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Fairness in Distributive Justice by 3- and 5-Year-Olds Across Seven Cultures

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This research investigates 3- and 5-year-olds' relative fairness in distributing small collections of even or odd numbers of more or less desirable candies, either with an adult experimenter or between two dolls. The authors compare more than 200 children from around the world, growing up in seven highly contrasted cultural and economic contexts, from rich and poor urban areas, to small-scale traditional and rural communities. Across cultures, young children tend to optimize their own gain, not showing many signs of self-sacrifice or generosity. Already by 3 years of age, self-optimizing in distributive justice is based on perspective taking and rudiments of mind reading. By 5 years, overall, children tend to show more fairness in sharing. What varies across cultures is the magnitude of young children's self-interest. More fairness (less self-interest) in distributive justice is evident by children growing up in small-scale urban and traditional societies thought to promote more collective values.

Keywords: *sharing; culture; development; fairness; naïve psychology*

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The sense of fairness is the ethical core of trust, agreements, and other symbolic handshakes that are sanctioned by justice systems across the great variety of human cultures (Taylor, 1989). As a species, we humans evolved unique ways of sharing resources, including bartering and giving. The human ways of sharing supplement sheer brute force and coercion to include complex systems of reciprocity (Malinowski, 1932; Mauss, 1952/1967). If power and the ruling of the lion's share still prevail in most human transactions, they are tamed by a shared sense of fairness and the possibility of deferred gratification and strong reciprocity principles expressed in costly sacrifice and punishment (Fehr & Gächter, 2002; Henrich et al., 2006). Such taming principles are arguably at the core of the human enculturation process. They form the roots of the human sense of equity. The question of interest here is how this sense develops in children growing up in very different sociological, economical, and cultural environments.

In ontogeny, value judgments and rationale regarding fairness or the appropriateness of particular actions toward others change markedly, starting by the 2nd year (Eisenberg, 1989) and developing well into the teens (Piaget, 1932) and beyond (Kohlberg, 1981). Here, the goal was to document aspects of this development from the outset, in the context of controlled distributive justice tasks and as children begin to claim ownership over things. In this research, we factored both age and the different cultural and economic environments in which the child grows. These environments were urban/modern or rural/traditional with presumably different ways of promoting collective values—ways that are linked to a more or less individualistic sense of self (Triandis & Gelfand, 1998; but see also critiques in Schwartz, 1990). As a general starting point and based on existing cross-cultural research on emerging prosocial behavior in children, we assumed that moral development and the developing sense of equity are rooted in the cultural circumstances of the child, despite the fact that some of these aspects exist in all cultures. Cultural psychology research points to the universality of some forms of concern with harm and unfairness toward others across known cultural groups, concern that overlaps over issues of injustice (Bersoff & Miller, 1993; Snarey, 1985). However, there is also evidence for marked cultural variations in the definition of personhood (Shweder, 1982), the kind of acts considered as fair or unfair, as well as the relative emphasis on justice to resolve moral dilemmas (Miller, 2006).

Prosociality in Development

Care and consideration for others is not a given; it develops slowly. The features of this development, in relation to the great variety of cultural and economical circumstances in which children grow, remain largely unknown. Up to now, the developmental origins of prosocial behaviors and moral reasoning have been mainly considered as universal and independent of cultural factors, despite indications of marked variations (Miller, 1994, 2006).

Numerous developmental studies focusing mainly on Western middle-class children document the emergence, by 18 months of age, of the first explicit signs of empathic actions such as care or comfort gestures toward others in distress (Robinson, Zahn-Waxler, & Emde, 2001; Zahn-Waxler, Radke-Yarrow, Wagner, & Chapman, 1992). In the 2nd and the 3rd year, Zahn-Waxler and colleagues reported a significant increase in the expression of concern via vocal, gestural, postural, and facial expressions as children viewed either their mother or strangers faking an injury. Concern is first expressed mainly toward their

mother, and by the 3rd year, children generalize such expression of concern toward strangers (Robinson et al., 2001). In the preschool years (3 to 5 years of age), children are increasingly likely to express empathy and prosocial behaviors when they witness a peer crying (Eisenberg & Fabes, 1998).

In synchrony with the emergence of the first signs of empathic actions, recent research also documents that by 18 months of age, children begin to express helping or collaborative actions in the context of collective games (Tomasello, Carpenter, Behne, & Moll, 2005). By 18 months, children become attuned to others' needs and wants, differentiating between their own and another person's desires (Repacholi & Gopnik, 1997). By the time children begin to intervene to comfort and to help, they also begin to understand the behaviors of others as intentional or goal oriented in the context of imitative games (Agnetta & Rochat, 2004; Meltzoff & Moore, 1995), an increasing awareness that they can learn by observing and being taught by others (Goubet, Rochat, Maire-Leblond, & Poss, 2008). By 2 or 3 years of age, children also begin to show rudimentary theory of mind skills, understanding mental states such as desires and emotions that guide and predict the behavior of others (Wellman, 2002). In all, prosocial development correlates with the increased propensity to combine first-person and third-person perspectives, what is arguably the foundation of humans' particular ways of reciprocating with others (Rochat, 2006, 2007; Tomasello, 1999).

Owning and Giving in Development

By their second birthday, middle-class Western children begin to claim property over objects by saying "Mine!" unambiguously meaning that it is not yours, nor is it anybody's but the self (Tomasello, 1998). Between 24 and 36 months of age, the issue of possession and exclusivity over objects becomes a frequent cause for argumentation and justification, a recurrent cause of anger and distress at 18 months (Dunn, 1988).

In general, the claim of ownership is the necessary requirement for relinquishing via sharing or giving, which is typically encouraged from children across cultures when they reach their third birthday and as they enter preschool settings (Tobin, Wu, & Davidson, 1989). Remarkably sparse, however, is the research on the origins and development of prosocial behaviors in relation to sharing and the propensity to give (but see Faigenbaum, 2005, regarding economic exchanges in early development; see Birch & Billman, 1986; Rao & Stewart, 1999; Stewart & McBride-Chang, 2000, on the propensity to share by young children from various cultural backgrounds).

From the second birthday when children begin to claim property over things, they also begin to grasp social power, in particular the control of the social environment attached to the claim of ownership by ways of giving, trading, and the negotiation of values with others. Based on his careful and extensive observations, Faigenbaum (2005) suggested that by merely using objects during the first months, infants show first signs of possession in relation to objects by 9 months and a sense of a property that can be transferred by 3 years. The sense of reciprocal exchanges and of values attached to things—particularly money—is shown to develop well beyond 3 years and into the end of childhood.

To our knowledge, there is only one published study documenting marked developmental changes in bargaining behaviors starting from the age of 7 years, but not earlier in classic game theory paradigms (dictator and ultimatum games; i.e., 2nd to 12th grades, Harbaugh,

Krause, Liday, & Vesterlund, 2003). Based on these economic games performed by children and young adults from small North American rural towns, Harbaugh et al. report that with age, bargaining behaviors change toward greater fairness in distributive justice. Between 7 and 18 years of age, fairness as a normative constraint progressively overrides bargaining ability and self-interest, even though participants are anonymous in these games, not knowing with whom they are sharing (Harbaugh et al., 2003).

In the ultimatum and dictator games, two children are paired, without knowing each other, to share a disclosed sum of money. One proposes (the proposer) and the other responds (the responder) to successive bids in sharing that take place anonymously. In the ultimatum game, the responder can either accept or reject the sharing bid initiated by the proposer. If rejected, neither gets anything. If accepted, each protagonist gets what was proposed. The dictator game is identical to the ultimatum game except that the responder cannot reject the bid of the proposer. He or she gets whatever bid put forward by the proposer. The ultimatum game allows for the study of fairness as well as strategy in sharing in terms of the calculation of the chance that a small bid might be accepted or rejected. The dictator game, on the other hand, allows for the study of the relative and presumably self-determined (spontaneous) fairness of the proposer who is given the power of splitting the pot.

The adult literature shows that bargaining behaviors in ultimatum and dictator games vary markedly across cultures and that the expression of punishment, fairness, and strategy in these games is sensitive to culture (Henrich et al., 2006). If culture plays a role in determining individuals' economic behaviors, questions remain as to how and when they might be acquired (Faigenbaum, 2005).

Rationale

Existing research on sharing and prosocial behavior among peers (North American 3- to 5-year-old preschoolers, Birch & Billman, 1986; preschoolers from China and India, Rao & Stewart, 1999; Western and Asian second graders, Stewart & McBride-Chang, 2000; first graders from the United States and Columbia, Pilgrim & Rueda-Riedle, 2002) indicate that the early propensity to share varies depending on culture, social context, gender, degrees of friendship, and the relative desirability of the traded item (preferred or nonpreferred food item).

In Birch and Billman's (1986) pioneer study, pairs of same-sex preschoolers were observed sharing (or not sharing) snack food. Instances of spontaneous or passive sharing were rare, most instances typically elicited by the potential recipient. Girls tended to share significantly more than boys did, particularly when they were friends rather than just acquaintances. Sharing was also influenced by the previous experience of the child as recipient and whether the food was preferred or nonpreferred.

In a replication of the study with Indian and Chinese preschoolers, Rao and Stewart (1999) found no influence of relative friendship on the propensity to share and, in general, more spontaneous sharing among these Asian children, particularly the Chinese. In a follow-up study, Stewart and McBride-Chang (2000) investigated the spontaneous donations—either anonymous or public—given to peers by Western and Asian second-grade children. They report that such donations varied depending on culture, gender, and condition of anonymity, thus interpreting these results as reflecting variations in parenting

practices and moral reasoning among Western and Non-Western cultural contexts (for a convergent account, also see Pilgrim & Rueda-Riedle, 2002).

In all, existing research indicates that the propensity to share by young children depends on a complex interaction between culture, gender, relative acquaintance, degree of anonymity, past experience as recipient, and the degree of subjective desirability of the items to be shared.

In the present study, we attempted to control for all these interacting factors. We compared 3- and 5-year-old boys and girls growing up in contrasted socioeconomic and cultural circumstances who performed distributive justice by splitting (not anonymously) a collection of preferred item between themselves and a female adult stranger or between two dolls. Because many factors seem to interact in determining early sharing behaviors, we tried to maintain constant gender distribution, relative acquaintance with the recipient, as well as the subjective desirability of the items to be shared. We varied whether or not the child was recipient his or her distributive justice while considering variations in the cultural context of the child, whether this context was small and rural as opposed to large, urban, and industrial. Within the latter urban context, we also considered sharp differences in children's circumstances, from rich and adult nurtured to poor and highly neglecting (i.e., street children of Recife).

We used a public, nonanonymous version of the classic dictator game. Our observations focused on children growing up in seven highly contrasted cultural environments (small rural communities vs. large urban settings) who split up a small collection of desirable goods between themselves and an experimenter or between two dolls. The collection was either even or odd in number. In each culture, we tested groups of 3- and 5-year-olds to probe the early development of sharing from the time children become assertive in claiming ownership and show explicit understanding of what is theirs and what is not. By 3 years of age, normally developing children are typically fluent in uttering possessives in relation to things and begin to express them already by their second birthday (e.g., Tomasello, 1998). Furthermore, between 3 and 5 years of age, children show marked progress in construing the mental states of others, particularly the desires and beliefs held by others (Wellman, 2002). False belief understanding is manifested in most 5-year-old children and only a few 3-year-olds. This general developmental pattern tends to hold when comparing children from five contrasted cultures around the world (Callaghan et al., 2005; but see also Vinden, 1999 and Wellman, Cross, & Watson, 2001, for further discussion regarding some cross-cultural variations). In probing the early development of distributive justice in various cultures, we also tried to link this development to mental state understanding by testing all children in their ability to construe false belief. False belief task is generally taken to be the acid test of the children's ability to differentiate between first-person and third-person perspective at a purely cognitive level. We included this task to explore the link between this basic sociocognitive ability and the extent to which it can predict children's developing sense of equity and fairness when sharing with others, in particular their relative ability to suspend self-maximizing propensities to factor the wants of others.

Questions and Hypotheses

Three questions guided the research: (a) How fair are young children when given the power to openly distribute desirable items between themselves and an adult stranger? (b) As

children develop a new appreciation of others' perspective, as measured here using the false belief task, do children also become increasingly fair, developing more concern for others in their ways of sharing? (c) Does this development depend on the culture in which the child grows and is embedded?

Based on existing research on prosocial development—most of them pointing to a marked decline of hedonistic reasoning in the preschool years and beyond (e.g., Damon, 1994; Eisenberg, 1989; Eisenberg & Fabes, 1998)—as a general working hypothesis, we expected to find evidence of universality in the development of distributive justice, with cultural variations moderating such development. In relation to the three questions guiding the research, we anticipated (a) that self-interest (i.e., reduced fairness and hoarding for self) tends to dominate early ways of distributing justice, regardless of the culture surrounding the child; (b) that accompanying the development of mental state understanding, children become universally less guided by self-interest in their ways of distributing justice and are able to figure what other people think, believe, and feel, making them more equalitarian; and (c) that culture plays a role in the pace and magnitude of young children's universal development of fairness in the preschool years, depending on the relative size of the community in which the child grows, the relative sense of interdependence nurtured by the community toward the child, and whether this community is thought to promote more or less collective values.

For the sake of guiding our inquiry, we assumed theoretically that small-scale rural communities where sharing resources among all members of the group is more central, systematic, and conspicuous, would promote more fairness earlier in the child (see the Method section for further details as well as discussion of the potential caveats of such an ad hoc assumption).

Method

Participants

We tested, in a succession of seven simple distributive justice (sharing) tasks, 202 children growing up in seven contrasted cultural environments from remote rural to highly urbanized regions of the world (China, Peru, Fiji, United States, and three distinct urban sites in Brazil). Chinese children ($N = 41$; 21 3-year-olds and 20 5-year-olds) were tested in a large communist party-run preschool they attended in the booming city of Shanghai with a population of 20 million. North American children ($N = 26$; 16 3-year-olds and 10 5-year-olds) were from predominantly White middle-class to upper-middle-class families attending private preschools in metro Atlanta, Georgia (with a population of more than 5 million). Peruvian children ($N = 40$; 18 3-year-olds and 22 5-year-olds) lived in the central Andean highlands of Peru (Junin region) in the province of Huancayo and were tested in day cares of semiurban agricultural communities ($N = 21$) on the outskirts of the city of Huancayo (population of 430,000), at their home, or outdoor in the fields of small rural village communities within a 50-mile radius of the city ($N = 19$). In Fiji, children ($N = 15$; 5 3-year-olds and 10 5-year-olds) came from a small fishing village community with a population of fewer than 100 people living on a remote island of the Yasawa group, where they were tested. Finally, three different urban populations of Brazilian children were

Table 1
Number of Tested Children by Age and Gender Across Seven Cultures

	Brazil 3 (Recife)		United States		Brazil 2 (Rio Favela)		Brazil 1 (Rio)		China		Peru		Fiji	
	3 Years	5 Years	3 Years	5 Years	3 Years	5 Years	3 Years	5 Years	3 Years	5 Years	3 Years	5 Years	3 Years	5 Years
Female	6	7	7	3	7	9	5	4	12	9	7	11	2	4
Male	5	6	9	7	8	5	7	11	9	11	11	11	3	6

tested: a group of middle-class to upper-middle-class children attending a private preschool in the heart of the large city of Rio de Janeiro with a population of more than 6 million (Brazil 1 site, $N = 27$; 12 3-year-olds and 15 5-year-olds); poor children living and attending a volunteer-run preschool in a populous and crime-infested Favela (slum) also in the heart of Rio de Janeiro (Brazil 2 site, $N = 29$; 15 3-year-olds and 14 5-year-olds); and a group of poor, unschooled, and unsupervised children surviving on the streets of the largest northeastern city of Recife with a population of close to 4 million (Brazil 3 site, $N = 24$; 11 3-year-olds and 13 5-year-olds).

Overall, out of the 202 children tested, 93 were females and 109 were males, split into two age groups of 98 3-year-olds ($M = 40$ months, $SD = 4.36$) and 104 5-year-olds ($M = 63$ months, $SD = 4.57$). Children of each culture were equally distributed into the two age groups with age ranging within 31 to 51 months and 52 to 75 months, respectively. Table 1 summarizes the distribution of children by age and gender across the seven cultural environments.

The seven cultural environments of the children were spread out across three continents, varying along multiple dimensions, including demographic (large urban areas vs. semiurban or small rural regions), socioeconomics (middle-class vs. poor), and cultural dimensions (individualistic vs. more collectivist value systems). The choice of the research sites was in part opportunistic, based on possible research collaboration offered to us that gave access to a large variety of cultural circumstances surrounding children in their development. Opportunism aside, the choice of the research sites was also guided by the working assumption of a contrast between cultures that more or less promote values attached to collective living and activities. We conceptually dichotomized cultures nurturing a greater sense of interdependence in the child beyond the nuclear family, educated around greater concerns for others as in the smaller rural communities of Peru and Fiji, and possibly children attending the communist party-run preschool in the megalopolis of Shanghai, China. We opposed these cultures to urban industrial cultures that would tend to promote more values attached to individual enhancement and children tending to be educated around greater concerns for self-optimization and individual achievements. The latter would include North America and the three sites in Brazil that are modern and urban, where children are often poor but highly Westernized, including the unschooled street children of Recife who get by on their own, surviving unsupervised with peers on the street.

This rough dichotomy served as a general interpretative framework from which we generated our working hypotheses regarding the potential cultural variations in our findings. Table 2 summarizes each cultural site relative to general environment, socioeconomic status, and population highlight.

Table 2
Brief Descriptive of the Seven Cultural Environments of Tested Children

Country	Region	Setting	Environment	Socioeconomic Status	Population Highlight
Brazil 3	Recife	Streets	Urban	Very low	Unschooling children with broken extended families surviving collectively on the streets
United States	Atlanta	Private day cares	Urban	Middle to high	Children of middle-class, predominantly Caucasian, suburban families
Brazil 2	Rio de Janeiro	Volunteer day care	Urban	Low	Children educated in crime-infested urban and working-class slum or Favela
Brazil 1	Rio de Janeiro	Private day care	Urban	Middle and high	Upper middle-class and urban rich families
China	Shanghai	Communist party-run day care	Urban	Middle	Children educated in a large communist party-run university day care
Peru	Huancayo	Villages and day cares	Rural or semiurban	Low	Children growing up in semiurban or small agricultural communities
Fiji	Yasawa	Village	Rural	Low	Children of a small insular fishing village with a population of fewer than 100

Design

Each child was tested for his or her ways of distributing small collections of desirable goods between two recipients in seven successive test trial conditions. Conditions varied in the number and quality of the items to be distributed (odd or even number, normal or special items), whether the child was or was not a recipient, and whether the distribution was direct or indirect (perfect sharing condition).

Of interest was the way children distributed the items more or less equally depending on whether they were a recipient or nonrecipient, whether the distribution was either direct or indirect, and whether equal distribution was either possible (even number of items) or impossible (odd number) and to whom they tended to distribute the special (more desirable) item(s) when part of the collection was to be distributed.

Table 3
Descriptive of the Successive Test Trial Conditions

Child's Role	Trial	Number of Items			Even or Odd
		Plain	Special	Total	
Recipient	1	6	0	6	Even
	2	4	2	6	Even
	3	7	0	7	Odd
	4	6	1	7	Odd
Not a recipient	5	6	0	6	Even
	6	6	1	7	Odd
Not a chooser	7	4	2	6	Even

The number of items was small (max = 7) to avoid an exclusive reliance on counting, which was presumably not yet in the register of the younger children. Trials varied, depending on whether children distributed the items between themselves and the experimenter or between two dolls. Trials varied also in the kind of instruction that was given to the child, either to distribute the goods directly or first to split them into two piles for the experimenter to choose the pile she wants for herself, leaving the other one for the child. In this latter situation ("Solomon wisdom" or "perfect sharing"), the experimenter told the child: "Now we are going to play one more game, but this time it is going to be a bit different. . . . you are going to split some treats for you and me to take home but this time we are going to do it differently. I am going to pour the treats on the plate and you are going to split them on the plate. Once you are done, I am going to choose which one of the two piles I want for me to take home. The other pile will be yours to put in your brown bag and take home." In comparison to direct sharing, the Solomon wisdom or perfect sharing situation entails a role reversal and a change in perspective taking. Finally, at the end of the session, each child was tested for his or her ability to represent the mind state of another using a simplified version of the classic false belief theory of mind task (i.e., "unexpected location change" false belief task; see Callaghan et al., 2005; Wellman, 2002).

In Trials 1 through 4, children were asked to distribute a collection of desirable items (candies, stickers, and/or crackers in the sites where candy was not approved by most parents and teachers) between themselves and an unfamiliar female experimenter. As described in Table 3, in Trial 1, the collection consisted of six identical plain items (even number, same kind). In Trial 2, the collection consisted of six items of which four were identical plain items and two were special items that were bigger and of a brighter color (even number, different kind). The child agreed with the experimenter beforehand that special items were better and hence more desirable than plain items. In Trial 3, the collection consisted of seven items made of identical plain goods (odd number, same kind). In Trial 4, the collection consisted of seven items made of six plain and one special (odd number, different kind).

These first four trial conditions with the child as recipient was followed by two control trial conditions (Trials 5 through 6) in which the child was asked to distribute items between two dolls (identical stuffed animals); the child remained the agent of the distribution but

was suspended as a recipient. In Trial 5, the child had to distribute six plain items between the dolls (even number, same kind). In Trial 6, the child had to distribute seven items, six plain and one special (odd number, different kind).

In a seventh and last trial condition (“perfect sharing”), the child was asked to distribute six items between herself and the experimenter, which consisted of four plain and two special (even number, different kind), with the instruction to split the items into two piles for the experimenter to choose her pile (perfect sharing condition entailing role reversal compared to previous trials).

As a function of age and culture, we assessed relative fairness in sharing by computing for each child differences in distribution between Trials 1 and 4 (child is recipient) with Trial 5 and 6 (child is not recipient), considering the extent to which the child maximized distribution for self, for others, or for both self and others. We did the same comparison between Trial 2 and 7 in which the child was either the chooser or not the chooser following distribution (perfect sharing condition). Furthermore, we assessed the link between children’s relative fairness in sharing and children’s false belief understanding.

Material and Procedure

In all seven successive test trial conditions, the child sat across a table from an unfamiliar female experimenter fluent in the child’s language. The experimenters were trained research assistants hired at each site, typically students at a local university, all native of the country with the exception of Peru, where children were tested by two fluent Spanish-speaking North American students living in the area, who were well integrated in the local community and acquainted with the regional culture.

A plate sat in the middle with one cup on either side. In each trial, the collection of items to be split by the child was poured onto the center plate from a cup by the experimenter. For the majority of children, plain candies were brown chocolate-coated M&Ms. Special candies were big red jelly beans. For a minority of children, we used small versus large stickers or crackers (Goldfish) in place of candies because of school and/or parents’ dislike of the use of sweets in Brazil 1 group and the United States (both middle-class to upper-middle-class population). Prior to testing, the experimenter asked the child if he or she liked the items to be shared. They discussed and agreed on the relative desirability of either the plain or the special items.

Then the child was asked to choose one of two identical plastic cups with different colorful animals painted on them. The experimenter asked, “Which cup do you want to be your treasure box for the game?” Once the child chose a cup, the experimenter told him or her that this was his or her own “treasure box” and that whatever was put inside it was to take home. The experimenter showed the child the other cup, declaring that this was the experimenter’s treasure box: “. . . everything put in this box is for me to take home.”

In Trials 1 through 4, the child was repeatedly probed, prior to each trial, as to which one was his or her treasure box and which one was the experimenter’s. The box remained on the same side across trials for a particular child, this side (left or right from the child’s perspective) counterbalanced across children of each age group.

A trial started after the child answered correctly which one was his or her cup and which one was the experimenter’s cup. The experimenter then asked the child, “Are you ready to

play (again)?” After a positive response from the child, the experimenter then poured the items on the central plate that spread randomly on its surface, telling the child, “OK now, go ahead, split the goodies between the cups . . .” If after 15 seconds the child did not start to distribute the items, the experimenter probed the child again: “. . . You can go ahead, split them . . .” All children eventually did put all items in the cups, which ended the trial. Another experimenter noted how many and what kind of items (plain or special) ended up in either cup, as well as which cup received the first item in the distribution. For reliability testing, in addition to this on-line notation, it was repeated after the fact by another experimenter at the laboratory, based on the video recording of the session. Once finished, the child was asked again which one was his or her cup and which one was the experimenter’s. The child was then asked to empty his or her cup into a brown bag to take home. The experimenter did the same for the items ending up in his or her cup, putting them in a brown bag to take home. This procedure was applied for Trials 1 through 4, the instructions modified for Trial 5 and 6 where the child was not a recipient and for Trial 7 in the perfect sharing condition.

In Trials 5 and 6, the child was asked to split the items poured by the experimenter on the plate between two identical stuffed animal dolls facing the child approximately 2 feet away and 1.5 feet apart, each having one cup placed on its side. After the distribution, the child was asked to help the experimenter by pouring the contents of each cup into the doll’s brown bag.

Measurement

Following each trial test, the number and kind of candies in each of the cups was recorded. In addition, each child was videotaped during the test. Based on this recording, we determined afterwards how they proceeded in their distribution, in particular in which cup he or she distributed the very first candy (e.g., to the self’s cup or to the experimenter’s cup).

False Belief “Theory of Mind” Test

The session ended with each child tested in a false belief theory of mind task involving the experimenter and another unfamiliar adult person. The child and the other adult witnessed the hiding of a ball under one of two distinct-color cups. The adult person then excused himself or herself by saying that he or she will be right back, disappearing into another room. The experimenter then suggested that the child play a trick on the person, secretly changing the hiding location of the ball from one cup to the other. The experimenter helped the child to do so and asked the child, “When he/she returns, where do you think he/she is going to look for the ball?” After the child guessed, the experimenter called the other person to come back, who upon return, looked for the ball where he or she last saw it being hidden. The child passed the test if he or she guessed correctly, suspending his or her own knowledge and attributing a false belief to the person that he or she tricked.

The video record of 30% of randomly chosen children in all cultures and for both age groups was recoded for reliability. Interrater reliability agreement for all measures was above 98%.

Results

For sake of clarity, result presentation is broken down into analyses that pertain to (a) fairness in distribution of the items, (b) the comparison of distributive against perfect sharing, (c) the role of being recipient or nonrecipient in sharing, and (d) the link between fairness in sharing and false belief understanding.

1. Fairness in Distribution

Table 4 presents the mean percentage of items (with standard deviation) ending up in the child's own cup (Trials 1 through 4 and 7) or in the child's side cup (Trials 5 and 6), following distribution for each trial condition as a function of age and condition.

The vast majority of children (84% of the 3-year-olds and 94% of the 5-year-olds) engaged in actual distribution of the item, in the minimal sense of not putting all the items in one cup across the seven distribution trials. However, in those trials where children were both recipients and choosers (Trials 1 through 4), hoarding was frequent (i.e., the child putting all items in one of the cup). In hoarding, the child either loaded all the items to be distributed in the cup that was his or her own (self-hoarding) or alternatively loaded the cup of the experimenter (other-hoarding).

On the whole, there was a marked decrease of self-hoarding instances between the 3-year-olds and 5-year-olds. In Trials 1 through 4, 3-year-olds self-hoarded on average 40.6% of the trials and 5-year-olds self-hoarded only 17.9% of the trials, putting all items in their own cup. In contrast, hoarding in favor of the experimenter (other-hoarding) occurred in only 11.7% of the trials for the 3-year-olds and 4.4% for the 5-year-olds. It is interesting that this developmental trend varies significantly across cultures.

A 2 (Age) \times 7 (Culture) Univariate Analysis of Variance (ANOVA) on the number of trials (out of 4 in Trials 1 through 4) in which self-hoarding occurred, with age and culture as between-subject variables, yielded a significant main effect of age, $F(1, 188) = 17.14$, $p < .0001$, $\eta^2 = 0.084$; a main effect of culture, $F(6, 188) = 3.40$, $p < .003$, $\eta^2 = 0.09$; as well as a significant Age \times Culture interaction, $F(6, 188) = 2.25$, $p < .04$, $\eta^2 = 0.067$.

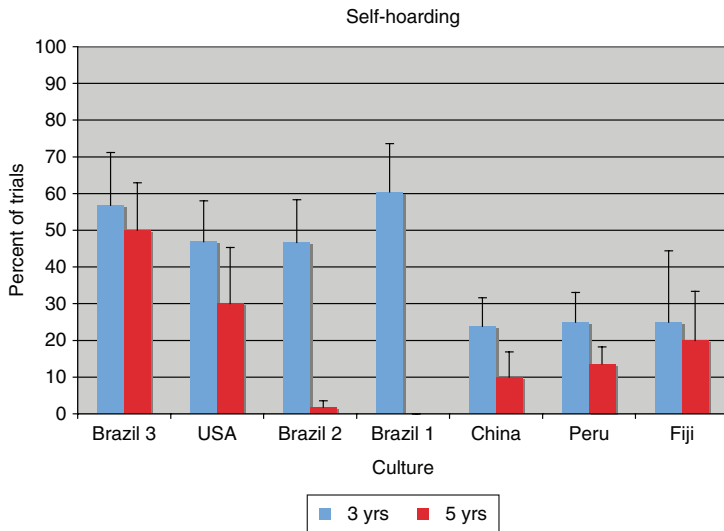
As shown in Figure 1, 3-year-olds tended to manifest markedly more self-hoarding compared to 5 year-olds. This developmental trend was not significant for the children of Recife (Brazil 3), accounting for the significant interaction of age by culture. Regarding the main effect of culture, post hoc comparisons indicate that the children of Recife are significantly more inclined to self-hoard compared to the children of Peru and China (Tukey tests, $p < .006$), marginally more so compared to the other two groups of Brazilian children as well as the Fijian children ($p < .10$), but not different from U.S. children ($p = .88$). Recife and U.S. children are thus the most comparable in terms of self-hoarding, more inclined do so compared to children in other cultures (particularly Peru and China).

The same analysis on the proportion of other-hoarding in Trials 1 through 4 yielded similar results, a significant main effect of Age, $F(1, 188) = 7.85$, $p < .006$, $\eta^2 = 0.04$; a main effect of culture, $F(6, 188) = 2.88$, $p < .01$, $\eta^2 = 0.084$; as well as a significant Age \times Culture interaction, $F(6, 188) = 2.81$, $p < .012$, $\eta^2 = 0.082$. The latter interaction rests on the fact that except for children in Recife and Peru, all other kids tended to hoard more for the experimenter at 3 years of age compared to 5 years of age. This interaction is difficult to interpret. However, in relation to the culture main effect, post hoc multiple pairwise

Table 4
Mean Percentage of Items (With Standard Deviation) Ending in the Child's Own Cup (Trials 1 - 4, and 7)
or Child's Side Cup (Trials 5 - 6) for Each Trial as a Function of Culture and Age

Trials	Brazil 3			United States			Brazil 2			Brazil 1			China			Peru			Fiji									
	5 Years		SD	3 Years		SD	5 Years		SD	3 Years		SD	5 Years		SD	3 Years		SD	5 Years		SD							
	%	SD		%	SD		%	SD		%	SD		%	SD		%	SD		%	SD		%	SD	%	SD			
1	76	34	64	39	72	29	63	26	63	35	51	4	67	39	48	14	60	26	53	24	69	26	59	26	67	42	58	29
2	70	38	71	35	71	34	65	24	76	27	55	14	82	27	48	6	67	24	57	18	53	31	39	25	33	42	60	22
3	71	37	78	29	66	36	67	23	72	36	51	9	73	36	51	7	52	30	55	20	60	31	62	25	31	46	60	22
4	79	29	55	41	76	31	63	27	70	35	53	12	82	28	50	13	65	27	58	19	58	29	44	28	43	43	61	22
5	47	39	54	33	61	20	50	0	76	24	49	4	85	21	54	13	48	32	53	13	63	27	55	22	40	42	48	9
6	70	40	43	32	42	22	54	6	65	40	52	9	70	30	54	12	56	18	51	10	60	28	42	23	20	28	51	7
7	39	44	49	29	63	31	52	5	63	38	54	7	58	30	48	6	47	15	48	10	61	25	52	24	40	42	48	9

Figure 1
Mean Percent Out of the First 4 Trials, With Standard Errors, in Which Children Ended Up Distributing All of the Items to Themselves (Self-hoarding) as a Function of the 2 Ages and 7 Cultures



comparisons independent of age show that children from the two rural areas that we assumed were more exposed to collective values as opposed to individualistic values (i.e., Peru and Fiji) were both significantly higher in their proportion of other-hoarding compared to all children in the other cultures (LSD tests, $p < .05$). These two cultures do not differ significantly, both showing greater other-hoarding, a measure that indexes some degree of self-sacrifice, because it pertains to the relative propensity of the child to give all of the items to the other.

To further assess the relative fairness of children across age and culture, we compared the percentage of items distributed to the self as opposed to the experimenter in trials where children were recipients as well as choosers (Trials 1 through 4). We ran a 2 (Age) \times 7 (Culture) \times 4 (Trial) mixed-design ANOVA with age and culture as between-subject variables and trial as a within-subject variable. The test yielded significant effects of age, $F(1, 188) = 6.19, p < .014, \eta^2 = 0.032$; as well as of culture, $F(6, 188) = 2.22, p < .043, \eta^2 = 0.066$; with no significant effect of trial, nor any significant interaction.

As shown in Figure 2, when children are recipients and choosers of their distribution (Trials 1 through 4), they tend to distribute more items for themselves. However, this tendency decreases with age, significantly less marked in 5-year-olds compared to 3-year-olds. Culture is not a factor in this developmental pattern, as there was no evidence of an interaction. The absence of trial effect indicates that the same distribution trend was found whether the collection of candies was even or odd in number and whether it included one or two special candies.

If there is apparent universality in the developmental pattern toward more fairness in sharing between 3 and 5 years of age, the baseline toward self-interest varies significantly

Figure 2
Mean Percent of Items Attributed to Self, With Standard Errors, When Collapsing Children of All Cultures in Trials 1 to 4 Combined, as a Function of Age (3- vs. 5-year-olds). The Horizontal (50%) Line Represents the Level of Equal Sharing

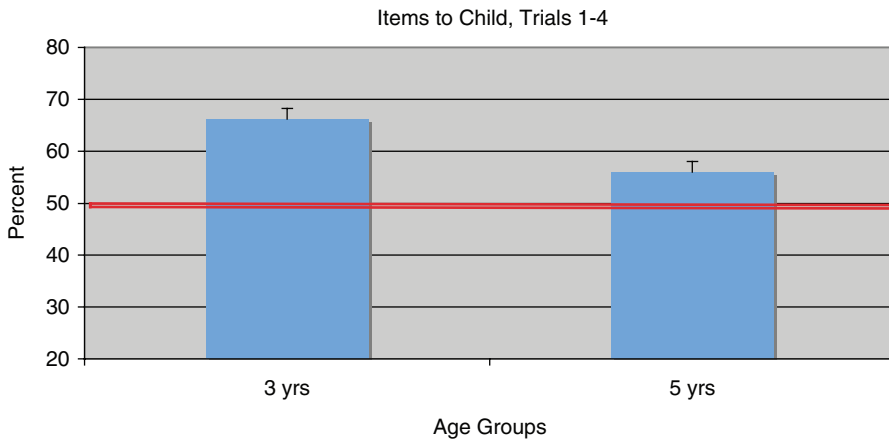
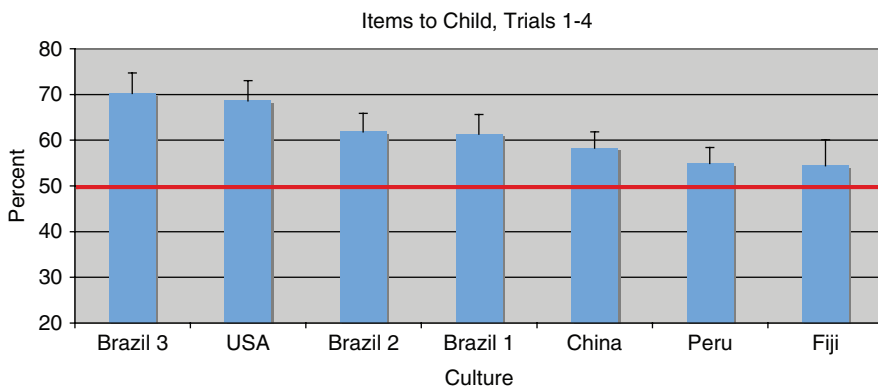


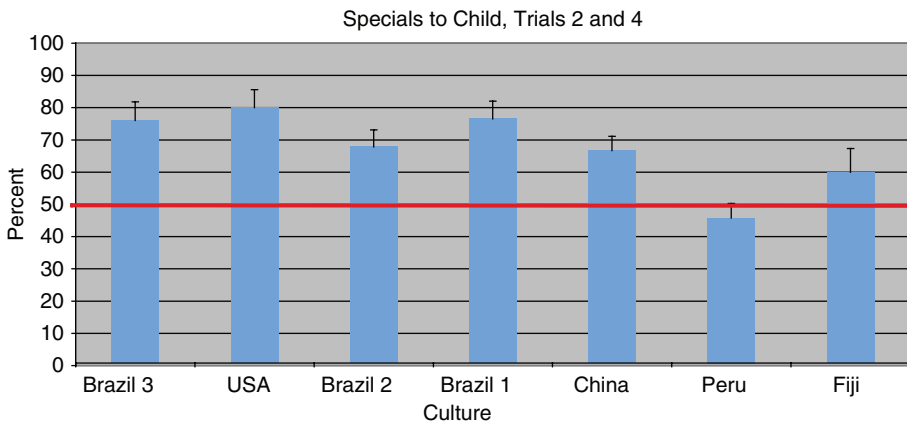
Figure 3
Mean Percent of Items Attributed to Self, With Standard Errors, in Trials 1 To 4 Combined, as a Function of the 7 Cultures



across cultures. This main effect of culture is visible in Figure 3. Post hoc pairwise comparisons (Tukey tests for $p < .05$) show significantly less self-interest biases in children from Peru, Fiji, and China, compared to either the unschooled children of Recife in Brazil or the middle-class children from the United States.

Regarding the location (self vs. experimenter's cup) of the very first candy distributed where the child was recipient (Trial 1), over 70% of the children attributed the first candy to themselves. A 2 (Age) \times 7 (Culture) Univariate ANOVA yielded no significant main effect of age or culture, nor any significant interaction between these two factors, $F(6, 186) = 0.75$. First candy distribution as an index of relative self-interest indicates that children

Figure 4
Mean Percent With Standard Errors of the Special Items Attributed to Self (Maximum Of 3) When the Child was Chooser and Recipient (Trials 2 And 4), as a Function of the 7 Cultures



tended to be self-serving at both ages in all seven cultures. This particular result points to the universality of a self-interest bend in distributive justice.

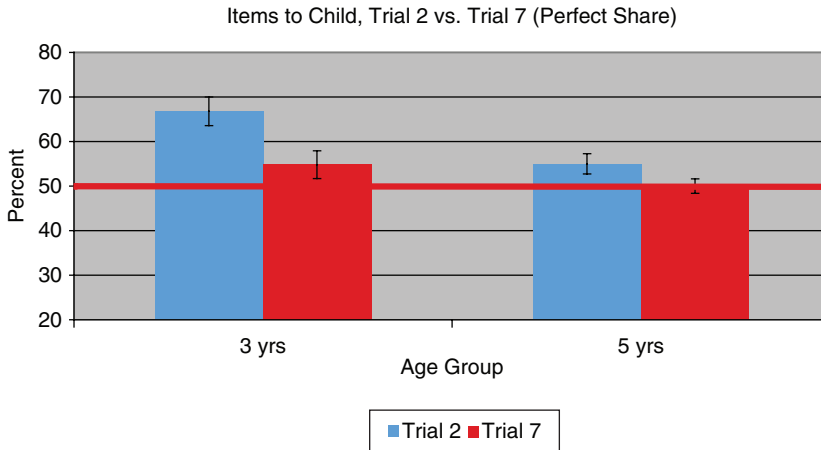
Considering the conditions in which the child was a recipient and the collection of items to be distributed included one or two special items (i.e., Trial 2 and 4), a 2 (Age) \times 7 (Culture) ANOVA on the overall proportion of the special items attributed to the self rather than the experimenter (maximum of 3) yielded a significant main effect of culture, $F(6, 188) = 5.87$, $p < .0001$, $\eta^2 = 0.158$; with only a marginally significant age effect ($p < .10$) and no significant interaction of culture by age. Overall, children attributed over 66% of the special items to themselves and only 34% to the experimenter. This self-interest bias tends to decrease, although not significantly, between the 3-year-olds and 5-year-olds (from 70% to 64%, respectively). Cardinal is the fact that the self-interest bias in relation to special items varies significantly across cultures.

As shown in Figure 4, the children of Peru show significantly less self-attribution of the special items in comparison to children in all other cultures except Fiji. Peruvian children were not significantly different from the Fijian children overall, both being the only two rural and smaller communities that presumably put greater emphasis on collective values. Post hoc comparisons on the percentage of special candies attributed to the self show significant differences between Peru and all other cultures (all Tukey HSD tests, $p < .02$) except Fiji ($p < .626$). Fiji, in turn, was not significantly different from all cultures ($p > .32$). Both children from Peru and Fiji tended to show more fair distribution of the special candies compared to children of all the other sites.

2. Direct Distribution Versus Perfect Sharing

We compared trials that had the same number and kind of candies but where the child was either a chooser or not a chooser in the sharing process (direct distribution of Trial 2 vs. perfect sharing or Solomon wisdom share of Trial 7 in which the child split and the

Figure 5
Mean Percent of Items Attributed to Self (or Child's Cup Original Side),
With Standard Errors, in Same Trial When the Child was Either a
Chooser (Trial 2) or was Not a Chooser (Trial 7 or "Perfect Sharing or
Solomon Share"), as a Function of Age (3- vs. 5-year-olds)



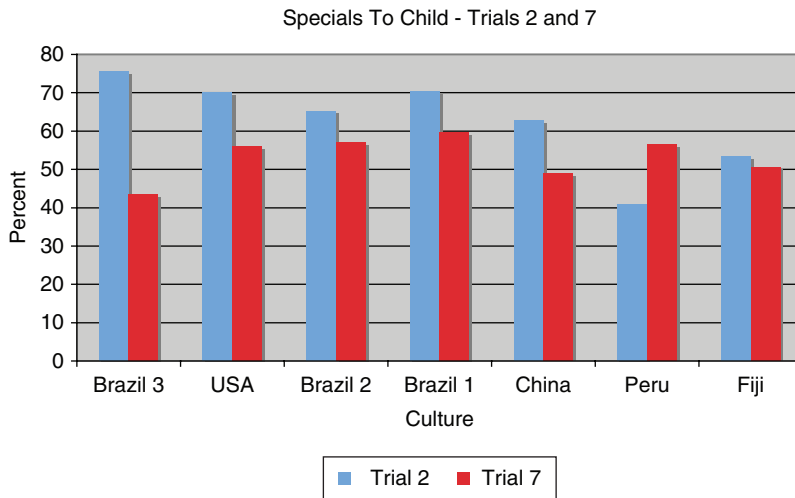
experimenter chose). As a function of age and culture, we analyzed the percentage of candies attributed to the self in Trial 2 compared to the proportion of candies put by the child into the cup that was at the same location in Trial 7. A 2 (Age) \times 7 (Culture) \times 2 (Trial) mixed-design ANOVA with Trial 2 and 7 as a within-subject variable yielded a significant main effect of trial, $F(1, 188) = 11.95, p < .001, \eta^2 = 0.06$; and a significant interaction of Trial \times Culture, $F(6, 188) = 3.64, p < .002, \eta^2 = 0.104$. There was no significant interaction with age. Overall, as shown in Figure 5, children at both 3 and 5 years of age tend to be more equal in their distribution in the perfect sharing situation.

These results suggest that from 3 years of age, children are strategic in preserving their self-interest in the distribution process, able to shift perspective from their own as chooser to the perspective of the experimenter in the perfect sharing situation. They infer that the experimenter will tend to choose the larger of two unequal shares and adjust their splitting accordingly.

The significant Trial \times Culture interaction (ages collapsed) is explained by a single reversed trend with Peruvian children who tend to more equally distribute the candies in Trial 2 compared to Trial 7 (perfect sharing). As we have seen in prior analyses, Peruvian children come across as exceptions. In general, they tend to manifest less self-interest (see Figure 3 and 4), being more equalitarian in their distribution at both 3 and 5 years of age. This trend could account in part for the reversal observed here and the significant interaction of culture by trial. Because Peruvian children are overall more equalitarian to start with, they also have less room to express sensitivity and strategic changes in the perfect sharing situation.

In relation to the distribution of the special items ($N = 2$) in Trials 2 and 7 (perfect or "Solomon wisdom" sharing), we analyzed children's distribution of these items to their own cup in Trial 2 versus their distribution of these items to the same side cup in Trial 7

Figure 6
Mean Percent of “Special” Items Attributed to Self (or Child’s Cup Original Side), With Standard Errors, in Same Trial When the Child was Either a Chooser (Trial 2) or was Not a Chooser (Trial 7 or “Perfect Sharing or Solomon Share”), as a Function of Culture

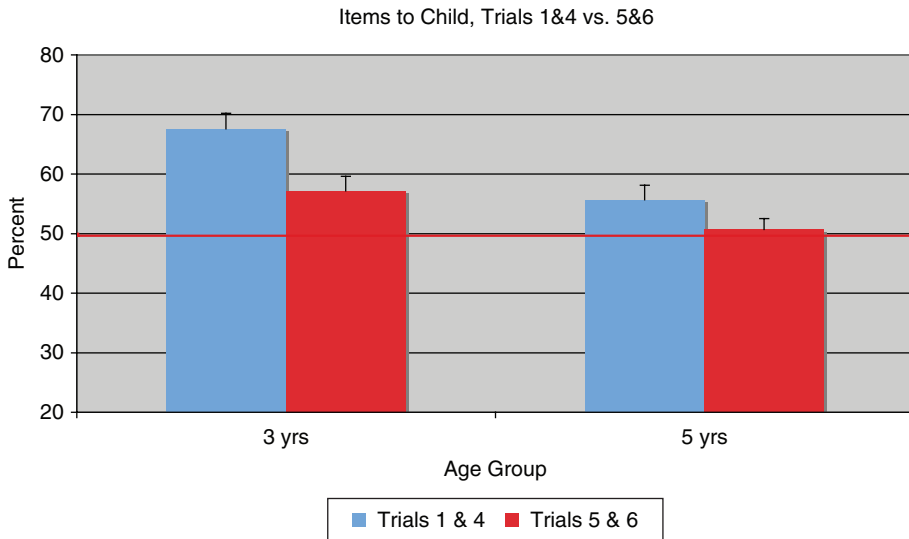


(i.e., the cup that was on the same side as their own in Trial 2). Again, we ran a 2 (Age) \times 7 (Culture) \times 2 (Trial) mixed-design ANOVA with Trials 2 and 7 as within-subject variables. This analysis yielded a significant main effect of trial, $F(1, 187) = 9.69, p < .002, \eta^2 = 0.049$; a significant interaction of Trial \times Culture, $F(6, 187) = 4.04, p < .001, \eta^2 = 0.115$; as well as a significant interaction of Trial \times Age, $F(1, 187) = 7.22, p < .008, \eta^2 = 0.037$. Overall, children tend to be more equalitarian in their distribution of the special items in Trial 7 (perfect sharing) compared to Trial 2 (direct distribution), this trend being significantly greater among 3-year-olds compared to 5-year-olds. In general, the older group of children was more even in their distribution of the special items in both Trials 2 and 7 (perfect share). This explains the significant interaction of Trial by Age. As shown in Figure 6, the significant Trial \times Culture interaction once again rests on the Peruvian children who show a reversed trend. Compared to all the other groups, the children of Peru start off more equalitarian in Trial 2. They are the only group that ends up, on average, distributing significantly more special items to the experimenter (56%) in Trial 2, a possible sign of early benevolence. In contrast, children of all the other cultural groups distribute on average more special items to their own cup in Trial 2 compared to Trial 7, becoming on the whole more equalitarian in their distribution in the latter (perfect sharing) trial condition. This trend is strategically sound if the child tries to maximize his or her gain.

3. Recipient or Nonrecipient Role in Distributive Justice (Control)

In relation to the two control trials (Trials 5 and 6) in which the child distributed the items between two dolls (distributive but nonrecipient role), we compared them to the same trials for which the child was a recipient (Trials 1 and 4). This analysis allowed the

Figure 7
Mean Percent With Standard Errors of Items Attributed to Self as a Function of Age When the Child is a Recipient of the Sharing (Trials 1 and 4 Combined) Compared to When the Child is Not a Recipient (Trials 5 & 6 Combined). In the Latter Trials We Considered the Items Attributed to the Doll on the Side of the Child's Cup in Trials 1 and 4



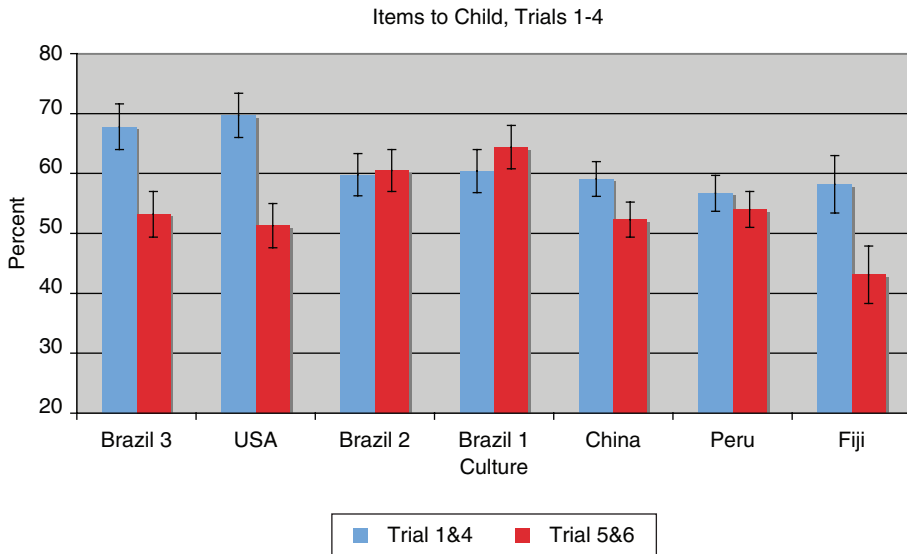
assessment of the relative role of children's self-interest in their distribution as a function of age and culture.

We first analyzed children's distribution either to the self in Trials 1 and 4 or to the doll's cup that was on the child's side in Trials 5 and 6. A 2 (Age) \times 7 (Culture) \times 2 (Trial) mixed-design ANOVA with the average sharing proportion of Trials 1 and 4 and Trials 5 and 6 as within-subject variable yielded a significant trial main effect, $F(1, 188) = 16.01, p < .0001, \eta^2 = 0.079$; and a significant Trial \times Culture interaction, $F(6, 188) = 2.79, p < .013, \eta^2 = 0.082$. There was no significant age effect or any other significant interactions.

As shown in Figure 7, children tended overall to be more equalitarian when distributing between the dolls (hence when they were not recipients). The significant trial main effect and absence of an age effect demonstrates once again the role of self-interest as a strong distributive justice bias in both 3-year-olds and 5-year-olds. However, as shown in Figure 8, this bias was not expressed equally across cultures, absent in the children of the Rio de Janeiro favela as well as for the children of the middle-class preschool of the same city. This absent trend with these two groups of children accounts for the significant interaction of Trial \times Culture. Children at these two locations did not manifest any differential performance when sharing as recipient or nonrecipient, having the same unequal sharing bias in both. We do not have any ready-made explanation for this phenomenon and can only note the significant cultural variation.

When comparing the sharing proportion in Trial 1 versus 5 and in Trial 4 versus 6 separately (not averaged), the results were corroborated, with the exception of the Trial \times

Figure 8
Mean Percent With Standard Errors of Items Attributed to Self
as a Function of Culture When the Child is a *Recipient* of the Sharing
(Trials 1 and 4 Combined) Compared to When the Child is Not a *Recipient*
(Trials 5 & 6 Combined). In the Latter Trials We Considered the Items
Attributed to the Doll on the Side of the Child's Cup in Trials 1 and 4



Culture interaction that did not reach significance in the comparison of Trial 4 versus Trial 6 separately. Finally, we compared the distribution of the special item in Trial 4 versus Trial 6 and found that children show a marked bias toward the attribution of the special item to the self in Trial 4, becoming significantly more equalitarian in the distribution of the special item when sharing between the dolls in Trial 6; trial main effect, $F(1, 188) = 14.55$, $p < .0001$, $\eta^2 = 0.072$. There were no other significant main effects or interactions.

4. Fairness in Distribution and False Belief Understanding

Of those children tested on the False Belief task ($N = 194$ out of the 202 included in the distribution analyses), 85% of all 5-year-olds ($N = 100$) passed the false belief task against only 26% of all 3-year-olds ($N = 94$). This overall age trend remains when breaking down children by the seven cultures, replicating the developmental synchrony across cultures reported by Callaghan et al. (2005) on children's false belief understanding. Binomial tests that compared to chance (50%) the proportion of 5-year-olds that passed the test or the proportion of 3-year-olds that failed the test were both significant at $p < .001$.

In further analyses, we compared the percentage of items attributed to the self (averaged over Trials 1 through 4) for children who either passed or failed the false belief theory of mind task. Children who failed tended to attribute significantly more items to the self as compared to those who passed, $t(192) = 2.76$, $p < .01$. In a further analysis, we tried to

partial out age as a confounding variable in this positive correlation between fairness in justice distribution and the passing of the false belief task. We repeated this analysis for each age separately and found that 3-year-olds who passed the false belief task ($N = 24$) tended to be only marginally more equitable in their distribution compared to those who failed ($N = 70$); one-tailed $t(92) = 1.43$, $p < .08$. We found another marginal trend in one-sample t tests comparing the percentage of items to the self against 50% or theoretically equal distribution. These tests yielded significant results for the 3-year-olds who failed, $t(69) = 5.86$, $p < .001$, but no significant results for the 3-year-olds who passed the false belief test, $t(23) = 1.785$, $p < .09$.

Despite this marginal trend, when age is controlled for, we found no clear evidence of a positive correlation between the passing of the false belief task (i.e., the ability of the child to take the perspective of others by construing their false belief) and the tendency to be less biased by self-interest (hence more inclined toward fairness in distributive justice). Clearly, more studies with more analytical power are needed before we can dismiss with some degree of certitude our original working hypothesis that there might be a positive correlation between perspective taking ability (i.e., the ability to construe the mental states of others as measured by the false believe task) and the degree of fairness expressed in distributive justice. Age as a whole is certainly a factor, but there is no clear indication that false belief understanding is directly linked to fairness in distributive justice. Based on these mitigated results, we are now more inclined to think that progress in theories of mind actually open possibilities for either increased fairness or increased self-interest, depending on whether the child's general outlook on the task is to promote equality or to maximize self-gains. Being able to figure what other people think, feel, and believe does not necessarily make the child more equalitarian, which was the rather naïve and idealistic working hypothesis that was ours. Other factors come into play, including the culture and values surrounding the child.

Discussion

Three general questions guided the research: How fair is a young child in distributing justice? Do children become increasingly fair? If fairness develops, does it depend on the culture in which the child grows?

The first two questions pertain to the possibility of universal trend in fairness development. The third question pertains to the possibility of cultural variations in such trend. In turn, we summarize and discuss our findings in relation to these two possibilities.

Universal Trend in Fairness Development

Across the variety of cultures we compared, the data show that self-interest outweighed self-sacrifice in children's early distributive justice. Across ages and cultures, 3-year-olds and 5-year-olds overwhelmingly tend to put the first candy in their own cup, attribute the most valuable items (specials) to self and, overall, tend to favor their own appropriation of items when they are recipients and dictator in the distribution.

Most striking is the fact that children from 3 years of age already understand that in the distributive justice game, if they split the items and then the experimenter chooses which collection of items they want (perfect sharing condition), they are better off splitting more

equally. They do so long before they pass classic theories of mind tests such as the false belief test (Callaghan et al., 2005). This significant change of strategy toward more equalitarian split in the perfect “Solomon wisdom” share situation is remarkable for three main reasons: (a) children understand that, like them, the experimenter’s mental state or want is also to maximize their own gain; (b) they understand that there is a first-person and third-person perspective on the split, each perspective carrying inverse meanings in terms of gain or loss; and (c) that they are capable of adopting the experimenter’s perspective and split the candies to maximize their own gain and minimize the experimenter’s, adapting to the new set of rules (“now you split and then I choose”). In all, it shows both differentiation and strategic coordination of first-person and third-person perspectives, a feat typically indexed by the passing of theories of mind tasks at around 5 years of age. Our results are consistent with other studies that show instances of children as young as 3 years of age lying and being deliberately deceptive regarding their own noncompliant actions (Lewis, Stanger, & Sullivan, 1989; Polak & Harris, 1999).

One interpretation for such an early developmental feat is that distributive justice (sharing) situations, probably as much as situations where they have to save face when confronted by an adult, are highly motivating for children. In such charged and engaging contexts, social-cognitive abilities reveal themselves earlier. So-called theories of mind and other naïve psychology might indeed be the necessary by-product (i.e., consequence rather than cause) of the developing ability to engage in reciprocal transactions with others within a consensual moral space, an ability sometime viewed as a cardinal and distinct feature of human cultures (Rochat, 2005, 2006).

In testing children on their ability to construe false belief in others, we confirmed the developmental trend between 3 and 5 years reported by Callaghan et al. (2005) across cultures. We found some indications that the few 3-year-olds passing the false belief task also tended to be less biased toward self-interest in their distribution between them and the experimenter. These results only showed a marginally significant trend, which was probably due to a lack of power in our analysis. Future research should include more children to explore and eventually confirm a positive correlation between the ability to construe the mental states of others and the propensity toward more fairness in the distribution of desirable goods between the self and others. Such research would further investigate the idea that the expression of fairness in distributive justice might be linked to the cognitive flexibility to construe the mind of others: what they feel, think, and believe. Such flexibility might indeed be associated with the children’s growing ability to suspend their own desires, weighing in the balance the desires of others while suspending their own immediate gratification and attempts at self-maximizing (see, e.g., Carlson & Moses, 2001, on the possible link between developing executive function and theories of mind). However, once this possibility is in place—and it appears to be the case at approximately the same age in development (5 years) across cultures—based on the passing of the false belief task (Callaghan et al., 2005), cultural circumstances still appear to sanction how the child uses such ability to determine justice.

Existing literature shows that by 3 years of age, children begin to engage in the explicit negotiation and bartering of claimed properties (Faigenbaum, 2005). Parallel to or as an integral part of this development, children also become explicitly more concerned about the welfare of others with clear manifestation of empathic and vicarious responses (Eisenberg

& Fabes, 1998; Robinson et al., 2001). Here, we further explored the emergence of prosociality in early ontogeny via the expression of fairness as opposed to self-interest in early distributive justice, when the child is given the power to attribute “wealth.”

As children develop an explicit sense of ownership and thus can begin to engage in the distribution of appropriated things (i.e., properties), we asked how much concern they display regarding the welfare of others as a function of age and culture. Our distributive justice task was thought of as a public or disclosed form of the classic “dictator game” extensively used in behavioral economics research. We engaged young children in a dictator game with no anonymity or secrecy involved. Within this paradigm, the concern for others’ welfare was operationally construed as fairness—namely the extent to which there is a balanced weight of common interest in an exchange. We measured fairness in terms of the more or less equalitarian distribution of wealth by the child (i.e., candies or stickers as desirable goods) between the self and an experimenter, or in a series of control conditions, between dolls when children were removed as recipients of their distribution or when the experimenter chose, after the fact, which collection of items he or she wanted (perfect sharing condition).

In our procedure, we made sure that the child understood that all recipient parties of the distribution game had the same preference for the items and an equal desire to go away with as many items as possible. This presumed understanding defines a general implicit rule or moral space (Taylor, 1989). Constitutive of this moral space is the norm that all parties are equally eager to possess, thus also equally inclined to be frustrated and feel dispossessed following the distribution. In the context of our task, it is against this norm that we assessed young children’s relative sense of fairness.

Within the moral space proposed to the child, all parties have the opportunity to be favored or to come out as a winner. It provides the opportunity for the child to show benevolence and self-sacrifice, as much as self-interest and absence of social concern, some degree of prosociality, or inversely some degree of social obliviousness. The idea guiding the research was that documenting early ways of distributing desirable items could reveal children’s experience and construal of this moral space, as a function of age but also as a function of the cultural circumstances of their upbringing.

Cultural Variations in Fairness Development

We compared children growing up in seven highly contrasted social, economical, demographic, and cultural environments. The choice of these cultural environments was in part opportunistic, dictated by logistical constraints, as we looked for environments that would promote more or less collective as opposed to individualistic values, including the emphasis on personal as opposed to group achievements, the value of cooperation as opposed to competition, and the emphasis on a collective rather than personal sense of ownership (see Triandis & Gelfand, 1998). This contrast is nevertheless not easy to document, in part because interindividual as well as intraregional variability makes the individualist–collectivist distinction conceptually arguable or at least difficult to validate (see Schwartz, 1990). We used this distinction as a working hypothesis, which enabled us to make some general predictions beyond the expectation of cross-cultural differences. However, our main goal was to assess what could be validated across cultures and what

aspects might vary depending on the cultural context in which the child grows. In relation to the early development of fairness in distributive justice, beyond the expectation of cultural differences, we anticipated that growing up in small rural communities, (e.g., Peru or Fiji) where the child is constantly immersed in collective activities such as cooking, celebrating, harvesting, decision making, or building houses that involve the community at large beyond the nuclear family would make a difference in the emerging sense of fairness, when compared to children growing up in large, modern, urban contexts that tend to foster competition, the recognition of individual achievements, and self-promotion from a very young age, even when children come from different social and economical backgrounds.

We acknowledge the difficulty of disentangling the confound between collectivist versus individualistic and urban versus rural opposition, particularly in today's increasingly global economy. However, our speculation was based on the general intuition that modern urban contexts would tend to foster more self-interest in young children. The contrast between these two categories of context (small scale, more traditional societies vs. large, modern, urban settings) was not directly measured but was based on what we observed casually at the various sites as well as on existing ethnographies of the life of children in small rural and traditional communities (Lancy, 1996; Morton, 1996; Rogoff, Baker-Sennett, Lacasa, & Goldsmith, 1995). These ethnographies resemble what we witnessed in Peru and Fiji, and to some extent China in the communist preschool, but not in the other North American and Brazilian sites. The mechanisms that might underlie a differential fostering of fairness across cultural contexts are complex and remain unknown to a large extent. Odden and Rochat (2005) emphasized the predominant role and enhanced opportunity for observational and rote learning in the enculturation of children that grow up in small-scale traditional societies such as Samoa in Polynesia. This is in sharp contrast to the modern Westernized urban contexts that typically emphasize one-on-one instruction. More research is needed to assess the impact of these different mechanisms of enculturation and learning on child development, in particular the developing sense of fairness toward others.

Our data show that the general developmental pattern toward an increasing display of self-sacrifice and fairness in distributive justice depends on cultural context. Following the collective versus individualistic matrix, we found evidence that unschooled children surviving among themselves and with no adult supervision are comparable to middle-class North American children in their greatest bias toward maximizing self-gain. We speculate that individualism and exacerbated self-assertiveness is probably a common feature of both cultural contexts, that otherwise are highly contrasted, to the point that such resemblance in distributive justice is paradoxical. Yet there is a strong culture effect of self-interest contrasting these two cultures against all the others.

Of all seven cultures, Peru, and to a lesser extent Fiji, are distinctly associated with less inclination in children to hoard candies for themselves. Most analyses indicate that children from these two cultural environments—particularly the Peruvian younger children—have a more generous and fair bias in their distribution. In contrast to all the other cultures that we compared, Peruvian and Fijian contexts are rural and collective in their organization, with children embedded in institutions, rituals, and a daily existence that promote the prominence of reciprocity and the sharing of goods rather than private ownership. Our own observations show that in both Peruvian and Fijian contexts, and in contrast with the other five cultures, children lived in a small rural village within a multigenerational collective

living arrangement of extended families. Children from these cultures tend to show the same general developmental trend toward increasing fairness in distributive justice. However, this trend is tamed, because they start off with a more equalitarian bias already at 3 years of age. Thus, the contrast seems to rest on an earlier inclination toward fairness by children growing up in these particular cultural contexts.

Summary and Conclusion

In all, the research provides evidence that across cultures, when children are set to engage in distributive justice, they do not express from the outset a natural inclination toward fairness. From 3 years of age, children tend to optimize their own gain, our data providing evidence that they do so strategically, on the basis of perspective taking and rudiments of mind reading (see data on distributive vs. perfect sharing).

Regardless of culture, when children begin to distribute justice in situations where they are recipients, they do so with a marked overtone of self-interest over generosity or self-sacrifice. This does not mean that culture has no impact on the early development of justice distribution and the expression of fairness in such distribution by the child. Despite the universal (transcultural) overtone of self-interest that tends to decrease significantly between 3 and 5 years of age, the starting state and magnitude of this development varies across cultures. In general, our data suggest that an early self-interest overtone in distributive justice is significantly less pronounced in cultural environments that presumably promote more collective values.

Although the development from an overtone of self-interest to increasing fairness appears to be universal, this predictable drift is also shaped by the particular values that define the cultural environment of the child. What these values might be and how they are transmitted to the child are central questions in need of much more research to answer them.

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