed jointly earned resources to her partner (either the child or another third party) and herself in either fair (equal) or unfair (unequal) ways. The main results were as follows. Children of both age groups spontaneously reacted in normative ways with protest and critique to unfair distributions of resources by another agent (but never did so when distributions were fair). In addition, they reacted in such normative ways both when they themselves and when someone else was the recipient (with slightly more frequent protest overall in the former case compared with the latter case but equal amounts of explicit normative protest). Such spontaneous responses were generally more frequent in the older children and were qualitatively different, with explicitly normative protest being less frequent in the younger children.

To our knowledge, this is among the first systematic evidence that preschool-age children not only act in accordance with fairness principles and expect that others will do so but also understand and enforce them as prescriptive and normatively binding. The current results converge nicely with recent findings by [Smith and colleagues \(2013\)](#), who showed that young children explicitly describe fairness principles in prescriptive terms as something that one "ought to" follow (even if they then themselves did not do so in fact). And the current results go beyond those findings by suggesting that children not only state but also enforce the normative power of these principles.

Far from being egocentric, children understand the prescriptive force of such principles in agent-neutral ways as applying regardless of whether they themselves are involved or not. Considering protest in general, although there was a difference between the first- and third-person conditions

(which might simply reflect motivational differences),² protest was not confined to the first-person condition but rather was also very frequent in the third-person condition. Crucially, however, considering only the more stringent measure of explicit normative protest, the first- and third-person conditions did not differ.

Clearly, these are just the very first steps toward understanding how children's grasp and enforcement of fairness norms develop, leaving open many fundamental questions. First of all, when during ontogeny does a robust sense of fairness emerge? In the current study, 5-year-olds revealed such a normative sense very clearly in both quantity (protesting in the majority of unfair trials) and quality (protesting mostly in explicitly normative ways), whereas the response patterns were much less clear in 3-year-olds. This could be because the younger children, while having a purely descriptive understanding of the fairness principle (as something that one can descriptively expect others to follow), did not yet have a robust normative sense of fairness norms (as something that others and themselves ought to follow) or, alternatively, because the younger children could not express it yet. Future research with more sensitive measures will need to explore the earlier development of normative fairness conceptions.

How sophisticated is young children's grasp of the normative force of fairness principles? The current study began to explore children's understanding of normativity of fairness by invoking the most simple fairness principle applying to resource distribution—equality. But clearly not every equal distribution is considered as fair by adults, in particular when the needs or merits of the participants diverge. Previous research has shown that under some circumstances preschoolers take factors such as merit and need into account in their own distributive actions and in their descriptive third-party expectations (e.g., Baumard et al., 2012; Kanngiesser & Warneken, 2012). But we do not know yet whether they consider such more complex fairness principles as normatively binding in the same way as they found equality binding in the current study (for recent findings suggesting that in their norm enforcement even 8-year-olds do not systematically differentiate between different kinds of fairness principles, see Schmidt et al., 2016). In addition, we do not know yet how such considerations of fairness principles as normatively binding develop as a function of cultural background and experience (for recent work on cross-cultural variation in fair resource allocation, see Blake et al., 2015).

More generally, one of the most fundamental open questions is how understanding, following (and expecting others to follow), and enforcing norms of fair distribution relate to each other developmentally. Recent research in this area has uncovered “knowledge–behavior gaps” (Blake et al., 2014), such that children in some situations can state what fairness principles would dictate (how one “ought to” distribute) but fail to act in accordance with them (Smith et al., 2013). With the help of the measures of spontaneous norm enforcement used in the current study (e.g., critique, protest), future research can help to elucidate whether there may be analogous “enforcement–knowledge gaps”; young children may well be able to (implicitly and practically) enforce fairness principles by criticizing deviations before being able to (explicitly and theoretically) state the principles.

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² For similar findings concerning children's conception of property rights, see Rossano, Rakoczy, and Tomasello (2011). Children witnessed how an agent violated someone's property rights (taking away and throwing away someone's objects without asking), where sometimes they themselves were the victim and sometimes another third person was the victim. In both cases, 3-year-olds protested (more so than in a control condition), but they did so more when they were personally affected.

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