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Ownership reasoning in children across cultures

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ABSTRACT

To what extent do early intuitions about ownership depend on cultural and socio-economic circumstances? We investigated the question by testing reasoning about third party ownership conflicts in various groups of three- and five-year-old children ($N = 176$), growing up in seven highly contrasted social, economic, and cultural circumstances (urban rich, poor, very poor, rural poor, and traditional) spanning three continents. Each child was presented with a series of scripts involving two identical dolls fighting over an object of possession. The child had to decide who of the two dolls should own the object. Each script enacted various potential reasons for attributing ownership: creation, familiarity, first contact, equity, plus a control/neutral condition with no suggested reasons. Results show that across cultures, children are significantly more consistent and decisive in attributing ownership when one of the protagonists created the object. Development between three and five years is more or less pronounced depending on culture. The propensity to split the object in equal halves whenever possible was generally higher at certain locations (i.e., China) and quasi-inexistent in others (i.e., Vanuatu and street children of Recife). Overall, creation reasons appear to be more primordial and stable across cultures than familiarity, relative wealth or first contact. This trend does not correlate with the passing of false belief theory of mind.

1. Introduction

Recent cross-cultural research indicates that market integration (i.e. average number of calories purchased per capita) and affiliation with a large world religion predict individuals' propensity to be generous as well as their tendency to distribute resources and engage in costly punishment (Henrich, Heine, & Norenzayan, 2010; Henrich et al., 2010). Such findings suggest that socio-economic and cultural context could determine much of the ways we tend to see and relate to material possessions: how we are inclined to share and distribute justice, how we think of who owns what and why? Ethnographies and comparative studies of property rights show how norms of individual ownership may significantly vary across cultures (Barclay, 2005; O'Meara, 1990). From a developmental perspective, the question is when and how children start to manifest the individual ownership norms of their culture? Alternatively, what kind of early ownership norms might be invariant across cultures in child development?

By the second year, children manifest explicit attachment to particular person (Ainsworth, Blehar, Waters, & Wall, 1978) and material things (Faigenbaum, 2005; Ross,

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Conant, & Vickar, 2011), becoming vocal and explicit about their possession (Bates, 1990; Rochat, 2011; Tomasello, 1998). However, the frequency and form of infants' and toddlers' early attachment and exclusive control over things may vary across cultures. Early attachment to objects or transitional objects (Winnicott, 1953) is less prevalent in cultures where the practice is for children to sleep with their parents (Hobara, 2003). When asked to split valuable goods with someone else, preschoolers growing up in rural, traditional, or small communal living environments tend to be less selfish and more egalitarian (Rochat et al., 2009). They are also less inclined to restore justice by punishing (Robbins & Rochat, 2011; see also Henrich et al., 2006 for cross-cultural differences in adults). Cross-cultural research with young children indicates that, in general, the spontaneous sharing of food and the exclusive appropriation of material things among young children may vary across cultural contexts and socio-economic circumstances (Birch & Billman, 1986; Rao & Stewart, 1999; Stewart & McBride-Chang, 2000). To the extent that there are cultural variations in the way children share resources and distribute justice among peers, questions remain whether early cultural ways of sharing may also translate in differential early reasoning and "intuitions" about who should own what and why.

In the recent influx of experimental studies on the origins and development of reasoning about possession (Ross and Friedman, 2011), entitlement (Schmidt, Rakoczy, & Tomasello, 2013), ownership of ideas (Shaw, Li, & Olson, 2012), ownership transfer (Blake & Harris, 2009; Kanngiesser, Gjersoe, & Hood, 2010), and reasons and intuitions to own (Friedman, 2008; Noles, Keil, Bloom, & Gelman, 2012), very little exists from a cross-cultural perspective (Rochat, 2014). Existing data primarily with Western middle-class preschoolers (but see Faigenbaum, 2005 for an exception) suggests that from three years of age, even possibly by two years (Fasig, 2000), young children like adults infer the ownership of an object based on a first possession principle ("who had it first owns it"; see Friedman, 2008; Friedman & Neary, 2008). By four- to five-years, children can infer ownership on the basis of who authorized the use of an object (control of permission principle; Faigenbaum, 2005; Neary, Friedman, & Burnstein, 2009, Neary & Friedman, 2014). More recently, studies show that by five years children develop some understanding of grounds for ownership transfer (e.g., labor investment, borrowing as opposed to stealing; Blake & Harris, 2009). This understanding may even emerge earlier, around three- to four-years, when children are active participants rather than third party observers in the ownership transfer (Kanngiesser et al., 2010).

The few existing studies comparing possessive behaviors in children across cultures present a mixed picture of universal and culture specific developments. Furby (1978) performed open-ended interviews of five- and ten-year-old children, questioning them about what makes somebody own something. Interviewees were North American and Israeli, some living in Kibbutz communal organizations, all showing exposure to marked differences "in the degree to which personal possession is practiced and encouraged" (Furby, 1978, p. 64). Furby reports two common and putatively universal motives for possession: the control of effects one has on objects (sense of efficacy or "effectance motives" in relation to objects) and self-assertiveness (self defining motives in relation to others). Furby also finds complex interactions of age, gender, culture, as well as object kinds regarding what constitutes possession and determines possessive behaviors. Although the right of use and/or control of an object are central aspects of what determines possession across cultures for all children, Furby reports that the acquisition process of the object was the main determinant of possession only for the youngest (five-year-old) Israeli children. Overall, the range of meanings and reasons for possessing as opposed to not possessing an object increase with age in all three cultures but at significantly different rates (Furby, 1978).

In another rare cross-cultural study that compared one- to three-year-old toddlers growing up in different kibbutz, Lakin, Lakin, and Costanzo (1979) observe fewer conflicts over objects among children raised in total collective care relative to those in daycare. These observations suggest that from an early age, a link may exist between the various kinds of cultural practices that surround children and their developing attitudes as well as motives to possess (i.e., more or less need for self-assertiveness and claim of ownership; see Keller, 2007). Again, indirectly corroborating the effect of culture on young children's degree of possessiveness, three and five year-old preschoolers growing up in diverse small non-Western rural communities around the world tend to show a lesser tendency to be greedy and self-maximize when asked to share, compared to same age preschoolers of large Western and non-Western urban and industrial areas (Rochat et al., 2009).

1.1. The present research

In this research, we considered the extent to which children's early intuitive reasoning about ownership reflects the particular values of their cultural and developmental niche (Super & Harkness, 1986) or alternatively, whether there are some universal principles that all children develop in independence of their socio-economic and cultural environment. The overarching goal was to weigh the extent to which the early development of ownership reasoning varies across cultural contexts.

In addition to what we know about Western middle class preschoolers regarding the principles they use in determining ownership, we considered additional principles that have been traditionally called for in political philosophy and the philosophy of law on the determination of ownership of an object (Locke, 1689/1997; Rose, 1985) but that have not been considered jointly in the perspective of development. These principles include *creation* (effort and work in creating an object, e.g., Kanngiesser et al., 2010; Li, Shaw, & Olson, 2013), *first contact* (antecedence in seeing or touching the object first, e.g., Friedman & Neary, 2008), *familiarity* (anterior use and habit; e.g., Friedman, Neary, Defeyter, & Malcolm, 2011; Neary et al., 2009), and *equity* (equitable distribution between rich and poor; e.g., Zebian & Rochat, 2012). We also compared children's

spontaneous propensity to split an object of contention in half to resolve an ownership conflict between two protagonists, whenever the object was divisible. This condition was specifically meant to allow children to choose between equal versus exclusive ownership attribution.

The question of interest here is whether young children (three- to five-year-old preschoolers) growing up in environments varying from relative material abundance (rich vs. poor), to basic group living arrangements and values (small traditional rural village vs. large urban and industrial environments ruled by communist or non-communist capitalism) would differ in developing intuitions and early reasoning about ownership.

As a general working hypothesis, we predicted that there would be differences across cultures in relation to some principles, but not others. We expected that the *first contact* principle would be most basic and universal, the least variable principle across cultures compared to *familiarity*, *creation,* or *equity* principles. The reasoning was the following. The first possession principle appears to be the most pervasive in nature and deeply rooted in evolution, evident even in invertebrates (i.e., hermit crab, Arnott & Elwood, 2007). In the perspective of development and relative to all the latter principles, the first contact (first possession) principle would be more primary because it is directly inferable, linked to concrete appropriative actions by possessors on the object (i.e., grabbing and holding). It is therefore less opaque and more concrete compared to all the other principles that are relatively more abstract. We reasoned that the other principles should be more open to cultural influences. We were agnostic regarding the nature and magnitude of these influences in relation to each principle, and therefore did not make any specific predictions.

Because past research indicates that three- to five-year-old children growing up in small rural, traditional and collectivistic societies tend to be more equitable in sharing (Rochat et al., 2009), we expected the group of Melanesian Ni-Vanuatu children (see description below) to show more inclination in resolving the conflict between the two protagonists by spontaneously splitting the object in half in the condition where the object was actually splitable (see Section 2). Finally, we expected a positive correlation between the passing of first order false-belief understanding (theory of mind) and children's reasoning about ownership attribution. Both were considered as potential indices of social-cognitive development between the age of three and five years.

The seven cultural sites were spread across three continents and varied along multiple dimensions, including demographic (large urban areas vs. semi-urban or small rural regions), socio-economic (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 collaborations offered to us that provided access to a large variety of socio-economic and cultural circumstances. Opportunism aside, the choice of the research sites was also guided by the working assumption of a contrast between cultures that promote more or less values attached to communal living and activities activities, as well as the sharing of more or less abundant resources or possessions (Fiske, 1992). Conceptually, for the sake of our general research question and while acknowledging limitations and caveats in such distinctions (Omi, 2012; Schwartz, 2013), we broadly dichotomized cultures. We distinguisted between cultures that nurture interdependence in the child beyond the nuclear family and that focus education around greater concerns for others. This would include the smaller traditional, rural, subsistence living, and highly collectivist community of Vanuatu, and possibly children attending the communist party run preschool in the megalopolis of Shanghai, China. In contrast, we compare these cultures to urban industrial cultures that would tend to promote more values attached to individual enhancement where children tend to be educated around greater concerns for self-optimization and self-assertiveness, toward individual achievements and control over individual possessions. The latter would include the two sites in North America and the three sites of Brazil that are modern and urban, where children are highly Westernized but often living below poverty levels, including the unschooled "street" children of Recife who get by on their own, surviving unsupervised by adults with peers on the street peddling and dealing (Aneci Rosa, Borba, & Ebrahim, 1992; Fernandes

Table 1
Brief descriptive of the 7 cultural environments of tested children.

Country	Region	Setting	Environment	SES status	Population highlights
USA 1	Atlanta	Private daycares	Urban	Middle/high	Children of middle class predominantly Caucasian suburban families
USA 2	Atlanta	Public daycares	Urban	Low	Inner city African American children of lower SES families
China	Shanghai	Communist party run daycare	Urban	Middle	Children educated in a large communist party run university daycare
Vanuatu	Motalava (Banks Island, Melanesia)	Village	Rural, chief system, traditional, collectivistic and egalitarian	Very low	Children of a highly insular subsistence living village with a population of approximately 1000
Brazil 1	Rio De Janeiro	Private day-care	Urban	Middle/high	Upper middle class and urban rich families
Brazil 2	Rio De Janeiro	Volunteer day-care	Urban	Low	Children educated in crime infested urban and working class slum or Favela
Brazil 3	Recife	Streets	Urban	Very low	Unschooled and unsupervised children with broken, extended families surviving collectively on the streets

& Vaughn, 2008). Table 1 summarizes each cultural site relative to general environment, socio-economic status, and population highlight.

2. Method

2.1. Overview

We used identical props and procedure to test groups of three- and five-year-old preschoolers of seven different cultures defining seven contrasted developmental macroniches along rich–poor and urban–rural dimensions (two sites in the United States, China, Vanuatu, and three sites in Brazil; see descriptions below). Each child was tested in five successive experimental conditions, all based on the same basic script of two puppets finding an object and fighting over its possession. For each condition, the character and situation of the two puppets within the basic script was changed to probe the various ownership principles. Following each story, the child was asked to decide which of the two puppets owns and should have the object of contention. In each experimental condition, we assessed children's responses as well as the level of their confidence in this ownership attribution by looking at the level of consistency of their responses to two follow-up questions: "Who should have it? Could you give it to the doll?" Each condition was tested twice in a row, once with an object of possession that is whole and indivisible, then again with an object demonstrated to the child as being easily divisible in two identical and separable parts. This last condition gave children the possibility to resolve the conflict between the two dolls by giving each an equal part of the contentious object of possession.

2.2. Participants

A total of 176 children were tested and included in the final sample (90 females) of seven cultures (two sites in the US, one site in China and Vanuatu, three sites in Brazil,). The children were divided into two age groups: 84 three-year olds (ranging from 34–50 months, M ± SD = 43 ± 4.2) and 92 five-year olds (ranging from 58–74 months, M ± SD = 63 ± 4.1). Table 2 below presents the breakdown of participants by culture, age, and gender.

2.3. Material and design

Throughout testing, the child sat across a table from a trained adult female Experimenter who was unfamiliar to the child, except in Vanuatu where children were tested by a male adult of their small community who was unrelated but known to the child and the only person in the village fluent in English as well as French. At all locations, the Experimenter was a native speaker in the child's language. Children were tested in their native language in five successive conditions. In each condition, the Experimenter presented the child with a story, each time involving two physically identical three-inch tall miniature dolls (e.g., playmobil or small hard plastic animals), each called by an unfamiliar name of the same length to avoid memory and preference bias; names were well contrasted by the last syllable of their name (e.g., Rooka and Rookee; Coolee and Coola, etc., see below). Across cultures, the dolls' names were clearly distinct in the local language, and children were sysematically assessed for their comprehension and labeling of the protagonists in each script (see Section 2.7).

In each of the five conditions, the story involving the dolls and the follow up three ownership questions were repeated twice: first with an object of contention that was intact (indivisible) and then with a similar object that was splitable in two equal halves held together by a piece of Velcro. In the latter situation, and before the story involving the two dolls was told to the child, the experimenter demonstrated twice in front of the child the divisibility of the object into identical halves, each time putting the two parts back together via the Velcro attachment without any comment, letting the child do the same if enticed to imitate.

For each condition, different pairs of identical dolls were used to maintain the child's interest, and to demarcate the successive stories and provide some novelty. Pairs of dolls were randomly assigned to each condition in the intact and splitable object situations. The object of contention consisted of small one-inch hard plastic, shiny and colorful toys. Indivisible objects included a small bicycle, a small plastic ice cream cone, or a solid colorful plastic block. Splitable objects were made of two identical pieces that could be "halved" such as two matching cubes or two plastic pizza slices. Different sets of objects were used across research sites, depending on availability. At each site, there was a total of five sets of two splitable and indivisible objects, each pair assigned to a particular condition. These objects were engaging and easily identifyable as valid props standing for real objects for children of all cultures, even in Vanuatu where manufactured toys are rare. Ethnographies show that pretend play with makeshift objects appear to be prevalent and a common way of playing in all cultures, even in the absence of manufactured toys (Kamei, 2005).

Table 2
Distribution of children tested by age, gender, and cultural site (N = 176).

	U.S. mid-high SES (N = 38)		U.S. low SES (N = 21)		China–Shanghai (N = 28)		Vanuatu–Banks (N = 24)		Brazil 1 (mid-high) SES (N = 24)		Brazil 2 (street, poor) (N = 19)		Brazil 3 (slum, poor) (N = 22)	
	3 yrs	5 yrs	3 yrs	5 yrs	3 yrs	5 yrs	3 yrs	5 yrs	3 yrs	5 yrs	3 yrs	5 yrs	3 yrs	5 yrs
Female	11	8	7	6	8	7	5	5	3	6	6	6	4	8
Male	10	9	4	4	6	7	5	9	6	9	4	3	5	5
N	21	17	11	10	14	14	10	14	9	15	10	9	9	13

Fig. 1. Five-year-old being tested on the island of Motalava, Vanuatu.

Except in Vanuatu (see Section 2.7), all testing sessions were videotaped using a small Canon digital camera for later analysis and reliability assessment. The camera rested on a tripod three to five meters away and provided an overhead side view of child and experimenter, who faced each other at a table across a distance of one to two meters (see Fig. 1).

2.4. Scripts and procedure

In five different conditions (with intact, then splitable objects of contention), the experimenter presented and enacted with small props an analogous story (basic script) of two dolls who were friends that decided to take a walk together and ended up fighting and arguing over an object of possession they found together at the same time or in succession, claiming in chorus: "This is mine!... No this is mine!" over the object until they were separated, placed one foot apart by the Experimenter with the object of contention placed exactly inbetween. The child was then asked three successive questions, always in the same order, that served as our primary dependent measures: (1) "Whose object is it?" (2) "Who should have it?" and (3) "Could you give it to the doll?". The child could choose and designate one puppet, or alternatively none or both.

For the analysis, we considered which doll(s) the child chose in response to each of the three questions and how consistent children were in their response to these questions. Based on their relative consistency across the three questions, we calculated for each child a confidence attribution score (see below).

Across the five experimental conditions, details of the basic script varied systematically in relation to the various background stories of the characters and how the conflict between the two puppets ensued:

(1) *Creation condition:* Before the occurrence of the conflict, and after being introduced to the two puppets by name and told that they were friends and playmates, the child was told by the experimenter that one of the puppet (either "Colee" or "Coola") painstakingly manufactured and created the toy they will eventually find together and that the other did not. As with all the stories, the same emphasis was placed on both dolls to avoid bias (see Appendix A for exact script). For later analysis, we reasoned that the target doll who should normatively own the object is the creator protagonist.

(2) *First contact condition:* After being introduced to a new pair of befriended dolls named either "Folee" or "Fola", the Experimeter told the child that they were going to take a walk together. Walking a distance from each other, one of the dolls suddenly saw an object from afar; the other doll stood closer but did not see it from its vantage point on the other side of an opaque barrier. Following the script, the puppet who can see the object announces with joy: "I see it!, I see it!". At this point, the other puppet goes around the opaque barrier and grabs the object first as the other doll is still rushing toward it, both screaming: "this is mine!" and fighting over the object. The two dolls were then separated by the Experimenter who then questioned the child regarding ownership. In other words, one puppet saw the object first and the other physically grabbed it first, thus testing children's sensitivity to first visual versus physical (tactile) possession in their determination of ownership. For later analysis, we reasoned that the target doll who grabbed the object first should normatively own it, based on our hypothesis (i.e., primacy of first contact principle). We thus considered first physical contact as the norm.

(3) *Familiarity condition:* The child was told by the Experimenter that one doll (either "Doolee" or "Doola") lived all its life near the object sitting close to its house and was able to see it every morning from its window as it wakes up. The other doll did not. Once again, equal attention, sentences, and words were used to describe the context of each puppet, controlling for potentially unbalanced focus by the Experimenter. In short, in this condition what varied was the initial familiarity of the object by one of doll prior to the walk, the simultaneous discovery of the object, and the fight over it. For later analysis, we reasoned that the target puppet which was familiar with the object should normatively own it.

(4) *Neutral (control) condition:* The dolls were introduced as friends ("Noolee" and "Noola") who took a walk together until they found simultaneously the object of contention and ended up fighting over its possession. No other information was provided in the story. For later analysis, we arbitrarily reasoned that the target doll which should normatively own it is the one sitting to the left of the child.

(5) *Rich–poor equity condition:* Before the occurrence of the conflict, and after being introduced to the two dolls by name and being told that they were friends and playmates, the child was told by the Experimenter that one of the dolls (either "Rookee" or "Rooka") was rich and had a lot of toys. The other had none. The rich doll was presented to the child surrounded by a collection of five small objects said to be toys belonging to it. The poor doll sat on the table with nothing surrounding it. The dolls then walked together, discovering the object at the same

time and fighting over it before being separated by the experimenter. What varied was the initial rich or poor character of the dolls. For later analysis, we reasoned that the target doll who should normatively own the object is the poor protagonist.

Once again, in all conditions, the Experimenter was careful to devote equal attention and phrasing to describe the context of each puppet, controlling for unbalanced focus and potential biases.

Creation, First Contact, and *Familiarity* conditions were always presented first in a counterbalanced order across the two age groups in each culture. The *Neutral control* condition always preceded the *Rich-Poor* condition that was presented last to avoid contamination, as it was thought to be more emotionally loaded.

In general, the tested ownership principles rested on different cues or rationales proposed to children in their determination of ownership. These cues were multiple (creation, familiarity and first contact conditions), circumstantial (equity condition), or absent (neutral condition). Each called for particular kinds of ownership abstraction.

2.5. False belief "Theory of Mind" test

To assess the extent to which children's development of ownership reasoning relates to other well-known universal aspects of social-cognitive development, the session ended with each child tested in a first order false belief theory of mind task (Wellman, Cross, & Watson, 2001). The rationale for this additional test was to correlate ownership reasoning with a robust index of socio-cognitive development documented to emerge across cultures between three and five years (Callaghan et al., 2005). This final test involved the experimenter and another unfamiliar adult person. In this test, the child and the other adult witnessed the hiding of a ball under one of two cups with distinct colors. The adult person then excused herself, saying that she will be right back before 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 then asked the child: "when she returns, where do you think she is going to look for the ball?" After the child guessed, the other adult returned and looked for the ball where she last saw it being hidden. The child passed the test if he (or she) guessed right, suspending his (or her) own knowledge and attributing a false belief to the person they tricked.

2.6. Coding and analysis

In each condition, children's ownership attributions for the three questions were coded relative to one target doll protagonist (here called the "target" protagonist, or the one aligned with the story rationale): the creator in the *Creation* condition, the one that grabbed the object first in the *First Contact* condition, the one that lived by the object in the *Familiarity* condition, the puppet sitting on the left of the child in the *Neutral* condition (arbitrary choice), and the poor puppet in the *Rich-Poor Equity* condition.

Children's responses to the first question ("whose is it?") were analyzed independently. We considered this direct index of ownership attribution.

Based on the remaining two questions ("who should have it" and "could you give it"), we further calculated a consistency of attribution score which ranged from 0 to 2 points. Children were categorized as completely inconsistent if for both questions they attributed the object to the non-target protagonist (score of 0). Children were partially consistent if they attributed ownership to the target protagonist for only one of the questions (score of 1). Finally, completely consistent children attributed ownership to the target protagonist for both questions (score of 2).

We also analyzed the frequency of children splitting the object in the splitable object situations. In our analyses, all of these variables were examined as a function of age, culture, and condition. Finally, we assessed the correlation between the passing of the theory of mind false belief test performed at the end of the testing session and all of the above dependent measures.

2.7. Precautions and reliability

The video record of 20% of randomly chosen children for each age and culture was re-coded for reliability by a second independent coder. Both coders were unaware of the specific hypotheses. Collapsed across culture, inter-rater reliability agreement for all measures, including the false belief theory of mind test, was high (overall *kappa* = .972; k = .980, .953, .988, .938, and .873 for the creation, first contact, familiarity, equity, and neutral conditions, respectively).

The Experimenter was a native speaker of the local language where children were tested and was also fluent either in English or French for training and back translation of the procedure and protocol. The basic procedure and the different scripts corresponding to each condition were translated into the local language and back translated in English or French (Vanuatu) under the close supervision of the first author who trained local assistants for testing. Testing sessions at all locations but Vanuatu were videotaped and systematically checked during coding for any language, labeling, or experimental errors. Note that in all instances, Experimenters were closely supervised by the first author who was present for most testing, in particular all testing of the children in Vanuatu and at the three sites in Brazil. In Vanuatu, because of a camera malfunction, in lieu of video re-coding for reliability, for each question, the first author systematically entered the child's response on the coding sheet and then confirmed this entry with the Experimenter's report of the child's answer. From that sample and on this stringent basis, all data included had 100% reliability.

In each condition, after the preliminary story was told, the child's comprehension of the story was systematically probed by the Experimenter who asked the questions about the two characters (e.g., "Who created the object? Who did not? Who saw it first? Who has already a lot of

objects", etc.) and asked children to respond to these prompts using the distinct nicknames of the dolls. The session proceeded only when children were unambiguous in their answers to the Experimenter's prompts, confirming their comprehension of the distinct character and actions of the dolls in each story. Testing was prematurely ended for seven children who did not correctly answer the prompts, representing an overall attrition rate of 3.8% (four three-year-olds), including two children in the US and one in each of the other five sites).

3. Results

Data were analyzed based (1) on children's answers to the first question ("*whose object is it?*"), and the consistency of attribution score described previously. We also considered (2) the frequency of splitting the object in the "splitable object" situation. In the analyses that follow, we examined each of these dependent measures as a function of age, culture, and condition. Results of the false belief theory of mind test (pass or fail) for the children at both ages were also considered (3) as being correlated with the ownership attribution and consistency of attribution measures.

3.1. First ownership attribution ("Whose object is it?") and consistency score

In relation to the first intact object situation, we analyzed the proportion of children who in their attribution of ownership followed the principle emphasized by the story (creation, first contact, familiarity, or inequity), using the left puppet in the neutral control condition (see Section 2). We also considered whether these initial ownership attributions were consistent with children's responses to the remaining questions ("Who should have it?" and "Could you give it to the doll?", see description of the consistency of attribution score in Section 2).

Ownership attribution was assessed in a series of hierarchical logistic regressions. Hierarchical (multilevel) logistic models are appropriate for research designs in which non-continuous data are organized in a nested fashion (e.g., age groups within cultures). These models adjust for the possibility that individual participants may share characteristics (not measured directly in the study, such as SES or family experience) that would in turn make it unlikely for their responses or behaviors to be independent (Gelman & Hill, 2006; Jaeger, 2008). Age was included as a fixed effect, culture was treated as a random effect, and models included random intercepts and random slopes. Analyses were run using the R-statistical platform using the generalized linear mixed model package. Per our hypotheses, competing models were not tested, but best fit statistics are reported using the logliklihood (-2LL) ratio chi-square statistic comparing each model to its releveant null model. Where appropriate as follow-ups to significant interactions, we ran two-tailed Fisher's exact tests to compare three- and five-year-olds within each culture, as well as two-tail binomial tests with Hochberg corrections to compare each sample to chance. All reported binomial tests include this adjustment for multiple comparisons, which controls for false discovery rate rather than the overall alpha level (Benjamini & Hochberg, 1995; Huang & Hsu, 2007).

Results yielded a significant three-way interaction of condition, culture, and age for ownership attribution ($z = 2.399$, $p = .017$, $N = 176$; model fit: -2LL chi-square = 116.12, df = 17, $p < .01$). Follow-up analyses assessed whether children's ownership attribution varied across conditions, independent of age and culture. Regarding ownership attribution, results yielded a significant effect of condition ($z = 3.62$, $p < .001$, $N = 176$; model fit: -2LL chi-square = 81.14, df = 4, $p < .001$). Children tended to attribute ownership to the protagonist aligned with the story rationale significantly more often in the *Creation* (83.6%) and *Familiarity* (75.8%) conditions, and to a lesser extent the *Equity* condition (66.0%). In contrast, children were less cohesive in their ownership attribution in the *First Contact* (47.6%) and *Neutral* (53.4%) conditions. These findings suggest that across age and culture, creation and familiarity may be more privileged criteria in determining ownership than other rationales such as first contact, in which the principle of ownership may be more ambiguous.

In a series of further analyses we examined the interaction of age and culture for each Condition independently. Fig. 2 above presents the graphic representations of the percent of children whose ownership attribution was aligned with the story rationale, as a function of age and culture. We describe the results for each condition separately.

For the *Creation condition*, across cultures, five but not three-year-olds are uniform in significantly attributing ownership of the object of contention to the puppet that created it. Hierarchical logistic regression yielded a significant interaction of age and culture, $z = 2.86$, $p = .004$, $N = 175$ (model fit: -2LL chi-square = 29.18, df = 13, $p = .006$). The majority of three-year-olds across culture tended to be at chance, with the exception of children from USA 1 (middle-class; 85.7%) and China (85.0%) who were already significantly above chance in attributing ownership to the creator (binomial tests: $p < .001$ and $p = .036$, respectively). Across cultures, five-year-olds tended to be either significantly above chance in chosing the creator, including Brazil 1 (100%), USA 1 (94.1%), China (92.9%) and USA 2 (90.0%; binomial tests: $p < .001$, <.001, .007, and .049, respectively) or marginally above chance in choosing the creator, including Brazil 2 (83.3%), Brazil 3 (88.9%), and Vanuatu (78.6) (binomial tests: $p = .068$, .068, and .088, respectively). Developmentally, this tendency for more five-year-olds to attribute ownership to the creator than three-year-olds was significant for Brazil 1 (Fisher's exact tests: $p = .003$), or marginal for Brazil 2 and 3 ($p = .080$, and .091, respectively).

Analysis of the correlation between children's ownership attribution (the first question) and their consistency regarding this attribution (e.g., responses to the other two questions) yielded highly significant results ($rs_{174} = .682$, $p < .001$). This indicates that regardless of age and culture, attribution to the creator puppet is associated with consistency across the three questions, with 84.4% of all children attributing ownership to the same protagonist across all questions.

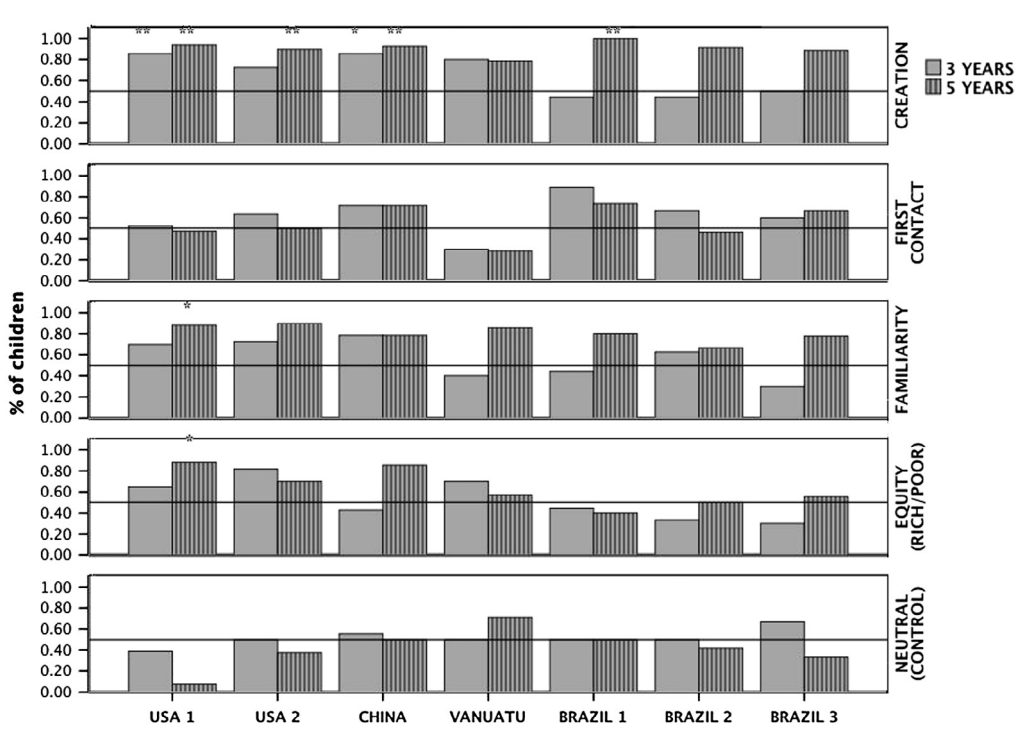

Fig. 2. Percent of children who attribute ownership to the protagonist considered aligned with the story rationale as a function of age, condition, and culture. Horizontal line represents chance. Asterisks denote significant departures from chance based on two-tail binomial tests with Hochberg corrections for multiple comparisons: $^{*}p < .05$, $^{**}p < .01$.

In the *First Contact condition*, hierarchical logistic regression yielded no significant predictors of age or culture regarding the ownership attribution question (first question). Across age and culture, children tended to be at chance. However, across ages and cultures, ownership attribution and consistent attribution were significantly correlated, $rs_{174} = .654$, $p < .01$. Children who attributed ownership to the doll who saw it first tended to be consistent across the three questions, (70.4% of children). Inversely, 76.9% of children attributing ownership to the puppet that grabbed it first did not show such consistency across the three questions. Results thus indicate that attribution to the protagonist who saw it first was associated with signs of greater confidence or decisiveness.

In the *Familiarity condition*, hierarchical logistic regression yielded a significant interaction of age and culture ($z = 2.930$, $p = .003$, N = 173; model fit: -2LL chi-square = 22.87, df = 13, $p = .043$) for the first ownership attribution question. Across all cultures, three-year-olds tended to be at chance in their ownership attribution. Among five-year-olds we observed either a significant trend (USA 1: 87.5%) or a marginal trend (USA 2: 90.0% and Vanuatu: 84.6%) to attribute ownership to the protagonist most familiar with the object (binomial tests: $p = .028$, .091, and .098, respectively). Developmentally, this tendency for more five-year-olds than three-year-olds to attribute ownership to the familiar protagonist was significant for Vanuatu (Fisher's exact test: $p = .028$), marginal for Brazil 1, and Brazil 2 (Fisher's exact tests: $p = .091$ and .051, respectively).

We found no significant associations between ownership attribution and consistency of attribution across questions, $rs_{174} = .092$, $p = .230$. Although a majority of children (70.7% collapsed across age and culture) attributed ownership to the familiar protagonist, these children did not necessarily remain consistent in their attribution for the remaining two questions. The consistency across the three questions in the familiarity condition appears to be low.

In the *Rich/Poor Equity Condition*, results yielded a marginal effect of culture only ($z = 1.67$, $p = .094$, $N = 174$; model fit: -2LL chi-square = 26.49, df = 13, $p = .015$). In follow-up analyses of this effect, only five year olds in USA 1 (85.7%) and five year olds in China (85.7%) tend to be either significantly or maginally above chance in attributing ownership to the poor puppet ($p = .028$ and .091 respectively). It thus appears that only these children show signs of a sensitivity toward the rich/poor distinction. Regarding development, only Chinese children show a significant age effect and are more likely to attribute ownership to the poor protagonist between three (42.9%) and five (85.7%) years (Fisher's exact test: $p = .023$).

Ownership attribution and relative consistency across questions were significantly correlated ($rs_{174} = .806$, $p < .001$). Across age and culture, when the child attributes ownership to the poor puppet, they do so consistently across the three questions (90.4%), but not when they attribute it to the rich puppet, as 80.0% of those children demonstrate inconsistency across the three questions. In short, overall, when children attributed ownership to the poor puppet, they tended to do so with more confidence and

decisiveness, showing less consistency when attributing ownership to the rich puppet.

In the *Neutral (Control) condition*, and as would be expected, analyses yielded no significant main effects or interactions of culture and age. The proportion of all children across cultures and at both ages are at chance in their first question ownership attribution (see Fig. 2). As would be expected in this control condition where no obvious ownership rationale was given to the child, the correlation between ownership attribution and consistency of attribution across questions yielded no significant association ($rs_{176} = -.059$, $p = .495$). Children tended to be inconsistentt and at chance in their responses.

3.2. Frequency of splitting the object

For each condition, in the situation where the object was splitable, we noted the number of children who spontaneously split the object to distribute each half to either doll. This binary variable was used as the dependent measure in a hierarchical logistic regression factoring age, culture, and condition (model fit: -2LL chi-square = 136.02, $df = 17$, $p < .001$). Analysis yielded no interactions, but a significant main effect of condition ($z = 8.55$, $p < .001$, $N = 176$) and culture ($z = 4.005$, $p < .001$, $N = 176$), with no significant age effect. Children split the object significantly more often in the neutral condition (32%) compared to all the other conditions (Creation: 19.1%; First Contact: 20.6%; Familiarity: 17.5%; Equity: 21.8%; $p < .05$ for all contrasts between the Neutral condition and each of the other conditions based on McNemar–Bowker tests). It appears that in the absence of any explicit rationale to attribute ownership, children as a whole tend to be more inclined to split the object when divisible.

As seen in Fig. 3, the Chinese children drive the significant main effect of culture, 42% of them splitting the object at least once. Collapsed across conditions and compared to all the other cultures, Chinese children demonstrate either a significantly greater tendency toward splitting compared to all the other cultures (all $p < .05$ based on Fisher's exact tests comparing China to each other culture). Ni-Vanuatu children and Brazil 3 street children showed a significant absence of object splitting across conditions (3.4% and 5.4% respectively). These two groups of children were significantly less inclined to split relative to all other cultures (all $p < .01$ based on binomial tests).

3.3. False belief theory of mind test

Overall, across culture a significantly greater proportion of five-year-olds (72.7%) passed the false belief test compared to three-year-olds (24.7%). These results did not vary across samples and uphold the universal (transcultural) development of false belief understanding between three- and five-years. This development does indeed prevail across cultures (Callaghan et al., 2005).

We examined whether children's attribution of ownership in each of the five conditions correlated with this

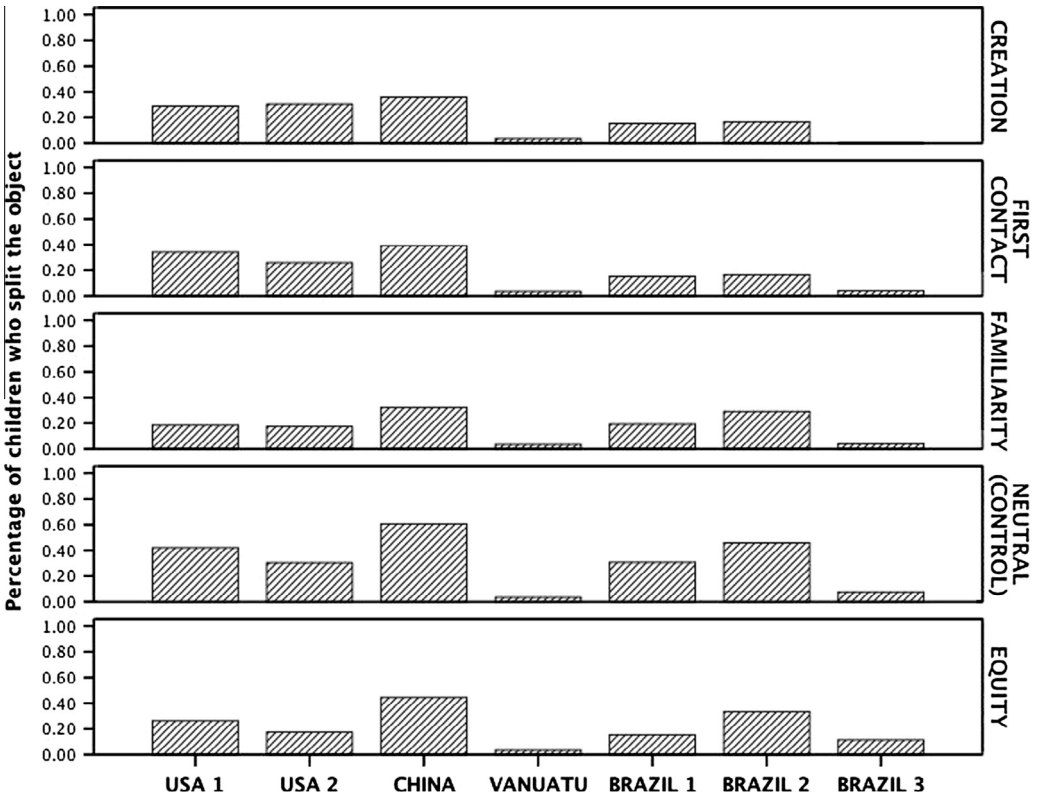

Fig. 3. Percentage of children who spontaneously split the object, across the seven cultures and five conditions when the object was splitable.

robust index of social-cognitive development. For each condition separately and collapsed across cultures, we correlated children's performance on the false belief task (pass or fail) with their ownership attribution (e.g., attributing ownership to the target protagonist or not) for each age group independently. Results yielded no significant associations for any of the conditions for either age group ($p > .05$ for all *rs* tests). Spearman correlations also yielded no link between false belief performance and children's propensity to split the object when it was possible. Contra predictions, these findings suggest that passing of the false belief task is not associated with stronger intuitions of ownership attribution.

4. Discussion

Recent surveys indicate that 80% of the world's population lives on a family income of less than $6000 a year, with half of the world's population living on an average of two dollars a day. Of the global worldwide income distribution, 90% of people from rich industrial European, North American and Asian (OCDE) countries are at the top 20%. In the meantime, half of the sub-Saharan African population lies at the bottom 20% of the wealth distribution (Kent & Haub, 2005; United Nations Developmental Programme (UNDP), 2006).

In this global context, the circumstantial inheritance of children is stunningly varied. In straightforward and measurable terms, economical disparities of children continue to be large, growing even larger. In poor circumstances, one in five children do not finish primary school education and only half partake to secondary education programs that typically entail costly fees and much sacrifice to poor families (UNDP, 2006). Such disparity continues to be the global situation of children in the world, yet what we know about their development is primarily informed by the testing of a selected sample of middle class Western children of European descent or "WEIRD" populations (Henrich, Ensimger, et al., 2010; Henrich, Heine, et al., 2010) from which universal features of development are induced as norms (Rozin, 2006).

This dominant perspective tends to neglect questions regarding the relative depth of impact circumstantial inheritance of children might have in the shaping of their values and the development of their social sentiments. Here we asked specifically whether highly variable developmental contexts might shape and eventually predict the way young children, in the preschool years, develop particular intuitions about ownership of material possessions and the sharing of resources. In measurable terms, economical disparity determines issues regarding health and hygiene, life expectancy, education, but also violence, gender roles, and political participation, i.e., the relative "social toxicity" of the child's environment. An urgent, yet neglected question for cognitive psychologists is what role such varied circumstances play in shaping children's intuitions and expectations about their environment, in particular how resources are and should be distributed.

It is with this larger issue in mind that we compared three and five-year-olds' reasoning about ownership, from rich and poor regions of the world spanning three continents and corresponding to socio-cultural environments that we presumed could put various emphasis on individual possession, owning, and sharing.

In the context of our possession scripts, we found that the first contact principle did not stick out as basic across cultures and age, contrary to what we expected. Rather, results suggest that it was harder for children to pick up and decide whether the protagonist who saw or alternatively grabbed the object first should own the object. Across cultures, in this condition children's ownership attribution appears to be at chance with no mark of increase of confidence with age. Contrary to what we hypothesized, the results in the first contact condition are most closely related to the chance results found in the *neutral/control condition* where the script provided no rational cues to the child. Children may have perceived first possession in both protagonists (visual and tactile first possessions), and therefore had difficulty deciding which one was most relevant. This possibility is most likely in view of existing research demonstrating the importance of the first possession principle as primary heuristic in ownership attribution already by two- to three-years of age (Friedman & Neary, 2008). Different results might have been obtained with a script providing better contrast between seeing as opposed to grabbing the object first, as well as counterbalancing the order of the comprehension questions (who saw it first and who grabbed it first prompts that were always in the same order in the present study, see Appendix A). The fact that a comparable proportion of children across cultures attributed the object to either puppet might suggest that the visual or tactile precedence was used interchangeably as rationale for ownership attribution. However, we found a significantly greater consistency across the three questions when the child attributed ownership to the puppet that saw rather than grabbed the object first. We found less confidence associated with the decision to attribute ownership to the puppet that grabbed the object first. The reasons are difficult to interpret.

Of all the tested principles of early ownership attribution, creation appears to be the most basic and universal. Across cultures, by five years children tended to be above chance in attributing ownership to the puppet that labored to create the contentious object. Children's ownership attribution in this condition also tended to be highly consistent across the three ownership questions following each script. In the context of our study, the creation principle sticks out as generalizing to children of all cultures, particularly by five years of age, with the exception of three-year-old middle class North American and Chinese children who already show a significant trend (see Fig. 2). Note that in the *Creation* condition, creating the object presumes manipulation, therefore also first possession. It also implies greater familiarity with the object. It is difficult to untangle each and therefore this confound could have a cumulative cue effect accounting for children's robust ownership intuition based on this principle across cultures.

We confirm that between three- and five-years of age there is a synchrony across cultures in the onset of mental

state reasoning measured by third party false belief understanding (Callaghan et al., 2005). However, and contrary to what was predicted, our results do not demonstrate that such development correlates with young children's ownership attribution. The lack of clear evidence between passing the false belief task and ownership attribution in any of the conditions corroborate previous cross-cultural findings with same-age children regarding fairness in resource distribution (Rochat et al., 2009). This lack of correlation suggests that ownership reasoning, like children's sense of fairness, would develop in relative independence of the ability to attribute mental states to others. This observation indicates that the development of ownership reasoning in children is not either derivative or strictly parallel to the known general and universal (transcultural) development of theory of mind. If not linked to theory of mind, further research is needed to probe what could be the general socio-cognitive precursors of ownership reasoning in children.

In relation to the rich/poor equity condition, only middle class North American and Chinese five-year-olds tended to be above chance in attributing ownership to the poor puppet (see Fig. 2). This is arguably the most interesting cross-cultural variation we found, contra our predictions. Overall, however, it is interesting to note that attribution to the poor protagonist tended to be associated with more confidence and reliability across the three ownership questions considering all tested children with age and culture collapsed. Independently of culture, those children who chose to attribute ownership to the poor puppet did so with significantly more confidence, although as a whole, children were not above chance in their decision. These results might suggest that the values of equity are differentially promoted and enacted by children of these cultures. We predicted similar trends in Ni-Vanuatu children based on their egalitarian, small scale and traditional rural culture, but also based as previous research (Rochat et al., 2009). The lack of confirmatory findings demonstrates that predictions based on gross cultural distinctions are difficult and rarely straightforward. The nature and meanings of cultural factors can only be established a posteriori, always in need of further refinement and measuring tasks. But those factors exist, the question is how to capture and operationalize them (Keller, 2007; Omi, 2012; Schwartz, 2013). In general, our data point to some cultural clustering around nationality, in particular between the two cohorts in the US and the three cohorts in Brazil, all tending to show comparable developmental data. What underlies such similarities is elusive. It might include language, cultural ways of adult behavior toward children (Lancy, 2008) as well as many other factors that appear to transcend economical disparities among these children.

The marginal tendency of five-year-old Chinese children to abide to the equity principle by attributing ownership of the object to the poor protagonist is upheld by the fact that they are also the only group among all the tested children who show some systematic tendency in splitting the object of contention in two equal halves whenever the object was splitable. Unlike the other children, Chinese preschoolers tended to take advantage of the object affordances in this equitable solution, overriding the rationale provided in the script to favor one of the two protagonists. They demonstrated a uniquely strong egalitarian bend. In general, however, children of all cultures tended to split the object significantly more in the *Neutral/control* condition compared to all the other, suggesting that rationales provided by the scripts did override such an egalitarian propensity. In other words, in the absence of any explicit rationale to attribute ownership, children as a whole tend to split the object more. The cardinal cross-cultural difference is that in our study, this egalitarian propensity was significantly more accentuated in Chinese children. What is most unexpected, even contradictory in relation to our original intuitions, is the fact that Ni-Vanuatu children, along with the street children of Recife, were those who showed a significantly lesser trend in splitting the object in two equal halves. In other words, splitting was the least common in children of the two poorest groups, cohorts that presumably experience enhanced group intimacy in their rural, small-scale village life (Vanuatu) or peer solidarity while surviving on the streets (Recife) (see Rosa, Borba, & Ebrahim, 1992). It is doubtful that these children did not detect that the object could be split. The divisibility of the object into two identical halves was modeled before all scripts, each time the experimenter detaching then putting the two parts back together via the Velcro attachment (see Section 2). We interpret these findings as expressions of different normative "stem" values promoted in these cultures, particularly in Chinese and Ni-Vanuatu culture. We remain more agnostic in relation to the street children of Recife. In the Chinese communist preschool where we tested children, collective learning and sharing is explicitly taught to the children who spend most of their school days in collaborative tasks including learning and even the cooking of food. Sharing and splitting things is a premium in the preschool culture from the third year. In contrast, and based on our own observations during testing of all of the Ni-Vanuatu children, we attribute their striking absence of spontaneous splitting of the object of contention to the fact that these children would not dare transforming or breaking an object provided to them by an adult, here a trained villager. In the Ni-Vanuatu, Melanesian culture, the value of respect and obedience toward the adult is an utmost premium children behaving accordingly from the outset. This interpretation is corroborated by our informants at this site supporting our idea that Ni-Vanuatu children where inhibited in the splitting of the object avoiding the transformation and potential deterioration of an object given by an adult authority, particularly in a public context with another adult observing what the child might do. Relation to adult authority is a serious issue in cross-cultural studies of children and it would always be advisable to study children as they interact spontaneously on their own or among peers. More research should pursue such effort in future investigations of possession in children across cultures.

In conclusion, despite a strong universal expression of the creation principle (as might have been predicted by John Locke), our data reveal some interactions between age, condition, and culture. They point to the importance

of considering the circumstantial inheritances of children, including material inequality and the larger social organization surrounding them. From their socio-cultural circumstances, children inherit particular normative values that calibrate the development of their social reasoning. Our data show specifically that these circumstances can potentially shape the content of children's early ownership reasoning and their understanding of personal possession. It is also reasonable to think that such circumstances could shape how children eventually integrate consensual views and sentiments about private property. Views and sentiments about property do indeed vary in nontrivial ways across ages and cultures, as multiple ethnographic, cultural anthropological and other comparative law studies show. The data presented here remind us how much culture calibrates the content of children's early social and cognitive development. It reminds us of the importance of taking context seriously, particularly when considering child development and the origin of ownership understanding.

Appendix A. Condition scripts

"I'm going to tell you stories. These stories are about two dolls such as these." *[Show them a pair of identical dolls and let the child get involved manipulating them].* "Are you ready to play with me? Yes? So here is the game: I want you to listen carefully to the story and then I will ask you a few questions, ok? Do you understand?" *[Once the child says yes, and appears captivated and excited, the Experimenter proceeds.]*

A.1. Condition 1: Creation

"This is Coola, and this is Coolee. They are good friends. Which one is Coola? Which one is Coolee? Good. I want to tell you about Coolee. Coolee loves to build things. He built this toy. He spent all day painting it and building this toy and trying it out. But look at Coola. He doesn't build toys. He doesn't like to paint. He just likes to play with toys like this one. One day Coolee and Coola decide to go for a walk and see the toy that Coolee built. They both run toward the toy at the same time and grabbed it at the same time and they say "This is mine! This is mine! No this is mine! No this is mine!. . ..*[back and forth*] and they began to fight over the toy *[The experimenter mimics the scene with the dolls and the toy in-between.]*. Coolee built the toy and Coola did not build the toy. Who built the toy? Who did not?"

Once the story is told and the child identified correctly each of the protagonist dolls (Coola and Colee with their specific character in the story), the Experimenter places the two dolls down on the table with the object of contention in the middle, at equidistance (50 cm apart). Then the child is asked 3 questions carefully recorded on the coding sheet: Whose toy is it? Who should have it? Could you give the toy to the doll? (behavioral response).

The story is then repeated with a splitable object of contention. Before telling the exact same story again, the Experimenter demonstrates how the toy object can be separated in two halves via Velcro or Lego fitting attachment, then putting the two halves back together, letting the child do the same if enticed to imitate. Questions 1–3 are then asked and responses recorded. Note that this repetition is standard procedure in all the following conditions.

A.2. Condition 2: First contact

"This is Fooma, and this is Foomee. They are good friends. Which one is Fooma? Which one is Foomee? Good. Foomee and Fooma go for a walk and are walking together but they are far apart. There was a toy hiding behind a tree *[object prop standing for the tree]*. All of a sudden, from far away, Foomee could see the toy. He looked up and says 'I see a toy! I see a toy! Over there behind the tree!" Fooma heard Foomee. He did not see it but was closer to the tree so he got the toy first. He grabed it while Foomee was still rushing toward it. Foomee ran and they both grab the toy screaming back and forth 'This is mine! No this is mine! No this is mine!" and they began to fight over the toy. . .". *[The Experimenter mimics the scene with the dolls and the toy in-between, then states]*: "Foomee saw the toy first, but Fooma got there first and grab it first. Who saw it first? Who grabbed it first?" *Once the story is told and the child identified correctly each of the protagonist dolls (Foomee and Fooma) with their specific character in the story, the Experimenter asked the three questions: Whose toy is it? Who should have it? Could you give the toy to the doll?*

A.3. Condition 3: Familiarity

"This is Poolee and this is Poola. They are good friends. Which one is Poolee? Which one is Poola? Poolee lives close to this toy-object and can see it from his bed everyday when he wakes up. Every morning Poolee wakes up and looks at this object, and is very close to it. But Poola lives far from this object; he lives all the way down in another house, and cannot see it every day from his bed, it is not close to his house. One day Poolee and Poola go for a walk and found the toy and grabbed it at the same time screaming back and forth 'This is mine! No this is mine! No this is mine!' and they began to fight over the toy. . ." *[The Experimenter mimics the scene with the dolls and the toy in-between, then states]:* "Poolee lives very close to this object, but Poola lives far away and has never seen it. Who lives very close to the toy? Who lives far away?" *Once the story is told and the child identified correctly each of the protagonist dolls (Poolee and Poola) with their specific character in the story, the Experimenter asked the three questions: Whose toy is it? Who should have it? Could you give the toy to the doll?*

A.4. Condition 4: Neutral (control)

"This is Noomee and this is Nooma. They are good friends. Which one is Noomee? Which one is Nooma? One day Noomee and Nooma go for a walk and found the object and they both rushed to grab it at the same time and scream back and forth 'This is mine! No this is mine! No this is mine!' *[back and forth]* and they began to fight over the toy. . ." *[The Experimenter mimics the scene with the dolls and the toy in-between then states]*: "Noomee and Nooma saw and grabbed the toy at the same time." *Once the story is told and the child identifies correctly each of the*

protagonist dolls (Noomee and Nooma), the Experimenter asks the three questions.

A.5. Condition 5: Equity (rich/poor)

"This is Rooka and this is Rookee. They are good friends. Which one is Rooka? Which one is Rookee? Rooka is very rich, he has a lot of toys *[Experimenter places 5 small object described as toys next to Rooka].* He sleeps with plenty of toys all around him and plays all the time with many toys. Rookee is different. He doesn't have any toys so every day he just plays by himself in his house. Who has a lot of toys? Who has no toys? One day Rooka and Rookee go for a walk. In the middle of a field as they are walking side by side they see a toy at the same time and they run up and at the same time they grab it, screaming back and forth "this is mine! No this is mine! No this is mine!" and they began to fight over the toy…" *[The experimenter mimics the scene with the dolls and the toy in-between. Then states]*: "Rooka and Rookee saw and grabbed the toy at the same time." *[The Experimenter mimics the scene with the dolls and the toy in-between, then states]*: "Rooka has a lot of toys and Rookee does not have a lot of toys. Who has a lot of toys? Who does not?" *Once the story is told and the child identified correctly each of the protagonist dolls (Rookee and Rooka) with their specific character in the story, the Experimenter asked the three questions: Whose toy is it? Who should have it? Could you give the toy to the doll?*

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