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The influence of friendship and merit on children's resource allocation in three societies



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ABSTRACT

Recent work has suggested that principles of fairness that seem like natural laws to the Western mind, such as sharing more of the spoils with those who contributed more, can in fact vary significantly across populations. To build a better understanding of the developmental roots of population differences with respect to fairness, we investigated whether 7-year-old children ($N = 432$) from three cultural backgrounds—Kenya, China, and Germany—consider friendship and merit in their distribution of resources and how they resolve conflicts between the two. We found that friendship had considerable and consistent influence as a cross-culturally recurrent motivation: children in all three cultures preferentially shared with a friend rather than with a neutral familiar peer. On the other hand, the role of merit in distribution seemed to differ cross-culturally: children in China and Germany, but not in Kenya, selectively distributed resources to individuals who worked more. When we pitted friendship against merit, there was an approximately even split in all three cultures between children who favored the undeserving friend and children who shared with the hard-working neutral individual. These results demonstrate

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commonalities and variability in fairness perceptions across distinct cultures and speak to the importance of cross-cultural research in understanding the development of the human mind.

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Introduction

If humans could survive and thrive entirely on their own, they would not need to concern themselves with questions about what is fair and what is not fair. From an evolutionary perspective, fairness has likely evolved in the context of human-unique forms of interdependent collaboration as an adaptation designed to regulate cooperative interactions (Henrich, 2016; Tomasello, 2018). One key challenge in sustaining such cooperation lies in distributing collaboratively acquired resources so that everyone is satisfied and motivated to collaborate in the future. In such contexts, the human sensitivity to fairness allows the stabilization of cooperative relationships even in the face of conflicting interests. Fairness represents a cooperative solution to the problem of competition—a kind of cooperativization of competition—as it enables individuals with competing motives to find mutually satisfactory solutions to the demands of interdependent ways of life (Engelmann & Tomasello, 2019). Concerns about fairness seem to be unique to humans and are not shared by our closest living relatives, chimpanzees (Engelmann, Clift, Herrmann, & Tomasello, 2017). Although equality is often regarded as the default principle of fairness (Starmans, Sheskin, & Bloom, 2017), what is considered fair in a given context will typically vary along several additional dimensions such as individuals' relative contributions to the joint effort (merit or equity), individuals' respective levels of requirement (need), and the social relationships among involved parties (e.g., whether they involve authority or friendship).

The extraordinary impact of fairness on human evolution is reflected in findings demonstrating that even human infants possess burgeoning expectations of how resources will be distributed. For example, 15-month-old infants looked longer (indicating surprise) at a scene depicting an unequal distribution of resources compared with a scene displaying an equal allocation (Geraci & Surian, 2011; Schmidt & Sommerville, 2011; Sloane, Baillargeon, & Premack, 2012). The first behavioral manifestations of a sense of fairness—understood here in terms of the principle of equality—emerge during the preschool years. In contexts where resources have been collaboratively produced, 3-year-old children are already averse to two forms of inequality (Ulber, Hamann, & Tomasello, 2017): receiving less than others (so-called disadvantageous inequity aversion) and receiving more than others (so-called advantageous inequity aversion). In windfall settings, 4-year-old children often reject distributions that place them at a disadvantage relative to a peer, but only 8-year-old children sometimes reject allocations that favor themselves (Blake & McAuliffe, 2011). When children are asked to distribute resources among third parties, they show a strong tendency to distribute rewards equally by 3.5 years of age (Kenward & Dahl, 2011; Olson & Spelke, 2008), and at 6 years children even prefer discarding an additional resource over creating an unequal split (Shaw & Olson, 2012).

The sense of fairness in young children, however, is not reducible to equality (Elenbaas, 2019; Killen & Smetana, 2015; McAuliffe, Raihani, & Dunham, 2017; Rizzo, Elenbaas, Cooley, & Killen, 2016; Schmidt, Svetlova, Johe, & Tomasello, 2016). Children readily accept and create uneven distributions in contexts where the status of the recipients justifies doing so. One reason why children from around 4 or 5 years of age allocate resources unequally is differential need. In setups where children can distribute resources between two beneficiaries that vary on characteristics related to need—defined in either material or emotional terms—they selectively pass resources to the needier recipient (Li, Spitzer, & Olson, 2014; Malti et al., 2016; Paulus, 2014). Merit is a second consideration that motivates children to share resources unequally. When one potential recipient has worked harder than a second recipient or has contributed more to a common endeavor, even 3-year-old children match contribution and distribution and favor the deserving individual in their resource allocation (Baumard,

Mascaro, & Chevallier, 2012; Hamann, Bender, & Tomasello, 2014; Kanngiesser & Warneken, 2012). A third reason that may lead children to prefer unequal sharing over equal sharing of resources stems from their social relationships to the involved parties. One set of findings suggests that children are partial toward their friends in sharing contexts, with 4-year-old children sharing a greater proportion of goods with their friends than with strangers or nonfriends (Birch & Billman, 1986; Moore, 2009; Paulus & Moore, 2014). A second line of research presents evidence that dominance relations structure infants' and children's resource allocation (Charafeddine et al., 2015; Enright, Gweon, & Sommerville, 2017). Even 17-month-old infants are surprised when a subdominant individual is favored over a dominant individual in a distributive context, but not when the payoffs are reversed.

Taken together, this body of evidence has revealed many previously unsuspected abilities of young children to make sophisticated fairness decisions, guiding their resource allocations along a variety of dimensions such as equality, merit, need, and social relationships. But the majority of the studies have two aspects in common—one theoretical and one methodological. The theoretical aspect is that nearly all recent studies have asked whether children consider principles of fairness in their decision making in situations where potential recipients differ along one relevant dimension only, for example, when one potential recipient has worked harder or is needier than another recipient (but see Damon, 1977, and Piaget, 1932/1965). But in many real-world decisions, the question is not whether to apply a principle of fairness but rather what principle to apply in a given situation or how to moderate among different, competing principles (Li, Curtis, Moore, Wang, & Zeng, 2019; McAuliffe & Dunham, 2017; Paulus, 2016; Xiao et al., 2019; Zhang, 2020). In these circumstances, the specific behavior that fairness requests of us is not apparent; instead, different fairness considerations can pull in opposite directions. Some of the deepest moral conflicts result from the fact that we are concurrently under the sway of distinct—and sometimes conflicting—principles of fairness. Should we employ the more qualified candidate, or should we hire our relative? Should we give extra resources to our friend or to a needier individual? Very little is known about how children resolve dilemmas that result from the simultaneous operation of different principles of fairness and how this differs across cultures (Carson & Banuazizi, 2008; Damon, 1977; Rizzo & Killen, 2016). Some insight into this question comes from classic early interview studies by Damon and colleagues. One key finding from this literature is that when authority considerations and fairness considerations pull in opposite directions, children show a strong preference for the latter (see, e.g. Damon, 1977).

The methodological aspect is that nearly all the findings are based on investigations of so-called WEIRD children—that is, children who were socialized in Western, educated, industrialized, rich, and democratic cultural settings (Henrich, Heine, & Norenzayan, 2010; Nielsen, Haun, Kärtner, & Legare, 2017). The few exceptions to this general pattern suggest that fairness represents a dimension of human behavior that shows significant cross-cultural variation (Blake et al., 2015; Corbit, McAuliffe, Callaghan, Blake, & Warneken, 2017; Huppert et al., 2019; Kajanus, McAuliffe, Warneken, & Blake, 2019; Rochat et al., 2009; Schäfer, Haun, & Tomasello, 2015; Shaw & Olson, 2012; Zeidler, Herrmann, Haun, & Tomasello, 2016). For example, the work of Blake et al. (2015) revealed that whereas disadvantageous inequity aversion shows uniform emergence during middle childhood across seven diverse societies, advantageous inequity aversion emerges later in development and only in a subset of societies. In addition, Schäfer et al. (2015) presented evidence that 4- to 11-year-old children from a gerontocratic pastoralist society in East Africa do not take prior productivity into consideration in their allocation decisions (whereas children from a modern Western society do). In the same study, children from a partially hunter-gatherer, egalitarian African culture were most concerned with equal distributions (with productivity playing only a minor role).

The current studies

The current studies were designed with these two limitations of previous work in mind. In addition to investigating whether children consider two central principles of fairness—merit and friendship—when presented separately, we also studied how children resolve conflicts between them. Thus, we examined how children would distribute a resource in three conditions: a *merit* condition, in which two unfamiliar recipients differed in terms of how hard they had worked; a *friend* condition, in which the two potential recipients differed with respect to their relationship to the participant; and, finally, a

friend versus merit condition, in which the two dimensions were opposed and children needed to decide between giving an extra resource to a lazy friend or giving it to a hard-working neutral peer.

To draw conclusions that go beyond WEIRD psychology, we studied not only Western children (Germany) but also children from two non-Western cultures: Kikuyu and Chinese. These three cultures were selected given that they occupy different positions on the individualist–collectivist dimension of cultural variation, which has been shown to be relevant to considerations of fairness (Huppert et al., 2019; Miller & Bersoff, 1992). Because social relationships and interdependence are highlighted in collectivist cultures (represented by Chinese and Kikuyu children in our sample), whereas individual-level attributes (e.g., how hard someone worked) tend to be emphasized in more individualist cultures (represented by Germany in our sample), these three samples present an ideal test case of how the effects of friendship and merit vary across cultures (for our specific predictions, see below). In the following, we provide short descriptions of the three samples.

Kenya

The Kikuyu are Kenya's largest ethnic group, living in the central part of the country. Their language (Kikuyu) is part of the Bantu family. Traditionally, they have been small-scale farmers, cultivating maize, beans, and other vegetables and practicing animal husbandry for their subsistence. Recently, trade and wage work have become more and more important, and a number of Kikuyu have become part of Kenya's middle or upper class. Children in our sample, however, came from rural low-SES (socioeconomic status) households. Although the nuclear family typically forms the basic economic unit, kin will be readily supported in times of need. Cooperation beyond the family is often organized by church or local initiatives (Maathai, 2010). Older members of the communities are highly respected (Whiting, 1996), but positions in other institutions such as church and government are also causes for respect. Decisions are usually made by the official political bodies, although local councils of elders might be consulted for family or community issues. Many Kikuyu have moved out of their original homelands, but their strongest relations are still within their own cultural group.

Although children are highly valued, many families nowadays decide to restrict their number due to economic reasons (Price, 1996). However, children still typically grow up surrounded by siblings, cousins, and friends of various ages. Children have few or no possessions of their own. Many children attend the local nursery school from about 4 years of age, and nearly all of them will go to school once they are 5 or 6 years old. Outside school, children typically help with various tasks in and around their homes, attend to younger siblings, or look after animals. Children are expected to be quiet and obedient at home, although cleverness and self-confidence are increasingly valued in school settings (Whiting, 1996).

China

Children spoke Chinese as their native language and were of the Han ethnicity. The schools were located in three different districts in Beijing (inside the 5th Ring Road). Students typically come from the residential areas in which the school is located. One of the schools is affiliated with the Chinese Academy of Sciences. Parents of about one fourth of the children from this school worked at the Chinese Academy of Sciences and thus had high levels of education. In addition, Chinese children were from mixed socioeconomic backgrounds. Since Beijing fully implemented a two-child policy (per family) in 2016 (in 2014, a more restricted two-child policy had been introduced), parents are allowed to give birth to a second child. This was previously forbidden according to the one-child policy (per family) implemented during the late 1970s. However, current birth rates in Beijing suggest that the new two-child policy has not significantly increased birth rates and that the majority of families have one child (Beijing Municipal Bureau of Statistics, 2020).

In China, where Confucianism prescribes strong parent–child ties throughout life and emphasizes the importance of family harmony, it is a strong tradition for grandparents to be involved in grandchild care and household tasks (Nyland, Zeng, Nyland, & Tran, 2009). In big cities such as Beijing, the involvement of grandparents in grandchild care is especially common. Chinese parents emphasize interpersonal relatedness from an early age (Keller et al., 2007). Although China has undergone profound cultural and economic changes over the past few decades, accompanied by ever-increasing adherence to individualistic values (Sun & Ryder, 2016; Zeng & Greenfield, 2015), traditional cultural

values (e.g., Confucianism) persist and increasingly inspire the public's interest (Binah-Pollak, 2014; Sun & Ryder, 2016; Xu & Hamamura, 2014).

Germany

Children were from mixed socioeconomic backgrounds. German children typically grow up with their parents and one or two siblings. Other family members often live in other parts of the country and are not part of the children's daily lives. Parents in Germany and other Western industrialized societies typically emphasize their children's psychological autonomy from an early age (Kärtner, 2018; Keller, 2007), and children receive high levels of direct child-centered pedagogy. Children grow up with many toys and their own possessions. From an early age onward, the majority of children are cared for in nurseries and kindergartens, and by 6 years of age children attend primary school.

Predictions

In each culture, we focused our investigation on 7-year-old children. The reason for this choice was as follows. We were primarily interested in whether children from the three cultures show differences with regard to fairness, and previous research has revealed that cross-cultural differences in sharing behaviors emerge most robustly during middle childhood. At this age, children's sharing decisions begin to be systematically influenced by local social norms. More specifically, a number of recent investigations have revealed that children's resource allocation decisions show little variation across diverse societies during early childhood. At around 6 or 7 years of age, however, children's allocation decisions begin to vary across societies and to reflect what adults of the respective populations judge to be the appropriate sharing norm (House et al., 2013, 2020; House & Tomasello, 2018). We formulated three predictions. First, based on previous anthropological work (Hruschka, 2010), we predicted that friendship would guide children's resource allocation in all three cultures (but see Scharpf, Paulus, & Würle, 2017). Second, based on previous work in a Western sample (Baumard et al., 2012), a Chinese sample (Chevallier, Xu, Adachi, van der Henst, & Baumard, 2015), and a Samburu sample (Schäfer et al., 2015) that has been shown to share certain distributive strategies with our Kikuyu sample (Zeidler et al., 2016), we hypothesized that differences with regard to merit would mediate children's distribution in China and Germany but not in the Kikuyu sample (see also Friedman, Todd, & Kariuki, 1995). Third, we expected cross-cultural differences in the resolution of conflicts between friendship and merit. Specifically, we hypothesized that friendship would trump merit in the two collectivist populations (Chinese and Kikuyu) but that children in the individualist sample (Germany) would prioritize merit over friendship (Hui, Triandis, & Yee, 1991; Leung & Bond, 1984; Sun & Ryder, 2016).

Method

Participants

We tested 144 7-year-old Kikuyu children (72 girls) from four schools near Nanyuki, Kenya. In addition, we tested 144 7-year-old Chinese children (72 girls) from four elementary schools in the urban area of Beijing, China. An additional 5 children from the Chinese sample needed to be excluded (3 children because of experimenter mistake and 2 children because they could not name their best friend). Finally, we tested 144 7-year-old German children (72 girls) from five different schools in a mid-sized German city with about 600,000 inhabitants. An additional 5 children from the German sample needed to be excluded (2 children because of experimenter mistake, 2 children because they could not name their best friend, and 1 child because the child did not want to finish the distribution).

Across groups, children's ages were recorded as a single whole number (7) because we did not have reliable information about the Kikuyu children's dates of birth and we did not want to bias the analyses by entering precise ages for only the other two groups. At all sites, children were tested in a quiet room in their local school. Given that a number of other behavioral studies had previously been run at the local schools, children in all three cultures were familiar with such situations. Participation was fully voluntary, and children were usually eager to participate. Informed written consent was obtained

from the school guardians of the children who participated in this study (Kenya) or from the parents of the children (China and Germany).

Materials and design

For a schematic drawing of the setup, refer to Fig. 1. Participants sat at a small table. The table contained three sets of objects: (a) a big transparent bowl holding a large number of differently colored beads; (b) two narrow see-through tubes filled with red beads where, depending on the condition, the two tubes contained either an unequal amount of beads (Fig. 1A: merit condition and friend vs. merit condition) or an equal amount of beads (Fig. 1B: friend condition); and (c) two envelopes, each belonging to one potential recipient. During the course of the test, participants were given three stickers: one for each recipient and an additional one to hand to either recipient.

In a between-participants design, children participated in one trial in one of the three conditions. At each testing site, 48 children participated in each condition. Instructions were given in the respective local languages. All sessions were videotaped for later coding.

Procedure

The experimenter (E) entered the testing room with the participant and asked her or him to sit down on a chair next to the table. The procedure consisted of two stages: an interview phase during which participants were questioned to determine friendship relationships (for the friend condition and the friend vs. merit condition) and an allocation phase during which participants distributed resources between two potential recipients (in all three conditions). In the following, the procedure is described for each condition separately.

Friend versus merit condition

The general setup for this condition is depicted in Fig. 1A. During the interview phase, E posed three questions to the participant in order to identify the two children to whom the participant could choose to allocate rewards during the second stage: the friend and the neutral individual: (1) Which boy/girl do you like playing with most in your class? (2) Which boy/girl don't you like playing with in your class? (3) Which other boys/girls are in your class? In response to each question, E aimed to elicit two names. If the child mentioned only one name, E followed up by asking "Who else?" The identity of the friend and the neutral peer for the allocation phase were determined as follows. The friend was the first individual who was mentioned in response to Question 1 independent of whether she or he was of the same gender as the participant or not. The neutral peer was the first individual who was mentioned in response to Question 3 and who was of the same gender as the friend. Note that to determine friends, we asked children who they most liked playing with rather than directly asking who was their friend because we did not want to influence children's behavior (e.g., using the term "friend" might prime children to share more with that individual). When determining neutral individuals, we selected children from the same class as participants to make some effort to control for familiarity (i.e., we wanted participants to have a certain level of familiarity with neutral peers as well).

After the interview phase, the second phase began, during which the participant could allocate rewards to the friend or the neutral peer. E informed the participant that the friend and neutral peer had previously helped her to sort the beads in the large bowl and, specifically, to collect all the red beads. E drew the participant's attention to the tube on the left, which contained the beads that had been collected by the friend (small number of beads), and then to the tube on the right, which contained the beads that had been collected by the neutral peer (large number of beads). The location of tubes was counterbalanced across participants. Because they had helped her, E continued, both the friend and the neutral peer would get a reward. E presented two envelopes to the participant, one for each recipient, and wrote the respective names on the front side of the envelopes. E then handed the first reward (a sticker) to the participant and asked her or him to place it in the friend's envelope. The same procedure was repeated with a second reward that was placed in the neutral peer's envelope. Next, E drew the participant's attention to the two tubes, commenting that "[The neutral peer] has worked really hard and has collected many beads" and that "[The friend] has not worked so hard

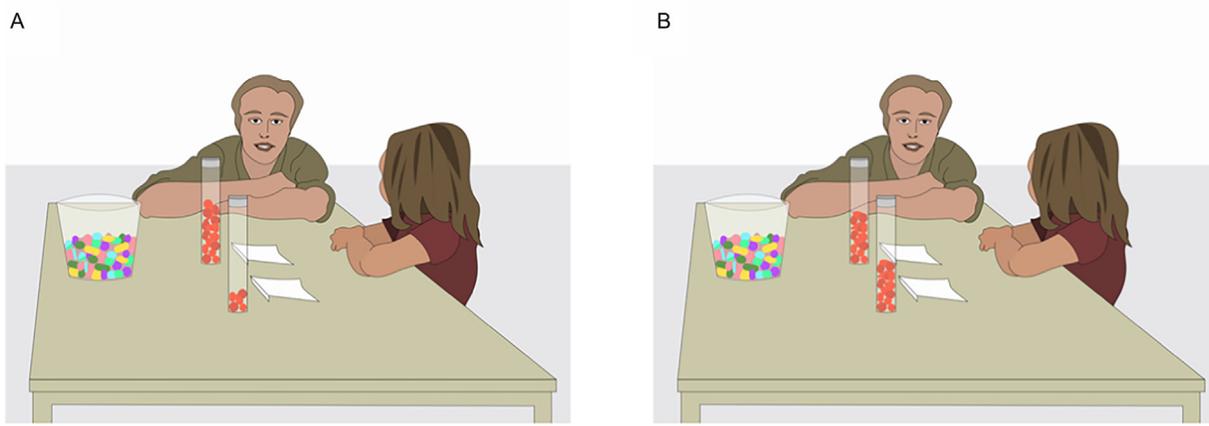


Fig. 1. Schematic representation of the setup. In each condition, the participant (located on the right) could choose to give a reward to one of two recipients. (A) The friend versus merit condition, in which the child chose between an undeserving friend and a deserving peer, and the merit condition, in which the child chose between a deserving stranger and an undeserving stranger. (B) The friend condition, in which the child chose between a deserving friend and a deserving peer. Note that the experimenter (located to the left of the participant) was present only for the instruction but retreated when the child made her or his decision.

Table 1

Numbers of children across cultures who chose the friend (in the friend condition and the friend vs. merit condition) and the deserving individual (in the merit condition).

	Friend condition (choice: friend)	Merit condition (choice: deserving individual)	Friend versus merit condition (choice: friend)
Kenya	34	30	23
China	45	45	28
Germany	39	42	27

Note. The sample size in each condition was $n = 48$.

and has not collected so many beads." E asked two comprehension questions: "Which of the beads did [the neutral peer] collect?" and "Which of the beads did [the friend] collect?" Once the participant had correctly answered the two questions, E saliently placed her hand in one of her pockets and, acting surprised, told the participant that she had found one additional reward. E told the participant that she or he could decide whether to give it to the neutral peer or to the friend and that the participant should place the reward in the respective envelope. E added that the participant should inform her once she or he had placed the reward in either envelope and moved away from the table, turning her back to the participant. The trial ended once the participant informed E that she or he had made a decision.

Friend condition

The general setup for this condition is depicted in Fig. 1B. This condition was identical to the friend versus merit condition except for one modification. E asked the participant to distribute the additional sticker between a friend and a neutral peer, but this time both potential recipients had worked equally hard and had collected an identical number of beads.¹

Merit condition

The general setup for this condition is depicted in Fig. 1A. This condition was also identical to the friend versus merit condition except for one modification. The merit condition did not involve the interview phase. Instead, E informed the participant that she had been at a different school before, where two children had helped her to pick all the red beads from the container. One of the children had collected a large number of beads, and the other child had collected a small number of beads. The participant was then asked to give the additional sticker to one of these two unknown children.

Coding and analysis

The first, second, and third authors coded the participant's allocation decision live as well as later from video. At each site, a research assistant, who was unaware of the study design and hypotheses, independently coded 20% of all trials. Inter-rater agreement was excellent in Kenya (Cohen's $\kappa = 1$), China (Cohen's $\kappa = .87$), and Germany (Cohen's $\kappa = 1$).

Results

Table 1 and Fig. 2 present the choices made by children in the friend, merit, and friend versus merit conditions in the three cultures.

To test the effects of condition and culture (and their potential interaction) on children's sharing behavior, we used a generalized linear model that we fitted with binomial error structure and log link function (McCullagh & Nelder, 1998). We also controlled for gender. To establish the significance of the full model (Schielzeth & Forstmeier, 2009), we used a likelihood ratio test (Dobson & Barnett, 2018), comparing its deviance with that of the null model containing only gender and the intercept.

¹ Due to a misunderstanding, children in China in the friend condition were not presented with two tubes that contained an equal number of red beads but rather with two tubes that contained an equal amount of green or yellow beads, respectively.

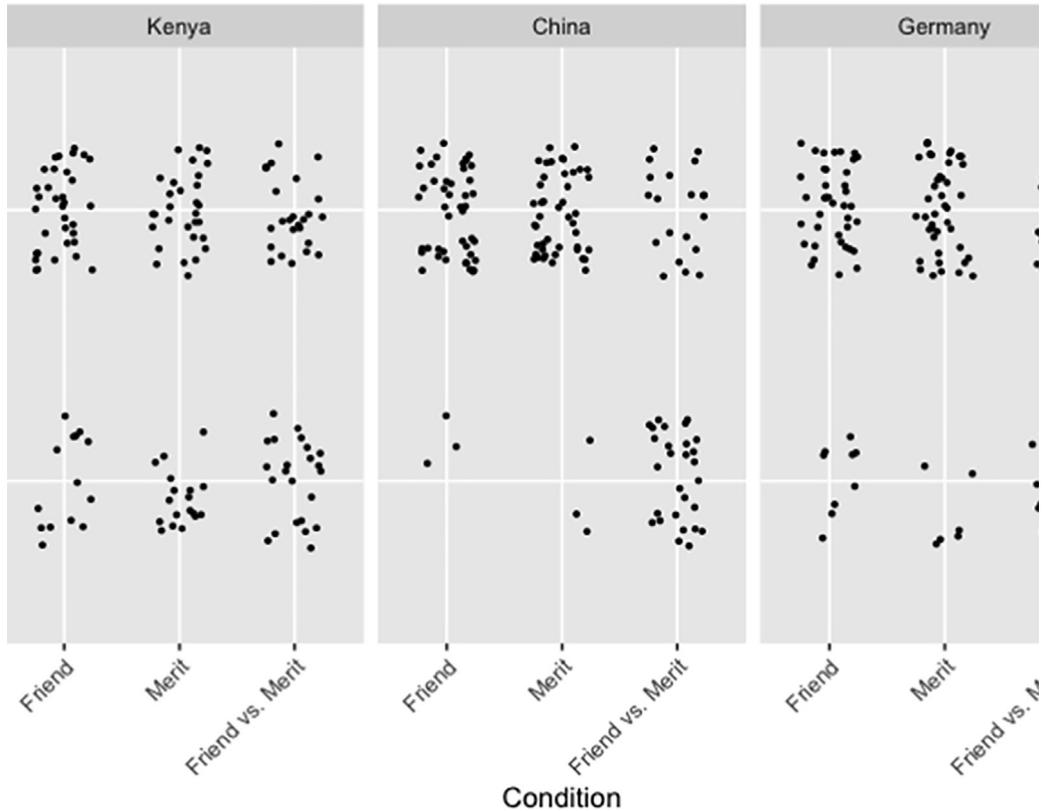


Fig. 2. Depiction of each child's decision in the three conditions across the different cultures. Each point represents the choice of one child. Children who gave more to the friend in the friend condition, to the deserving individual in the merit condition, and to the friend in the friend versus merit condition were coded as "yes".

To test the significance of the interaction between condition and culture, we compared the full model's deviance with that of the corresponding reduced model not containing the interaction. The model was fitted in R (R Core Team, 2015) using the *glm.b* function of the MASS package (Venables, Ripley, & Venables, 2002).

Overall, the full model was highly significant as compared with the null model [likelihood ratio test: $\chi^2(9) = 16.08, p < .0001$]. Specifically, we found an interaction between condition and culture (estimate $\pm SE = 2.241 \pm 0.791, \chi^2 = 18.8, df = 4, p < .0001, 95\%$ confidence interval (CI) = [0.7746, 3.9424]). To further investigate the interaction between condition and culture, we conducted post hoc binomial tests. Children in Kenya ($p = .001$), China ($p < .0001$), and Germany ($p < .0001$) were significantly more likely than expected by chance to pass the resource to their friend rather than the neutral peer in the friend condition. We also found that children in China were significantly more likely to favor their friend than children in Kenya [chi-square test: $\chi^2(1, N = 96) = 8.65, p = .003$]. It is important to point out that we had not predicted this effect. In addition, children in China ($p < .0001$) and Germany ($p < .0001$), but not children in Kenya ($p = .11$), were more likely to give the extra resource to the hard-working individual than to the lazy individual in the merit condition. There was no significant tendency in any of the three cultures to favor the hard-working neutral peer or the lazy friend in the friend versus merit condition. However, children in China [chi-square test: $\chi^2(1, N = 96) = 16.52, p < .001$] and Germany [chi-square test: $\chi^2(1, N = 96) = 11.59, p = .001$] were more likely to pass the resource to the undeserving recipient when the recipient was a friend (in the friend vs. merit condition) compared with when the recipient was a stranger (in the merit condition). No such tendency was observed in the Kenyan sample [chi-square test: $\chi^2(1, N = 96) = 2.06, p = .15$].

Discussion

The current cross-cultural empirical examination was conducted with the goal of detecting variation and similarity in how children from three cultures apply the principles of merit and friendship in resource allocation contexts. Children from Kenya, China, and Germany reliably considered friendship in their distributive decisions and selectively shared resources with closely bonded individuals. Children from China and Germany, but not children from Kenya, also tracked the extent to which potential recipients differed in terms of how hard they had worked when determining how to share rewards. In a final condition, we asked this question: When the two motivations are in conflict, do children give precedence to friendship or to merit? We found this answer: Across cultures, the two considerations carry approximately equal weight; that is, about half of participants favored the more hard-working individual, whereas the other half shared with their less productive friend.

The finding that children in all three cultures reliably displayed partiality toward their friend over a neutral peer extends previous work from Western cultures showing that children favor their close social connections in the domain of prosociality and preferentially direct behaviors such as sharing and helping toward them (Engelmann, Haux, & Herrmann, 2019; Paulus & Moore, 2014). Our experimental manipulation involved an especially strong test of partiality toward friends. Whereas previous studies have generally compared how children treat their friends in comparison with how they treat nonfriends or strangers (Moore, 2009), here we used neutral but familiar recipients as a comparison group, thereby ensuring that any differential treatment is grounded in friendship and not in other related motivations such as a preference for familiar individuals over unfamiliar individuals and antipathy toward disliked individuals. Although a general impetus to treat friends differently was present across the three cultures studied, there was variation in the strength of this motivation. Chinese children showed a stronger tendency to favor their friend over a neutral familiar individual than Kikuyu children (with German children being in the middle). Although it is possible that the weight that is placed on friendship relations in the context of resource allocation differs across cultures, this result should be interpreted with caution; we had not predicted cross-cultural variation in this direction, so we need to await further studies to corroborate it.

The second finding was that the extent to which merit is considered as a factor relevant to resource allocation varies cross-culturally. Chinese and German children, but not Kikuyu children, preferentially rewarded more meritorious individuals. Although the current studies thus suggest that merit has uniform influence in both Chinese and German populations, it is possible that future studies will detect variation in terms of how different aspects of merit are taken into consideration in children from these two populations. What looks like cross-cultural uniformity on the behavioral level might be driven by culturally varying psychological processes. At first sight, distributing resources according to merit appears to follow a straightforward heuristic: Allocate preferentially to those who have worked harder. But parsing the concept of merit reveals a suite of distinct components that may carry differential relevance in Chinese and German children. In determining who to reward in the context of merit, we may pay special attention to someone's ability or talent, to the effort or work that someone has put into a task, or to someone's performance, that is, the output of the person's labor. The current results do not allow us to tease apart these different considerations because effort and output reliably correlated in our experimental setup. It is entirely possible, however, that German children, for example, value effort over output, whereas Chinese children place greater significance on yield. Talent, effort, and output all are dimensions that are relevant to distributions according to merit, and future studies should investigate whether the weight that is placed on each of these components varies across cultures.

The null effect of merit in the Kikuyu sample also warrants further investigation. One hypothesis is that relationship-independent ways of regulating distributions (e.g., considering merit) play an important role in large-scale communities, where economic transactions among strangers occur frequently; on the other hand, in small-scale societies (e.g., the Kikuyu sample), individuals interact with one another repeatedly, and so relationship-specific patterns might regulate the transfer of resources (Curven, 2004; Curven & Winking, 2008). Support for this view comes, for example, from a study with children from another small-scale Kenyan population, the Samburu. Schäfer et al. (2015) reported,

similar to our findings, no effect of deservingness on Samburu children's allocation decisions even in the face of large imbalances of output. Thus, Kikuyu children in our setup might not have reliably considered merit in their distributive decisions given that they are not frequently involved in resource transfers that call for impersonal standards of division.

Alternatively, the cross-cultural difference on the behavioral level between the Kikuyu sample, on the one hand, and the Chinese and German samples, on the other, might be explainable not in terms of variation in underlying psychological processes but rather in terms of a different construal of the sharing situation. Previous work with diverse populations provides support for the risk reduction theory of sharing: whether or not resources are shared according to effort depends on the variance in output associated with a given resource. For example, Kaplan et al. (1985) reported that hunter-gatherer communities share resources widely among their group in contexts where effort does not consistently predict foraging success (e.g., hunting for meat, searching for honey), but they share food in a much more discriminatory manner in contexts where acquisition correlates positively with effort (e.g., gathered plant foods). For evidence that the same pattern of behavior operates in WEIRD populations, see Kaplan, Schniter, Smith, and Wilson (2012). It is conceivable that Kikuyu children, in contrast to Chinese and German children, viewed success in the current setup as involving other factors rather than effort and consequently showed a lower tendency to distribute to meritorious individuals. Given that E emphasized in her instructions to participants that differential output resulted from variation in effort (see "Procedure" section in Method), we do not deem this explanation as highly likely, but it is nevertheless worthy of further investigation. Future studies could address this issue by asking children to justify their sharing decisions. This would help to answer the question of whether children, like adults, apply different sharing rules in contexts where output varies as a function of input compared with situations where other factors—such as luck—emerge as decisive in explaining differential production.

Finally, our third condition, which sought to uncover the relative weight that children place on friendship and merit in resource allocation, revealed that in all three cultures about half of the sample favored the lazy friend over the hard-working neutral individual, whereas the other half showed the opposite preference. This pattern of results fails to confirm our prediction that children from more collectivist populations (Chinese and Kikuyu) would give priority to obligations resulting from close interpersonal connections and that children from the more individualist population (Germany) would accord precedence to the impartial notion of merit. What might account for this divergence from our prediction? Because Kikuyu children did not display a robust preference to reward more hard-working individuals in the merit condition, they might not have experienced a true conflict of different fairness considerations here. Thus, it is difficult to interpret their behavior in the friend versus merit condition. At first glance, it seems puzzling that Kikuyu children paid attention to friendship but not to merit in the first two conditions but then appeared to be split between the two factors in the third condition, suggesting that considerations of deservingness do in fact carry some relevance. One potential explanation for this is that Kikuyu participants showed a relatively weak effect of friendship combined with a potential trend toward significance in the merit condition. For the Chinese and German children, one possibility is that older children and adolescents might show the predicted effect, whereas the relatively young children who we studied might not have internalized locally prevailing norms to the same extent. Although this remains a possibility, previous results from a variety of experimental paradigms (House et al., 2013, 2020; House & Tomasello, 2018) present strong evidence that sharing norms vary cross-culturally by 7 years of age. Future work should explore the respective contributions of friendship and merit motivations in distributive contexts across a wider age range. Finally, although friendship did not override merit considerations (or vice versa), we nevertheless found that children in China and Germany were more likely to reward a lazy individual over a hard-working individual if that individual was a friend compared with a stranger (it should be noted, however, that this comparison does not control for familiarity). Thus, social relationships mediate the extent to which children from these two cultural backgrounds consider more impersonal factors, such as potential recipients' relative deservingness, in their allocation decisions (see also Zhang, 2020).

One limitation of the current work is that we cannot explain children's behavior in the friend versus merit condition. Because culture did not emerge as a decisive factor in determining how children resolved this dilemma condition, it would be interesting to relate children's choice—that is, whether

they rewarded the meritorious individual or the friend—to differences on the individual level. One question is whether children who passed the resource to the undeserving friend feel more closely connected to their friend than children who handed the reward to the deserving neutral peer. The Inclusion of Other in the Self (IOS) Scale could be used to measure the degree of closeness between the participant and friend in future research (Aron, Aron, & Smollan, 1992; Li et al., 2019). A further limitation of the current work is the fact that we employed a one-shot forced-choice task. It is possible that a more sensitive method (using a more continuous measure) would have allowed us to detect differences regarding the respective weights that friendship and merit considerations carry in the different populations. In addition, although our method, which relied on children's behavioral sharing decisions rather than on extensive verbal instructions, is especially suited to cross-cultural investigations, future work could incorporate interview questions to confirm the potential motivations behind children's allocation decisions (Elenbaas, Rizzo, Cooley, & Killen, 2016; Rizzo, Elenbaas, & Vanderbilt, 2020).

Some of the deepest moral dilemmas, which have seemingly no satisfactory solutions, are a result of the fact that humans are simultaneously influenced by diverse and sometimes conflicting moral considerations. Here we investigated how children from three cultures factor two such considerations—social relationships and equity—into their distributive decisions. We also asked how children mediate between obligations that result from the partiality of friendship, on the one hand, and the impartiality of merit, on the other. Our results raise the possibility that children from some cultures (e.g., Kikuyu) potentially do not experience such situations as involving a conflict because they might not (or might not yet) operate with merit-based sharing norms. Children's behavior in the other two cultures studied here (Chinese and German), which was split evenly between a preference for friendship over merit and the opposite pattern, provides support for the view that such dilemmas might simply not have a straightforward solution. Taken together, the current results suggest that children's sense of what is fair and what is not fair shows important commonalities across cultures on some dimensions but also significant differences on other dimensions.

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