

# The developmental origins of fairness: the knowledge–behavior gap

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**Recent research in developmental psychology shows that children understand several principles of fairness by 3 years of age, much earlier than previously believed. However, children’s knowledge of fairness does not always align with their behavior, and immediate self-interest alone cannot explain this gap. In this forum paper, we consider two factors that influence the relation between fairness knowledge and behavior: relative advantage and how rewards are acquired.**

## The development of fairness in concept and action

Recent research in developmental psychology has revealed that, by 3 years of age, children understand several principles of fairness. Despite this conceptual knowledge, children do not always follow these principles, favoring themselves when their own resources are at stake. We argue that two factors can explain how and why the gap between fairness knowledge and actual behavior occurs: a desire to maintain an advantage relative to peers and the means by which children acquire the resources. We first summarize recent evidence for early conceptual knowledge of fairness principles and then describe the relation between children’s knowledge of fairness and their behavior. Next, we examine the roles of relative advantage and resource acquisition in explaining the gap between knowledge and behavior.

## An updated view of the origins of fairness knowledge

Classic work on the development of distributive justice held that children’s understanding of fairness emerged slowly: children endorse equal outcomes not before 5–6 years of age and recognize the principles of merit and need only around 11–12 years of age [1,2]. This relatively long course of development suggested that knowledge of fairness is constructed by the child through their own experience, adding different principles in a sequence that is tied to stages of cognitive development. Recent research with infants and preschoolers challenges this view, showing that knowledge of fairness emerges earlier than expected, thus forcing us to rethink the ontogenetic origins of fairness.

Knowledge of fairness has typically been assessed by asking children to judge resource allocations between third parties [1], thus removing the self-interest of the subject.

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Looking-time methods in developmental psychology can ask similar questions of preverbal infants by measuring how long infants look at different outcomes for a third-party allocation scenario. In one recent study, 19-month-olds watched how an experimenter allocated two items to two puppets [3] (Box 1). Infants looked longer when one puppet received both items compared with when each puppet received one, suggesting that the infants expected an equal allocation. Control conditions indicated that this expectation applied specifically to social situations as opposed to a general expectation of symmetry. Similar experiments have found that even 15-month-olds expect resource allocations to be equal [4,5].

By 2–3 years of age, children also understand the more sophisticated principle of merit. In one looking-time study, 21-month-old infants expected unequal outcomes for unequal effort on a work task, a principle of merit [3]. By 3 years of age, children explicitly apply a principle of merit when judging third-party interactions. When shown simple hypothetical scenarios, 3-year-olds believe that the actor who does more work should receive more [6] and even use sophisticated forms of proportional reasoning to determine how much they should receive [7].

Combined, these studies present a challenge to the traditional view of the ontogenetic origins of fairness. Young children expect and state that people should act according to principles of equality and merit. Infants are unlikely to have constructed their knowledge of equal as fair through their interactions with others alone, and knowledge of principles such as merit does not seem to depend on a long progression of cognitive development. Rather, the roots of knowledge about fairness may be present from early in development. This raises the possibility that these principles have an innate basis, although the contributions of biological predispositions and children’s acquired knowledge from observations of social interactions still remain to be studied.

## A striking gap between fairness principles and behavior

Knowing the principles of fairness does not guarantee that one will use them. A recent study directly compared children’s fairness norms and their behavior [8]. Children between 3 and 8 years of age stated that, when given a set of stickers, the right thing to do would be to share half with an absent child. However, only 7- to 8-year-olds actually gave equally. The younger children kept more for themselves despite endorsing equality.

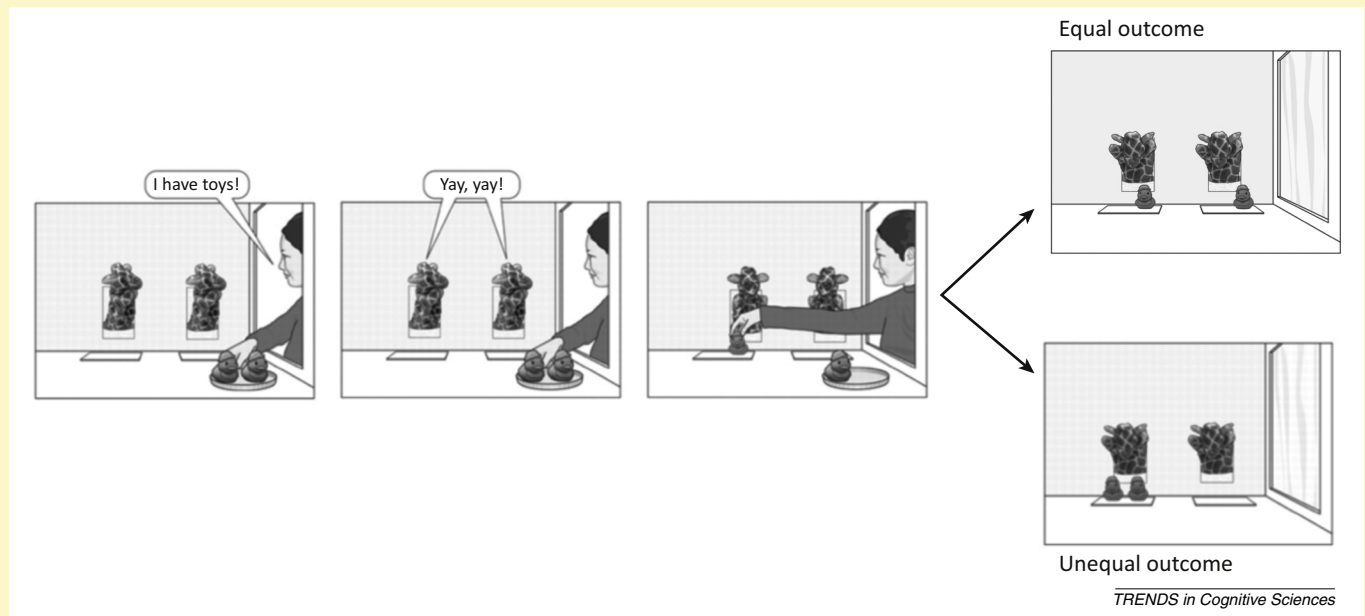
One plausible explanation for this gap between fairness knowledge and actual behavior is that the younger children cannot inhibit their desire for the stickers and, thus, fail to

### Box 1. Infant expectations of fair outcomes

Recent studies have used looking-time measures to assess infants' expectations about how resources are distributed. In one representative study [3], 19-month-olds looked longer at the unequal outcome than the equal outcome, suggesting that they expected the experimenter to divide resources equally (Figure 1). Infants looked equally long to the two outcomes in control conditions in which (i) recipients were replaced with inanimate objects or (ii) the experimenter did not distribute the objects, but instead lifted covers to reveal an equal or unequal outcome. These control conditions indicated that infant's expectation of equal outcomes applied

specifically to social situations as opposed to a general expectation of symmetry.

Similar experiments have found that 15-month-olds, but not 12-month-olds, expect resource allocations to be equal [5]. In addition, infants not only expect equality, but also prefer agents who enact equal allocations. Specifically, after watching fair and unfair agents distribute resources and then being presented with images of the agents, 16-month-olds reached for the fair one [4]. Taken together, looking-time measures represent a novel tool to unearth fairness expectations and preferences in nonverbal infants.



**Figure 1.** Sequence of events presented to infants in [3]. Two hand puppets were in fixed locations and an experimenter distributed two toys to them. Infants saw the experimenter give one toy to one puppet and then either saw the equal outcome or the unequal outcome. Infants looked longer at the unequal outcome, indicating surprise at this result. Reproduced, with permission, from [3].

follow the norm. However, an inhibitory control task revealed no relation to the amount given [8]. In a separate condition, children were told that they could keep the stickers, thus removing the problem of inhibition, and then were asked to predict what they would give if they had the chance. If the children stated that they would give half, this would suggest that inhibition problems prevented children from being fair in the real giving task. Surprisingly, children accurately predicted that they would keep more for themselves, thus limiting the role of inhibitory control in explaining the gap between fairness knowledge and behavior. We next explore two factors that can explain this gap: a concern for relative advantage and the manner in which resources are acquired.

#### The role of relative advantage

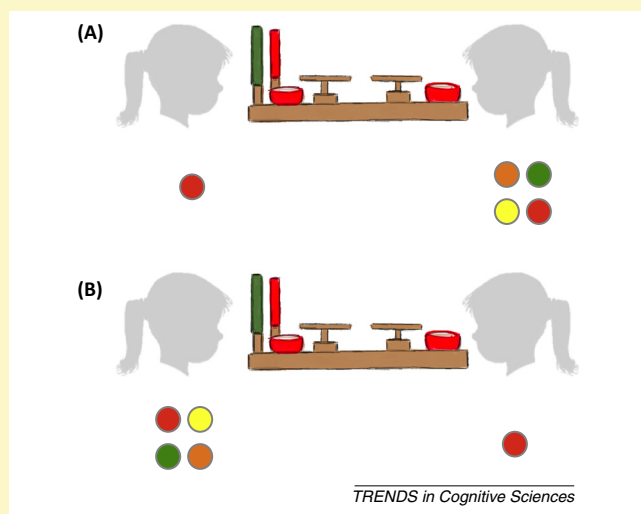
In the giving tasks described above, children seem to fail to give equally due to a self-interested desire to maximize one's own gain. However, this may not be the case. Rather than focusing solely on their own gains, children may compare their rewards to those of their peers and make decisions based on their relative advantage. To test this possibility, one recent experiment presented two children with unequal allocations of candy [9] (Box 2). One child decided whether to accept or reject the allocation, in which

case both received nothing. If children are purely self-interested and seek to maximize their personal gains, they should accept all allocations. By contrast, if children are fair-minded they should reject all allocations, choosing the equal outcome of 0–0. A third possible outcome would reveal a more strategic approach: reject allocations that will put one at a disadvantage relative to the peer and accept those that will put one at an advantage. Four- to 7-year-olds followed this third pattern, demonstrating a concern for relative advantage (see also [10]). Around 8 years of age, children's behavior changed markedly. While these older children continued to reject disadvantageous allocations, they now also rejected advantageous offers, paying a large cost to achieve an equal outcome and citing 'fairness' as the reason.

In summary, a concern for relative advantage may prevent children from enacting their knowledge of fairness when actual resources are at stake. The relatively late emergence of children's willingness to make large sacrifices in the name of fairness suggests that social concerns are involved in closing the gap between knowledge and behavior. For example, by 8 years of age, children may be more concerned about their social reputations and, thus, may wish to appear fair [11]. Alternatively, by this age children may have internalized norms of fairness and come

### Box 2. Inequity aversion and unfair behavior

In typical giving tasks, fair behavior (giving half) is also generous to the recipient, thus confounding two motives. One recent experiment deconfounded these two motives using a novel apparatus [9]. Two peers who did not know each other sat face-to-face while an experimenter placed candy on trays for each child (Figure 1). One child (the actor) could pull different handles to accept the allocation, tilting the trays outward to deliver the candy to each child, or reject it, tilting the trays inward so that the candy became inaccessible. Rejections represented the fair outcome (zero for each) but also went against the actor's immediate self-interest and were not generous to the recipient. Each pair of children received either disadvantageous allocations (one for the actor, four for the recipient) or advantageous allocations (four for the actor, one for the recipient). All pairs also received equal allocations (one candy each), which should be accepted if children understand the apparatus. Results of this and another study [15] showed that children behaved differently depending on the direction of the inequity. The different developmental trajectories for disadvantageous and advantageous inequity aversion also suggest that different cognitive mechanisms operate depending on which side of inequity one faces.



**Figure 1.** Experimental setup for the study by Blake and McAuliffe [9]. Two children sat on either side of the apparatus and one controlled the handles to accept or reject allocations of candies. An experimenter placed different amounts of candy on the trays for each child. One group of children received a disadvantageous allocation (A) and another group received an advantageous allocation (B). Illustration by Katherine McAuliffe.

to see the principles of fairness as obligatory. However, even internalized norms may be used strategically through selective application to ingroup but not outgroup members. These possibilities are clear priorities for future research.

### The acquisition of resources: windfall gains versus earned rewards

The gap between knowledge of fairness and actual behavior is striking when children are presented with a sudden windfall gain of resources, as in the studies described above. However, when children must work together to earn rewards collaboratively, they are more likely to suppress their concern for relative advantage and distribute the rewards fairly. For example, when two 3-year-olds acquire

rewards through collaborative effort, they will spontaneously share them equally [12]. However, when children work side-by-side but acquire their rewards separately, they accept inequality as an outcome [12]. Three-year-olds also attend carefully to the amount of effort expended on earning rewards and tend to give more to whoever worked harder [13] or more successfully [14]. In these cases, children may conceive of the rewards as jointly owned, given the efforts of both actors. In sum, children are sensitive to the means by which resources are obtained, and collaborative effort appears to engage children's principles of fairness in a way that windfall gains do not. Exploring the precise relation between collaboration and fairness remains one of the exciting avenues for new research.

### Concluding remarks and future directions

From this brief review, a new view of the developmental origins of fairness is already evident. By 3 years of age, children know a great deal about fair allocations of resources. This early knowledge suggests that children do not construct their understanding of fairness over many years, but rather, have expectations and knowledge before gaining experience allocating resources to others. Despite their knowledge of fairness, children do not apply it in all cases. In the context of windfall gains, strategic concerns with gaining an advantage relative to peers appear to prevent children from enacting principles of fairness. However, collaborative effort allows children to overcome strategic concerns and apply their knowledge of fairness.

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