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Differences in allocation patterns and in the use of distributive principles emerge from children of Brazilian parents in Brazil and in the United States

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A B S T R A C T

This study aimed to investigate differences in the way children in Brazil and USA allocate resources and justify their decisions in a fictional situation. The sample was composed by 178 children of Brazilian parents: 98 Brazilian, living in Brazil, and 80 American children, who had low familiarity with Brazilian culture. Participants were requested to resolve a distributive dilemma during which characters with different personal attributes reunited to a picnic in a public park. The results showed that most children preferred equality or near-equality patterns of distribution to allocate the food among the characters of the dilemma. Preference for other patterns of distribution like equity and need was related to age and nationality. Also, children who used equality as justification for their distributions were more consistent (that is, they distributed the food using an allocation system who matched their justification) than children who used other types of justifications. Results are discussed in light of recent works on sharing and processes of socialization during childhood. © 2014 Fundación Universitaria Konrad Lorenz. Published by Elsevier España, S.L.U. This is an open-access article distributed under the terms of the Creative Commons CC BY-NC ND Licence (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Diferencias en los patrones de distribución y en el uso de los principios distributivos surgidas de los niños de padres brasileños en Brasil y Estados Unidos

R E S U M E N

Este estudio trató de investigar las diferencias en el modo de distribución de los recursos por parte de los niños en Brasil y Estados Unidos, y en la justificación de sus decisiones en una situación ficticia. La muestra se compuso de 178 niños de padres brasileños: 98 niños

Palabras clave:

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Distribución
Socialización
Cultura

brasileños que viven en Brasil, y 80 niños americanos, poco familiarizados con la cultura brasileña. Se solicitó a los participantes que resolvieran un dilema distributivo, durante el cual los personajes con diferentes atributos personales se reunían para hacer un picnic en un parque público. Los resultados reflejaron que la mayoría de los niños prefirieron patrones de distribución de igualdad o no igualdad para repartir la comida entre los personajes del dilema. La preferencia por otros patrones de distribución tales como la equidad y la necesidad guardó relación con la edad y la nacionalidad. También se observó más concordancia en los niños que utilizaron la igualdad como justificación de sus distribuciones (es decir, distribuyeron los alimentos utilizando el sistema de reparto que se correspondía con su justificación) que en los niños que utilizaron otros tipos de justificación. Los resultados se analizan a la luz de los trabajos recientes sobre la acción de repartir y los procesos de socialización durante la infancia.

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Culture has been suggested to be an important mechanism that enables humans to develop socio-cognitive abilities for cooperation (Henrich & McElreath, 2003; Henrich & Henrich, 2007; Chudek & Henrich, 2011) through a gene-culture co-evolution (Richerson & Boyd, 2005). From that point of view, cooperative behavior is conceptualized as one of the origins of human morality (Tomasello & Vaish, 2013). Moreover, human beings would be born with specific cognitive mechanisms to acquire and maintain culture in its great diversity (Sperber & Hirschfeld, 2004; Claidière & Sperber, 2007). This would in turn lead to a variety of ways to cooperate and to elaborate social norms and values, including how to distribute resources.

Distributive justice, in a developmental perspective, was first studied by Piaget in his work on moral judgment (Piaget, 1932). In his study, Piaget observed three distributive principles: authority, absolutist egalitarianism, and equity. Along these lines, Damon (1977, 1980) found that by age of three children are able to reason in terms of justice when allocating resources, and that a preference for considering someone else's need increases with age. Several studies have confirmed the association between age and children's ability to use and coordinate different distributive justice principles (Dell'Aglio & Hutz, 2001; Frederickson & Simmonds, 2008; McGillicuddy-De-Lisi, Vinchur & Watkins, 1991; Sampaio, Camino & Roazzi, 2007; Sigelman & Waitzman, 1991; Takagishi, Kameshima, Koizumi & Yamagishi, 2010; Wong & Nunes, 2003).

Cross-cultural studies indicate that cultural differences might influence sharing from an early age (Rochat et al., 2009; Henrich & McElreath, 2003). Also, socialization processes within each culture could affect the way children coordinate distributive principles when they allocate resources on hypothetical scenarios and justify their allocations. Indeed, it could be particularly relevant if cultures that emphasize either collectivist or individualistic values are contrasted.

Immigrants are an interesting group to investigate this kind of situation — especially immigrants' children, as they might be influenced both by their parents' and by their peers' norms

and values. In order to verify the strength of socialization processes and culture on distributive judgments, this study considered two different populations: children of Brazilian immigrant parents in the United States, and Brazilian children in Brazil.

Studying these two groups enables us to identify the influence of each culture on distributive judgments, as these children were born, raised and live in two different countries: one of them, Brazil, described by some authors as a *Simpatia* country, with prevailing collectivist values, and the other with more individualistic values (Gouveia & Clemente, 2000; Levine, Norenzayan & Philbrick, 2001; Matsumoto et al., 2008). In fact, cross-cultural studies showed Brazilians at the top of a ranked-list of the most helpful persons whenever a stranger is in need, among participants from 23 countries, while the participants from the United States ranked next to last (Levine et al., 2001). So, if children who were born in USA allocate resources differently as compared to children who were born in Brazil, this could be attributed to their distinct cultures. If this doesn't happen, it is impossible to say anything, since it could mean either that culture had no influence, or alternatively that they were more influenced by their parents.

In addition, socialization processes could also be investigated because children in both countries have Brazilian parents, therefore a similar influence of norms and values from family. However, for those who were born in USA, the social norms and values of American culture are acquired by socialization through their peers, whereas they have acquired Brazilian norms and values from their parents. So, if different judgments of resources allocation are made by these two groups, it could be said that—in addition to cultural influence— children privilege norms and values from their peers, in regards to allocation of resources. So what could we say about children who have a cultural environment at home, and a different one among their peers? In these situations, we can ask whether parents' culture would influence more or less than the local (peer) culture.

One approach to answer these questions is that parents have almost no influence on children's social development. Based on genetic behavioral studies, Harris (1995) shows that behavior and personality similarities among parents and their children could be better explained if genetic influence were considered. In that sense, most of the difference among individuals is due to socialization through interaction with peers, instead of parents' education. Harris (2000) has reiterated her argument claiming that criminality is not related to children having been raised without a father.

As far as the predominance of a more individualistic or collectivist orientation can be linked to the way people cooperate and relate to each other, it is not clear if these cultural differences influence children's distributive justice judgments before they reach adolescence. Furthermore, in only a few studies on children's sharing in Brazil and USA diverse principles were simultaneously presented to children (Mcgillienddy-De-Lisi, Watkins & Vinchur, 2006; Sigelman & Waitzman, 1991; Sampaio, Camino & Roazzi, 2007).

Besides, it is important to take into account children's ability to consider and coordinate different kinds of information (personal traits of the recipients, distributive setting, value of the resources, etc.) during distributive justice situations (Gummerum, Hanoch, Keller, Parsons & Hummel, 2009). For instance, McGillicuddy-De Lisi, Daly and Neal (2006) reported that although second graders gave similar treatments to characters, regardless of how they were described in terms of skin color and gender, fourth graders' distributions were affected by experimental manipulations related to the race of the recipients.

Fehr, Bernhard and Rockenbach (2008) observed an in-group and out-group distinction on aversion for unequal distributions, comparing children aged 3 to 8. There was a stronger preference for egalitarian distributions when the recipients were from the participants' in-group, rather than the participants' out-group. Similarly, Markovits, Benenson and Kramer (2003) observed that from the age of 8 years to adolescence, individuals tend to use the same key contextual elements for reasoning and making judgments about food distribution. Also, most participants judged fair to favor siblings, classmates and friends when the resources were more valuable, in comparison to when the value of the resources was lower.

Rochat et al. (2009) tested children from Brazil, USA, China, Peru and Fiji in an experimental situation involving sharing, as well as their relationship with performance on false belief tasks. The results showed that hoarding behavior decreased dramatically from 3 to 5 years, and that the self-hoarding behavior was more evident when children were both recipients and choosers of the distribution than when they were only providers. Furthermore, as compared to children who passed the false belief task (FBT), children who failed that task tended to allocate more items to themselves, when age effects were controlled.

Kenward and Dahl (2011) showed that young children are able to evaluate the moral valence of the actions of two characters and to take their behavior into account when allocating cookies. Also, that when the outcomes were scarce, both 3 and 4½-year-olds gave more cookies to the character who had been helpful. However, when the outcomes were plentiful, 4½ year-

old children allocated the cookies equally, suggesting that they prefer egalitarianism, except under conditions of scarcity. Younger children did not distinguish the moral valence of the puppets' actions during the pre-test phase, and that they could not adequately justify their distributions, whereas 4½ year-olds were able to do so, and to link the helper's behavior to prosociality.

Although many studies show that older children are more able to deal with complex situations, Baumard, Mascaro and Chevalier (2012) tested children's sharing in a situation during which two characters baked cookies together, but one of them stopped helping and started playing, while the other character continued baking cookies. The results indicated that children decided to give the big cookie to the character that worked harder, regardless of their age. In a second experiment, authors employed the same hypothetical situation, but, in that time, three identical cookies were used, so children could divide equally or favor one of the characters. The results showed that 3- and 4-year-old children tended to an egalitarian distribution of the cookies, but they could not correctly justify their distribution, which indicates that children were able to assess merit and effort, even though they are not able to explain their decisions properly (Liénard, Chevallier, Mascaro, Kiurad & Baumard, 2013).

This result is not limited to hypothetical scenarios, because Kanngiesser and Warneken (2012) also found that three year-old children take merit into account when there is a real consequence for them regarding their distributive behavior, and they performed an effort activity during the study as well. Namely, children gave less stickers (the resource in that study) when they were more productive than when they were less productive, although, authors also found a self-interest bias.

From that point of view, allocation procedures and their justifications could be seen as two distinct processes in which people make most of their moral judgments intuitively, but give their reasons afterwards, in order to justify them (Haidt, 2001, 2007; Hauser, 2006; Hauser, Cushman, Young, Kang-Xing Jin & Mikhail, 2007). This dual-process model where people have, on one hand, an intuitive and fast thinking and, on the other hand, a rational and slow one (Tversky & Kahneman, 1974) has been adopted recently to cover a wide range of moral phenomena, from cooperation (Rand, Greene & Nowak, 2012) to religious belief (Baumard & Boyer, 2013).

For children, linguistic ability is an additional difficulty, thus studies that relied only in verbalization to investigate moral judgments would not be able to find early evidences of egalitarian distribution of resources that have been founded in recent studies with adults (Hamann, Warneken, Greenberg & Tomasello, 2011; Warneken, Lohse, Melis & Tomasello, 2011).

This study takes into account these two aspects of distribution of resources, i.e., judgments and their justifications in two different cultures. Also, it would be fruitful to examine whether the tendency to avoid equality and to use equity as children get older is maintained in a situation where the use of diverse distributive principles is possible. Considering these points, we conducted this study in order to assess whether the preference for different distributive justice principles is influenced by the cultural backgrounds of children living in USA and Brazil.

Method

Participants

The participants were 98 Brazilian children (46 boys and 52 girls), ranging from 7 to 12 years of age (M_{age} , 9.31 \pm 1.56), from the city of Petrolina (PE), and 80 American children (41 boys and 39 girls) whose age ranges from 6 to 13 (M_{age} , 9.31 \pm 2.06). The Brazilian children were recruited from public and private regular schools, and the American children were recruited from Portuguese schools in the cities of Everett (MA), Allston (MA) and Somerville (MA). American children attended Portuguese schools pursuant to their parents' urge for their children to learn Portuguese and have insight of the Brazilian culture, in order to keep their cultural origins. Three age groups were tested: 6-8-year-olds (n = 54), 8.1-10-year-olds (n = 65), and 10.1-13-year-olds (n = 59). Children in both countries came from a range of socioeconomic backgrounds (most from middle-class, living in urban areas), and grade level varied from kindergarten to 8th grade.

Materials and procedures

Children were administered a hypothetical distributive dilemma involving sharing in a picnic context, in which respondents were invited to take the role of a character in a school-based situation. At the beginning of the task, participants chose one card from five options to represent themselves, and received two more cards representing one apple and one hot-dog (food cards).

The experimenter told a story about a teacher (Ms. Linda) who invited some students (including the participant) to a picnic at a public park and asked them to bring some food to share with each other. When they arrived at the park, Ms. Linda told them to combine the food they had brought, and at this point the experimenter asked participants to show what they brought to the picnic, using their food cards. Next, the experimenter showed how much food the other characters had brought to the picnic, explaining for example that: Ms. Linda brought one apple and one hot-dog; William (USA) / João (Brazil), a boy who had helped the principal of the school to organize books in the library and received some money, brought three apples and three hot-dogs; and Bob (USA) / Gilberto (Brazil) who was a poor student and did not have much food at home brought only one apple. A female version of the same story (Kelly/Maria, Molly/Cristina) was administered to the girls. So that participants would remember the story, the experimenter said: "Now, I want you to show me the best way to share the apples and hot-dogs among Ms. Linda, you and the other students. You can put the food cards close to their cards to show me how much they will receive." Finally, the researcher asked the participant if that distribution was fair and, if so, why. The total time for administering the task was around 15 minutes. Children were tested individually. This study was evaluated and approved by an Ethic Committee (CUHS n.º F20875-101). Parents expressed their consent to the participation of their children in the study, and children were requested to take part on a voluntary basis.

Results

Preliminary analysis showed that the number of hotdogs and apples that children allocated did not differ significantly. Accordingly, the number of apples and hotdogs allocated to each character were summed and expressed as a percentage of the total number of food items allocated. The poorest character received the highest mean percentage of food items (M = 27.43 \pm 5.69) followed by the character who had brought more food (M = 25.98 \pm 5.39), the participants themselves (M = 23.35 \pm 4.73) and Ms. Linda (M = 23.22 \pm 6.61).

A $2 \times 2 \times 3$ Multiple Analysis of Variance was conducted in order to determine the effects of gender (boys, girls), country (Brazil, USA), and age (6-8-years, 8.1-10-years, 10.1-13-years) on the mean percentage of food allocated to each character. No main or interactive effects of independent variables on mean percentages of food were found.

In order to evaluate the use of different patterns of distribution, children's allocations were categorized according to the amount of food allocated to each character: *need*, when the distribution favored the poorest character; *near-equality* when participants used a 3/3/3/2 pattern of distribution; *exact equality* when each character received exactly 25% of the food cards. Note that, in these cases, children decided to put aside three food cards in order to create an amount of food that could be equally distributed among all four characters. Thus we have merit, when the character who brought more food received more than the others; equity, when the poorest character and the character who brought more food received equal amounts, but more than the other characters; authority, when Ms. Linda received more food than the students; and self-benefit, when the participant allocated more food to himself/herself.

Inspection of Table 1 shows that the most frequent pattern of allocation (n = 60) was near-equality, followed by the category of exact-equality. Indeed, it is evident that when these two categories are combined into one category (near + exact equality), it dominates (71.9%) the way in which children allocated the food.

A χ^2 test showed that the relative percentage of children who used a pattern of distribution based on the category need significantly varied according to age [χ^2 (12,178) = 22.88; p = .029]: 9.3% of children between 6 and 8 years, 9.2% of children between 8.1 and 10 years and 20.3% of children between 10.1 and 13 years gave more snacks to the poorest character. No significant effects related to children's Nationality were found.

When the frequencies of these distributive patterns were analyzed within each country, χ^2 Test indicates that the use of the exact-equality increases as age goes by in Brazil [χ^2 (12,98) = 21.61; p = .042], but not in USA (p = .14).

Justifications

Three independent judges categorized children's justifications for allocation of the food. Inter-judge reliability was acceptable with the level of agreement of 85%, and conflicts were resolved by discussion among judges. Thus, the justifications were classified in the following categories:

Table 1 – Percentage of the use of the distributive patterns, according to participants' age and nationality

	Need	Near-equality	Exact-equality	Merit	Equity	Authority	Self-benefit
USA							
6-8 yrs	0.0	29.2	45.8	4.2	8.3	8.3	4.2
8.1-10 yrs	14.3	50.0	28.6	3.6	0.0	0.0	3.6
10.1-13 yrs	21.4	21.4	50.0	0.0	3.6	3.6	0.0
Total	12.5	33.8	41.2	2.5	3.8	3.8	2.5
Brazil							
6-8 yrs	16.7	46.7	26.7	0.0	0.0	10.0	0.0
8.1-10 yrs	5.4	32.4	37.8	5.4	8.1	0.0	10.8
10.1-13 yrs	19.4	22.6	41.9	3.2	9.7	3.2	0.0
Total	13.3	33.7	35.7	3.1	6.1	5.1	2
Total	12.9	33.7	38.2	2.8	5.1	3.9	3.4

- Equality: participants said that everyone should receive the same (e.g., "It is fair to share in this way because everyone has the same thing, everyone could eat the same, they all have the same"... "they all eat equally...").
- Need: children said that the poorest characters deserved to receive more food because of his/her precarious conditions of life (e.g. "It's fair because this boy must be very hungry. Her family doesn't have much money").
- Equity: participant said that it's fair to consider personal attributes of the characters before distribute something. In these cases, children combined two or more distributive principles in his/her reasoning (e.g., "Bob is poor, so I gave him two apples and... William got money, so he had two apples..."; "The math teacher... can have two apples and one hot-dogs for teaching, and I can have one apple and one hot dog").
- Self-interest: participants justified the distribution based on her/his personal interest or on the desire of one of the characters (e.g.: "... Ms. Linda doesn't want anymore I think, and she wants more (herself), and she wants more (the most helpful), and since she is poor she just want more...". "I don't like apples").
- Merit: children said that the character who helped the principal deserved to receive more food to recompense his/her work at the library (e.g.: "It's fair because she

worked hard and she brought three apples and three hot-dogs").

- Not categorized: participant did not justify her/his distribution.

In general, participants used the category of equality most often (40.4%). On the other hand, the least frequently used category was merit (2.2%). The percentages of the use of the other categories were: equity (22.5%), need (17.4%), self-interest (9.0%), and not categorized (8.4%).

χ^2 test showed that the use of the justifications varied, according to children's nationality [$\chi^2(5,178) = 16.21; p = .006$]. More specifically, American children used the category equality more frequently (50%) than Brazilian children (32%). On the other hand, the category equity was observed more frequently among Brazilian children (31.6%) than American children (11.2%) (Figure 1).

Consistency between patterns of distribution and justifications

In order to evaluate if children allocated the food to the characters according to the reasoning they offered in their justifications, we compared the patterns of distributions to children's justifications. Overall, only 30.7% of the children used a

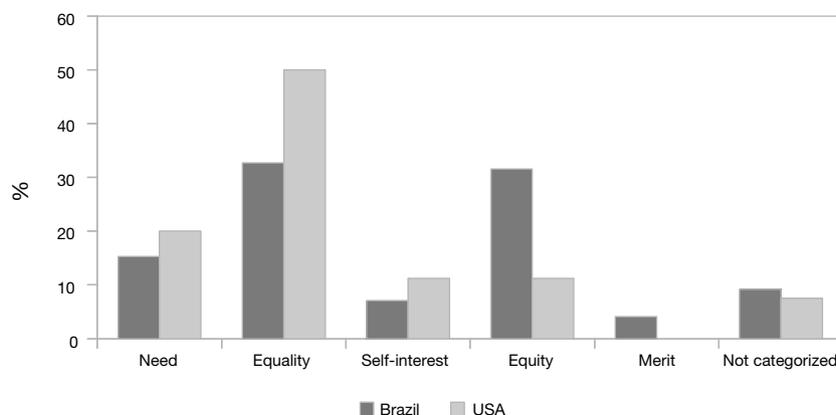


Figure 1 – Percentages of children's justifications by country.

pattern of allocation that was consistent with their justifications. However, the most consistent participants were those who used the category equality as the justification for their decisions, and distributed exactly the same amount of food to all four characters (56.9%). Moreover, it is feasible that some children might have intended to distribute the food in an egalitarian way, but were unable to do that (since there were 11 items to distribute among 4 people), so that they only managed to approximate equality. Thus, if we treat children who used the justification equality and distributed in a near-equality pattern as consistent, the percentage of consistency for those who used the category equality is very high (84.7%), as displayed in Table 2.

Finally, a higher level of consistency was observed in American children (58.1%) than in Brazilian children (30.3%).

Discussion

Most children used equality reasoning to justify their distributions, and adhered more frequently to near-equality and exact-equality patterns of distribution, even though they justified their decisions evoking different kinds of principles. The findings agree with research conducted in the past (Frederickson & Simmonds, 2008; McGillicuddy-De Lisi, Daly & Neal, 2006).

Previous studies found that young children strongly avoid inequality distributions (Fehr, Bernhard & Rockenbach, 2008; Blake & Rand, 2010; LoBue, Nishida, Chiong, DeLoache & Haidt, 2010; Kenward & Dahl, 2011), and that they fail in matching sharing behavior and judgments (Smith, Blake & Harris, 2013), with this tendency to fail decreasing from 3 to 8 years of age. Also, that egalitarianism peaks around the age of 8-11 years (Fehr, Rützler & Sutter, 2011).

The high level of inconsistency observed in the present study might be produced because, even though children were able to consider personal attributes of the characters, they intuitively apply the equality norm or a near-equality pattern, in order to diminish the possibility of conflicts, maintain the group harmony, and preserve the good relationship between students and Ms. Linda. This can be explained considering the existence of a dual process mechanism in decision making and judgments in human beings: one intuitive and innate, another rational and conscious. Innate and intuitive decision-making is fast, whilst more reasoned decision-making is slow (Tversky & Kahneman, 1974). In general, intuitive judgments deal with everyday life situations, and only when it fails its less spontaneous counterpart is triggered.

As observed in previous studies (Fehr, Bernhard & Rockenbach, 2008; Markovits, Benenson & Kramer, 2003; Moore, 2009), the type and quality of the interpersonal relationship has an important role in children's distributive judgments of food. More specifically, if the relationship implies that the probability of future interactions among social partners is high, sharing tends to increase. It is worth remembering that the dilemma used here involved a situation in which characters were all classmates, and a context in which they all were required to give something to the picnic.

Moreover, a situation involving sharing food during a picnic seems to be a rather familiar experience among children in the USA and in Brazil. This would imply that the participants could make intuitive judgments about the distribution of food at the picnic. So it could make them judge that the fairest way of distribution is an equally allocation of food to each one, based on their experiences in previous situations alike.

Hence, the collaborative framework of a picnic might have led children to resolve the dilemma through the use of equality, functioning in a heuristic fashion, in order to maintain fairness inside the group. This is due to the fact that cooperative behavior has been influenced by intuitive judgment (Rand, Greene & Nowak, 2012). Then, when asked about the reason for that decision, children need to take some time and find out an answer; thus the deliberative mechanism would be triggered, leading to different justifications (Haidt, 2007; Hauser, 2006; Hauser et al., 2007), which demands considering personal attributes of each character.

Participants that used equality as a justification for their distribution were much more consistent than participants that evoked the other categories of rationales. It is possible that this higher level of consistency among egalitarians had happened because the near-equality and the exactly-equality patterns were easier to be followed than the other patterns that implied favoring one or more of the characters. Converting the distinctive features of the characters in mathematical advantage in the distribution would demand the application of a mathematical weighting in the allocation, which is not required in an egalitarian distribution.

Furthermore, we can hypothesize that equality or near-equality patterns of allocation were preferred because the number of food cards was scarce, and favoring any of the characters could imply that someone would not receive the minimum amount of outcomes necessary to produce a sense of justice in givers. Thus, equality would be a distributive principle generally applicable when resources are scarce, but enough to everyone, irrespective of personal features, handicaps or efforts, because its main objective would be to ensure that everyone will get something.

On the other hand, when resources are plentiful and the minimum required is assured, other principles could be implemented, completing equality. So, it is possible that if there were plenty of food cards available, participants with a mismatch between the actual pattern of allocation and rationales for allocation might have distributed the food giving one or two more cards to the characters with distinctive features (e.g. the poorest), without producing an evident sense of inequality inside the group.

Table 2 – Consistency between justification and pattern of distribution, according to participants' justification

Consistency	Justification				
	Need	Equality*	Self-interest	Equity	Merit
Yes	19.4	84.7	0	5.0	25.0
No	80.6	15.3	100	95.0	75.0

* $\chi^2(4,178) = 94,40; p < .001.$

Even though we can consider all these aspects, it is difficult to draw conclusions from the results, since there is a great occurrence to equal or near-equal distributions among American (75%) and Brazilian (69.4%) children. Thus, a tendency for justifications classified as Egalitarian would necessarily agree more times than the other types observed here, because of its prevalence among young children.

Even though the exact amount did not vary between American and Brazilian children, these two groups differed in the patterns they used to allocate the food cards, and in their justifications: the first one preferred to justify their decisions in the base of the equality norm, while Brazilian children used more justifications based on the equity principle. Socialization and cultural transmission could give some answers for the different justifications given by American and Brazilian children. Although the participants were born in two different countries, they all are children of Brazilian parents. If social values and beliefs were transmitted from parents to children, then these two groups of children should have justified their judgments in a similar way, which didn't happen.

As Harris (1995) claims, children socialization occurs among peers, not inside their family. Furthermore, Saltzstein, Dias, and Roazzi (2003) showed that in three distinct moral dilemmas children's judgments are more in accordance to those of other children than to adults, including their parents. So, considering that values and beliefs are acquired from the local culture, instead of inside the family, we could explain the difference of the justifications between countries examined here because of cultural patterns acquired by the children during their interactions with peers.

In the same direction, only in Brazil age influenced the use of the near-equality pattern of distribution as children got older. This suggests that adherence to egalitarian norms might not follow the exact same pattern of development in all cultures, as proposed by Piaget (1932). Our results indicate that preference for equality is stable for American children from age 6, whilst in Brazil that preference is gradually developed. Although hard to explain, a previous study also shows an earlier development in American children as compared to other countries (House et al., 2013).

It is worth noting that Catholic religious education stimulates the development of a community climate in which children are encouraged to share, cooperate and be kind to other people. This may lead children living in these religious environments to be inclined to adopt equality as a distributive principle, in order to preserve the interests of the group, thus resulting in a stronger preference for equality among American children (Fehr et al., 2008; Blake & McAuliffe, 2011) driven by the religious atmosphere of Portuguese schools.

Another interesting result is related to the increase in the preference for the use of the need pattern of allocation, as children get older. Previous studies indicate that children's ability to take into account personal characteristics of recipients when allocating resources is gradually developed along childhood (Sampaio et al., 2007; Baumard et al., 2012; Liénard et al., 2013), even though they are not able to justify their decision.

The differences between younger and older children in the need-based sharing in some sense corroborate the develop-

mental path observed by Piaget (1932) and Damon (1980), and demonstrate a late development to elaborate upon which principle should be used. Resource allocation is claimed to be a context-dependent mechanism in which equity should be divided in three different types, namely efficiency, accountability and need (Konow, 2001). As Konow formulated this model for adults, with age children would be more capable to assess complex contexts they would be in, thereby implying a more diverse use of distributive principles as adults do.

In our specific case, the use of the need principle might have been due to the context we chose to set the experimental scenario. A picnic is usually a situation where children are among friends (or, at least, potential friends), and this might lead participants to consider the other characters as part of their own group (Fehr et al., 2008; Fehr et al., 2013; Markovits et al., 2003).

In sum, different contexts affect distribution; however, young children must struggle to fully consider context when there are no explicit and simple cues, such as in previous studies (Baumard et al., 2012; Kanngiesser & Warneken, 2012). Thus, older children could have taken one aspect that was more salient to them (in our case, need) because the scenario involved friends interacting in a familiar situation.

Future investigations should control cultural background and social environment in order to avoid possible "mixed-culture" or educational biases, such as those that might have hypothetically happened in this research. It would also be interesting to provide children with only a small number of characters, in order to take into account individual characteristics more easily when they allocate the resources.

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