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BRIEF REPORT

Preschoolers Are Able to Take Merit into Account When Distributing Goods

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Classic studies in developmental psychology demonstrate a relatively late development of equity, with children as old as 6 or even 8–10 years failing to follow the logic of merit—that is, giving more to those who contributed more. Following Piaget (1932), these studies have been taken to indicate that judgments of justice develop slowly and follow a stagelike progression, starting off with simple rules (e.g., equality: everyone receives the same) and only later on in development evolving into more complex ones (e.g., equity: distributions match contributions). Here, we report 2 experiments with 3- and 4-year-old children ($N = 195$) that contradict this constructivist account. Our results demonstrate that children as young as 3 years old are able to take merit into account by distributing tokens according to individual contributions but that this ability may be hidden by a preference for equality.

Keywords: fairness, cooperation, development, morality, equity

Justice can be at the same time very simple and very complicated (Sandel, 2010). It is simple because it amounts to distributing resources in a fair way, not giving advantage to anyone (Rawls, 1971). It is complicated because being fair often involves taking into account a vast array of parameters (efforts, needs, investments, and so on) that are difficult to evaluate and quantify. Moreover, the very same logic of fairness can lead to different distributions. When individuals are in the same position—for instance, because they have equally contributed to the production a common good—equality may be the fairest way to distribute resources. By contrast, when individuals are in different positions—for instance, because one of them has contributed more—being egalitarian may amount to favoring the one who contributed less (by offering him or her a better "rate of return" from the work he or she performed). Thus, if people want to be fair, they sometimes ought to give more to the ones who contributed more.

The difficulty of implementing fairness in the real world is probably the reason that, following Piaget (1932), judgments of justice have long been thought to emerge very gradually and to follow a stagelike progression from irrelevant rules (such as giving according to one's own preferences) to simple rules (such as equality: everyone gets the same) to more complex ones later on in development (such as equity: distributions match contributions). In line with this approach, classic studies demonstrate a relatively late development of equity, with children as old as 6 or even 8–10 years failing to follow the logic of merit, that is, failing to give more to those who contribute more (e.g., in tasks involving the distribution of money after a common phase of art work production; Damon, 1975, 1980; Enright et al., 1984; Enright & Sutterfield, 1980; Kohlberg, 1969; McGillicuddy-de Lisi, Watkins, & Vinchur, 1994; Nelson & Dweck, 1977; Peterson, Peterson, & McDonald, 1975; Sigelman & Waitzman, 1991).

In the last decades, an alternative to this constructivist position has emerged. This approach draws from general accounts of fair-

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ness coming from evolutionary biology (Trivers, 1971), behavioral economics (Binmore, 2005), and moral philosophy (Rawls, 1971). In this framework, it is posited that humans are endowed with a universal "sense of fairness," an adaptation designed to regulate cooperative interactions (for empirical evidence, see, e.g., Robinson, Kurzban, & Jones, 2007). Humans are indeed uniquely cooperative and, unlike the great apes, obtain most of their resources through collaborative interactions such as hunting, gathering, or exchanging goods and services (Kaplan, Hill, Lancaster, & Hurtado, 2000; Tomasello, 2009). In this highly cooperative context, recent evolutionary models have shown that fairness is the optimal strategy (André & Baumard, 2011a, 2011b; Chiang, 2010). Individuals are indeed in competition to be recruited in cooperative interactions, and those who take a bigger share of common benefits are left out for more advantageous partners. This perspective allows for a better understanding of why merit is strongly valued by humans. If Person A invested three units of resources in the interaction while Person B invested only one, then A ought to receive a payoff exactly three times greater than B (otherwise B would benefit more from the interaction than A, and A would be better off leaving for another partner). Distributing resources according to merit is thus the best way to share the benefits of cooperation in a mutually advantageous way.

Although evolutionary theories do not contradict the idea of a progressive development of justice judgments, they render the idea of an early development of complex judgments of justice more plausible (the same argument holds for a variety of domains; see, e.g., the case of numbers, Dehaene, 1997; for a general discussion, see Barkow, Cosmides, & Tooby, 1992; Bloom, 2004; Pinker, 1997). Indeed, the idea that humans are predisposed to develop a sense of fairness is at the heart of this approach. Such a predisposition might help children to overcome the complexity of judgments of justice from an early age. In line with this idea, recent experiments involving looking time measures have shown that 12- to 18-month-old infants are sensitive to inequity (Geraci & Surian, in press; Schmidt & Sommerville, 2011; see also LoBue, Nishida, Chiong, DeLoache, & Haidt, 2010). When actively involving involved in the task, children as young as 3 years share mostly equally after having worked together to obtain rewards in a collaborative task, even when those rewards could easily be monopolized (Warneken, Lohse, Melis, & Tomasello, 2011; see also Blake & Rand, 2010). Moreover, as a follow-up study demonstrated, sharing is clearly related to the collaborative nature of the task: 3-year-olds share with others much more equitably in these contexts than they do in either windfall or parallel-work situations (Hamann, Warneken, Greenberg, & Tomasello, 2011).

Taken together, these studies suggest that fairness—that is, the ability to share the benefits of social interactions in a mutually advantageous way— may be present very early in ontogeny. A finer test would be to study whether children are able to match contribution and distribution in order to maintain fair interactions with their partners. So far, however, evidence for such ability has been lacking. What may have prevented the identification of such complex judgments of justice previously, we argue, is that experiments were often overly demanding for young children. To single out a representative example, consider the following scenario: children are told a story about a group of three characters making clay pots together. Each character is associated with identifying characteristics: one is the oldest, one is poor, and one is the most productive. Ultimately, the clay pots are sold for $9, and the child is asked to state the number of dollars each character should get (taken from Sigelman & Waitzman, 1991). Here, young children are likely to have struggled with the fact that numerous tokens need to be manipulated and that the whole situation is not very familiar to them.

In more recent studies reporting a late development of equity, children were directly affected by the distribution, which may have biased them to serve their own interests. In Fehr, Bernhard, and Rockenbach (2008), for instance, children as old as 7 were reluctant to distribute tokens equally when they had the option to get more for themselves (see also Rochat & Dias, 2009 for a similar problem). Young children may find it difficult to be moral when there is a cost for themselves (Moore, 2009; Thompson, Barresi, & Moore, 1997).

In the two experiments presented here, children were told a story about two characters who decide to bake cookies together. One gets tired, stops working, and starts to play. The other character agrees to continue cooking while declaring that it is hard work. Eventually, the cookies are done, and children are asked to distribute them. This task addresses the concerns discussed earlier. First, there are only two or three tokens to distribute, and the scenario is extremely simple. Moreover, the answer is behavioral rather than verbal, which is less challenging for young children. The experimenter gives out some fake cookies, and the children manipulate the cookies themselves. Second, the children have no personal interest in the outcome of the distribution. Finally, adult interference is reduced to a minimum, and the children are encouraged to rely on their own interpretation of the situation.

In Experiment 1, we examined whether children are able to take merit into account. Children had to distribute a small cookie and a big cookie. Two options were thus available to them: giving a big cookie to the greater contributor (and a small cookie to the lesser contributor), or giving a big cookie to the lesser contributor (and a small cookie to the greater contributor). Although none of these choices was ideal (since the big cookie was much bigger than the small cookie), we reasoned that if children understand merit, they would consider that favoring the big contributor is the "least bad" solution. This forced-choice scenario, however, gave us no access to children's ideal choice. It may be the case that children are able to take merit into account but prefer egalitarian distributions in particular situations (in our scenario, for instance, they might think that although the character who worked more has slightly more rights over the cookies, this does not warrant an unequal distribution). In Experiment 2, we relaxed the constraints placed on the distribution by allowing children to distribute three cookies of equal size as they wished. If children prefer equality in our scenario, they should give each character one cookie and not distribute the third cookie. In a second phase of the experiment, we asked children to distribute the remaining cookie(s), thereby allowing them to make use of their *capacity* to take merit into account in spite of their potential *preference* for equality.

Experiment 1

Preschoolers are presented with a typical situation of distributive justice involving varying levels of contribution. We predicted that children would favor the big contributor over the small contributor and distribute the tokens accordingly.

Method

Participants. We tested 121 preschoolers: 35 took part in Pretest 1 (mean age (*M*) = 48.1 months; range 36–58 months; 13 girls), 35 took part in Pretest 2 (*M* = 48.1 months; range 38–60 months; 14 girls), and 51 took part in the test (*M* = 50.3 months; range 36–58 months). Children in the test phase were divided in two age groups: 3- to 4-year-olds (*n* = 20; *M* = 44.1 months, *SD* = 3.5; range 38–48; 11 girls) and 4- to 5-year-olds (*n* = 31; *M* = 54.3 months, *SD* = 3.1; range 48–60; 12 girls). Data regarding ethnicity were not collected. To keep the sample homogeneous in term of socioeconomic background, we restricted recruitment to middle-class school catchment areas in Paris and Lyon (France) and excluded private schools (which typically enroll children from families with higher socioeconomic status) or ZEP (*zone d'éducation prioritaire*) schools (which enroll students living in the 10% poorest catchment areas). Head teachers were contacted over the phone by one of the experimenters and sent general information about the study and procedures if they were interested in taking part. The school administration then sent an information sheet and consent form to every parent of a child in the targeted age group. Data for each experimental phase (Pretest 1, Pretest 2, test) were collected sequentially, and a given test phase only started when data collection for the previous phase had been completed (note also that children in a given school were allocated to the same experiment or pretest, hence the slight variation in sample size across experiments and pretests).

Material and procedure. Participants were tested individually in a quiet room they were familiar with that was close to their own classroom. In the test phase, the experimenter introduced the characters of the story, saying

> See, this is Amélie, and this is Hélène. Amélie and Hélène are very good friends. Can you show me Hélène? Can you show me Amélie? Good! Bravo!

The experimenter then ensured that the child had memorized their names by asking her to point to Amélie (right) and to Hélène (left; see Figure 1, Picture 1). The experimenter then showed Picture 2 and said

> Today, Amélie and Hélène have decided to bake cookies. See, they're in the kitchen; they're making cookies! After a little while, Hélène is bored with making the cookies. Amélie says, "Yes, it's tiring to bake cookies, but I'm OK to finish on my own."

The experimenter then showed the third picture and said, "Hélène goes to play with her doll. Yeepee! It's fun to play dolls!" At this point, the first control question was asked: "Does Hélène find it fun to play dolls?" If the child provided the correct answer, the experimenter then proceeded to the fourth picture, saying, "In the meantime, Amélie is finishing the cookies. She says, 'Phew!! This is such hard work! It's so tiring to make these cookies!' Amélie is working really hard." The second control question was asked:[1] "Does Amélie find that it's a lot of work to bake the cookies?" If the correct answer was provided, the experimenter showed the final picture and said

> That's it! Amélie is done! The cookies are ready! Mum says, "You can each have a cookie." She puts two cookies on a plate. There is one small cookie and one big cookie. Hélène and Amélie both want the big cookie. Is it better to give the big cookie to Amélie or to Hélène?

Picture 1 was presented again, and the child answered the test question either by naming the character or by pointing to her picture. After the child had made her choice, she was explicitly asked to justify her answer. To do so, the experimenter asked "Why?" after the child indicated whether it was better to give the big cookie to Amélie or to Helène. Justifications mentioning the characters' respective levels of contribution were considered correct (e.g., "Because Amélie prepared more of the cake"). Other justifications (e.g., "Because she has a big mouth") or an absence of justification ("Don't know" or silence) was coded as incorrect. A second coder classified the children's justifications. Agreement between coders was 100% in Experiment 1 and 2.

Pretest 1. In order to ensure that children had no a priori preference for Amélie or Hélène, the experimenter asked the children to distribute the cookies after they had seen the first picture only. The experimenter followed the same procedure used for Picture 1 and then went straight to the distribution phase.

Pretest 2. To check that children did not give the big cookie to Amélie for reasons unrelated to justice, we conducted another pretest in which we presented Picture 1 and then explained that Hélène was playing dolls (Picture 3) and Amélie was cooking (Picture 4), but we provided no justice-related information. Children were then asked to distribute items unrelated to both activities (i.e., a small wrapped gift and a big wrapped gift). This allowed us to make sure that children did not give the big cookie to Amélie because they favored the activity she was associated with (cooking vs. playing dolls) or because she was displaying facial signs of effort. We used the same script as in the test except for the final picture: "Mum brings two gifts. There is one small gift and one big gift. Hélène and Amélie both want the big gift. Is it better to give the big gift to Amélie or to Hélène?"

Results and Discussion

Pretest 1. When presented with Picture 1 on its own, children (*N* = 35; *M* = 48.1 months; range 36–58) were just as likely (*p* = 1.00, two-choice binomial) to give the big cookie to Amélie (*n* = 18) and Hélène (*n* = 16). This indicates that children had no a priori preference for Amélie.

Pretest 2. Fourteen children gave the big present to Amélie, and 21 gave it to Hélène, which is not different from chance (*p* = .31, two-choice binomial). This suggests that children did not give the big cookie to Amélie because they favored the activity she was associated with (cooking vs. playing dolls) or because she was displaying facial signs of effort.

Test. Thirty-eight of 51 children gave the big cookie to Amélie (the girl who had contributed more), a distribution different from chance (*p* = .002, two-choice binomial, odds ratio [*OR*] = 2.92) and different from the one observed in both pretests, Pretest 1: $\chi^2(1) = 4.22$, $p < .05$, *OR* = 2.60; Pretest 2: $\chi^2(1) = 10.34$, $p < .005$, *OR* = 4.38. Analysis in each age group confirmed this result: Among the 3-year olds, 15 of 20 (*p* = .04, two-choice binomial, *OR* = 3) chose to give the big cookie to Amélie, and among the 4-year-olds, 23 of 30 (*p* = .01, two-choice binomial,

[1] If the child did not provide the correct answer, she was prompted again.

Figure 1. Pictures used in the Experiments 1a, 1b, and 2.

OR = 3.29) made this choice. A chi-square test revealed no difference between the age groups, $\chi^2(1) = .004$, $p = .95$, and also no significant impact of the child's sex on the distribution pattern, $\chi^2(1) = 2.9$, $p = .09$. Children's justifications were also analyzed. Overall, 12 children provided correct justifications: one of 20 in the group of 3-year-olds and 11 of 31 in the group of 4-year-olds. Note that though there was a marked increase in children's capacity to justify their judgments ($p = .017$, Fisher's test, *OR* = 10.45), most 4-year olds still struggled to provide accurate explanations for their choices. It is interesting to note that such a gap between judgments and justifications is also commonly reported in the adult literature and suggests that moral judgments are independent from language (Haidt, 2001; Hauser, Cushman, Young, & Jin, 2007).

In sum, preschoolers appear to be able to take the characters' respective contributions into account by giving more to the one who played a bigger role in the production of a common benefit. This result shows that children are able to understand merit and come up with an equitable solution at a much earlier age than previously thought (e.g. Damon, 1980; McGillicuddy-de Lisi, et al., 1994). It is important to note, however, that our forced-choice scenario tells us nothing about children's ideal choice: Since the cookies had different sizes, children had no way of expressing a preference for an egalitarian solution. What Experiment 1 allows us to conclude is that young children are *able to* take merit into account, not that this is their *preferred* option. In Experiment 2, we relaxed the constraints placed on the distribution to have access to young children's spontaneous preferred option in a similar situation.

Experiment 2

We used the same story structure as in Experiment 1, but this time three cookies of the same size were available for distribution. Children were offered all three cookies at once and had the opportunity to distribute them the way they wanted (with no further constraints imposed by the experimenter). Once they showed signs that they had completed the distribution, the experimenter recorded their initial distribution and, if relevant, prompted them to distribute any spare cookie. While remaining very simple, this design offers children a wider range of possible distributions, including that of distributing the cookies equally. We predicted that some children would spontaneously favor equality but that beyond this egalitarian response children would still think that the greater contributor has a right to slightly more than the smaller contributor.

Method

Participants. Seventy-five preschoolers were tested. They belonged to two age groups: 3- to 4-year-olds ($n = 33$; $M = 42.7$ months, $SD = 3.4$; range 34–48; 17 girls) and 4- to 5-year-olds ($n = 42$; $M = 54.2$ months, $SD = 2.6$; range 49–58; 19 girls). An additional seven children were eliminated because they did not speak French (one child), refused to complete the whole experiment (four children), or failed to answer prompt questions (two children).

Materials and procedure. The materials and procedure were identical to those used in Experiment 1 except for the final picture, at which point the experimenter says, "That's it! Amélie is done! The cookies are ready! Mum says, 'You can have some!' [She puts three small cookies on a plate.] You can give cookies to Amélie and Hélène." Picture 1, displaying Amélie and Hélène's faces, was shown again so that the children could distribute the cookies. We then waited 10 s or for a clear sign from the child that she had finished distributing (e.g., "I'm done"). The "initial" distribution was recorded at this point. If the child had not distributed all the cookies, the experimenter went on saying, "Well done! Very nice! Oh, look, there's some left. Whom do you want to give it to? To Amélie or to Hélène?" (order of names counterbalanced) and repeated the procedure until all cookies were given out (children could thus distribute the cookies in one, two, or three steps). The "final" distribution was recorded at this point. The experimenter then asked the child to justify the distribution: "Oh! Look! Amélie/Hélène (depending on the child's distribution) has more! Why did she get more?"

Results and Discussion

In what follows, we take three variables into account: (a) who was given a cookie first, (b) children's initial distribution, and(c) children's final distribution. Of the 75 children, 59 gave the first cookie to the big contributor, which differs from chance, $p < .0001$, two-choice binomial, *OR* = 3.69 (among 3-year-olds: 27 of 33, $p < .0003$, two-choice binomial, *OR* = 4.5; among 4-year-olds: 32 of 42, $p < .001$, two-choice binomial, *OR* = 3.2).

Children's initial distribution was mainly egalitarian: 44 of 75 children gave one cookie to each girl (3-year-olds: 17; 4-year-olds: 27; $p < .0001$; in both cases, nine-choice binomial, $OR = 11.35$; see Figure 2) Among the 31 children choosing an unequal initial distribution, 26 favored the greater contributor, which differs from chance, $p < .0002$, two-choice binomial, $OR = 5.2$ (among 3-year-olds: 14 of 16, $p < .005$, two-choice binomial, $OR = 7.0$; among 4-year-olds: 12 of 15, $p < .04$, two-choice binomial, $OR = 4.0$), with no difference between the age groups, $\chi^2(2) = 1.57$, $p = .46$. It is interesting that there was no difference between the mean age of the 44 egalitarian children ($M = 49.4$, $SD = 6.9$) and the mean age of the 26 children favoring the greater contributor ($M = 48.2$, $SD = 6.0$), $t(67) = 0.74$, $p = .46$, which suggests that equal distributions were not specifically favored by the youngest.

In the final distribution, the greater contributor was favored by 56 of 75 children, $p < .0001$, two-choice binomial, $OR = 2.95$. This was confirmed when both age groups were considered separately: among 3-year-olds: 26 of 33 favored Amélie, $p < .002$, two-choice binomial, $OR = 3.71$; among 4-year-olds: 30 of 42 favored Amélie, $p < .008$, two-choice binomial, $OR = 2.5$. All 4-year-olds chose to give two cookies to Amélie and one to Hélène, and none decided to give all three cookies to Amélie. Among the 3-year-olds, 22 gave two cookies to Amélie and one to Hélène, and only four gave all three cookies to Amélie. In line with Experiment 1, distributions were influenced neither by age group, $\chi^2(1) = 0.21$, $p = .65$, nor child's sex, $\chi^2(1) = 0.74$, $p = .39$.

We also analyzed separately the behavior of the 44 children who had been egalitarian in their initial distribution. When these children were encouraged to give the third cookie, 30 children favored the greater contributor ($p < .03$, two-choice binomial, $OR = 2.14$), with no difference between the age groups, $\chi^2(1) = 0.74$, $p = .79$.

Finally, we analyzed children's justifications following the same procedure as in Experiment 1 and found that a minority of children provided correct justifications (13 of 75 children: among 3-year olds: two of 33; among 4-year olds: 11 of 42). Again, there was a significant increase in children's capacity to justify their judgments with age ($p = .03$, Fisher's test, $OR = 5.5$).

Experiment 2 shows that in Amélie and Hélène's story, children judge equality to be the best solution. Further evidence suggests that they still think that a greater contributor has a right to more of the stock of commonly produced tokens.

General Discussion

In this article, we demonstrated that children as young as 3 are able to take merit into account when distributing tokens. In Experiment 1, children consistently gave the biggest cookie to the biggest contributor, showing an ability to match contribution and distribution. To our knowledge, this is the first demonstration of a consistent understanding of merit and equity before the age of 6 years (Damon, 1975, 1980; Enright et al., 1984; Enright & Sutterfield, 1980; Kohlberg, 1969; McGillicuddy-de Lisi, et al., 1994; Nelson & Dweck, 1977; Peterson et al., 1975; Sigelman & Waitzman, 1991). These results are in line with recent experimental findings demonstrating that more basic moral principles (e.g., equality) are also grasped early on in development (Hamann et al., 2011; Warneken et al., 2011). In Experiment 2, children had the opportunity to be egalitarian, and their modal response was to share one cookie with each recipient. When prompted to give the remaining cookie, however, most children gave more to the harder worker.

These results go against previous theories predicting (a) a late development of equity and (b) a stagelike progression from simple rules (e.g., equality) to more complex ones (e.g., equity). On the contrary, we observed (a) that young children understand that the greater contributor has more rights than the lesser contributor over the tokens to be distributed and (b) that children may have an initial preference for equality while being able to take merit into account when prompted.

Our studies thus enabled us to disentangle children's *ability* to take merit into account from their *preferences*. Many previous studies had demonstrated that young children tend to distribute goods equally (Damon, 1975, 1980; Enright et al., 1984; Enright & Sutterfield, 1980; Kohlberg, 1969; McGillicuddy-de Lisi, et al., 1994; Nelson & Dweck, 1977; Peterson et al., 1975; Sigelman & Waitzman, 1991), but whether they were unwilling or unable to perform equitable distributions remained unclear. Conversely, our studies suggest that young children have the *ability* to be equitable

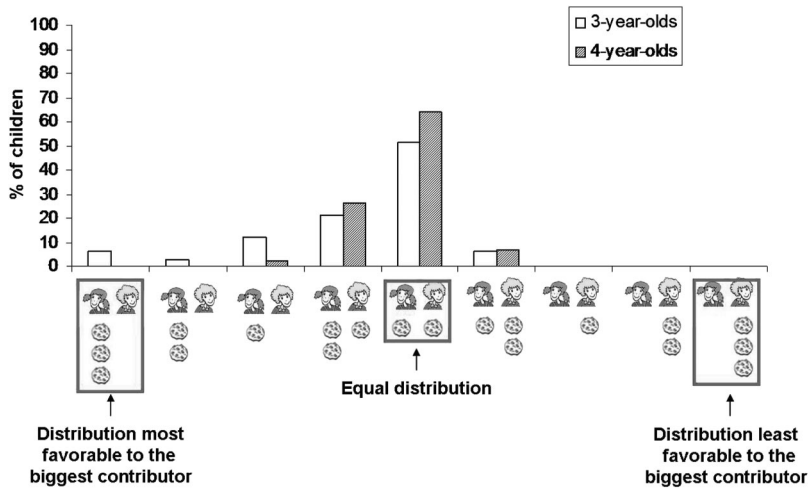

Figure 2. Pattern of initial distribution in 3- and 4-year-olds.

but may nonetheless *prefer* to distribute goods equally when they have the opportunity to do so.

There are a number of reasons why children might have preferred egalitarian distributions in these experimental settings (and in their initial distribution in Experiment 2), some of which may have nothing to do with equity: Children may find the egalitarian solution more salient; they may be trying to demonstrate that they have good counting skills and that they can split tokens equally; they may be assuming that the experimenter expects them to produce an egalitarian distribution, and so on. Alternatively, children may choose equality simply because it appears to them as the most equitable solution. After all, both Amélie and Hélène contributed to baking the cookies, Amélie and Hélène are friends, Hélène went to play dolls with Amélie's approval, and the extra effort involved on Amélie's part is not that big. In other words, they may realize that Amélie has slightly more rights over the cookies, but the extra merit involved may not warrant going so far as to offer twice as many cookies (for a similar point, see Kenward & Dahl, 2011).

One limitation of the present studies is that they do not allow us to disentangle these alternative interpretations. Therefore, characterizing which contexts favor a spontaneous preference for equality will be an important route for future investigations. The adult literature suggests that in interactions with relatives or friends, people prefer egalitarian distributions (Clark & Mills, 1979; Deutsch, 1975; Fiske, 1992). In long-term relationships, it indeed makes sense to share things equally as individual contributions are likely to be roughly equalized in the long run. It would thus be interesting to manipulate friendship status or length of relationship in order to assess the influence of relationship status on children's judgments of fairness.

It would also be interesting to explore other factors known to influence judgments of fairness. For instance, previous studies on justice have shown that adults take into account talents, handicap, and privileges (Cappelen, Sørensen, & Tungodden, 2010; Konow, 2003). Whether children also take these factors into account from very early on remains an open question. For instance, would they think that Amélie deserves more cookies if she has been more productive because her mother helped her or because she is older? Would they think that Amélie deserves more if she spends more time cooking even if she is eventually less productive than Hélène? What if Hélène had never helped in the first place and arrived as Amélie's guest? What if they had worked equally hard on different tasks (e.g., one is baking cookies, the other is cleaning the drawing room)? The scope of these findings therefore remains limited, and an important next step will be to further study which features are salient to young children, under what conditions they are taken into account, and what are relevant mitigating factors influencing children's equity judgments.

Another limitation is that the study does not help to explicate the relationship between nascent intuitions of fairness and their impact on moral behavior. Earlier studies have shown that children as old as 8 fail to forgo their own interests in order to distribute goods in a fair way. In our study, the participant was put in the position of being the impartial referee who had to make the call about fair-sharing. However, this context tells us nothing about what they would have done if they had had an interest in keeping some of the cookies to themselves. It is indeed conceivable that the developmental trajectory differs for moral intuitions and moral behavior and that the former matures sooner than the latter.

Finally, how much the sense of fairness is innately predetermined and how much it is constrained by environmental or cultural factors remain an open question. Though most children this age spend a lot of time in a benevolent family environment and are rarely in a position to distribute the product of collective actions, they still have at least 2 years of experience engaging in social interactions involving collaboration and conflicts of interests: they have to share toys, take turns, help out, and so forth (Ross, 1996). On the other hand, observations of children's everyday interactions show that children as young as 2 spontaneously produce complex judgments of justice (Dunn & Munn, 1987). Teasing apart the effects of innate dispositions, environment, and culture therefore calls for further investigation. For instance, it would be interesting to assess the generalizability of our findings and compare the development of fairness in traditional societies where different norms and values are promoted.

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