

# Young Brazilian Children's Emotion Understanding: A Comparison within and across Cultures

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## Abstract

Research on children's Emotion Understanding (EU) has been dominated by middle-class samples from Western societies. We studied cultural and Socioeconomic Status (SES) variation in young children's EU in a high SES sample (n = 50) and a low SES sample (n = 50) of Brazilian preschoolers using the Test of Emotion Comprehension. We found that the high SES sample performed better at both the overall and component levels than the low SES sample on EU. The differences were especially substantial for the recognition of basic emotions, with the low SES children recognizing negative emotions better than positive and neutral emotions. In addition, we compared the two SES samples of Brazilian children to same-age samples from Norway, Italy and Peru. Between the Brazilian and the European samples and the Brazilian and other non-European samples, the variation in EU was observed to be more related to SES than to culture.

**Keywords:** child, culture, emotion understanding, socioeconomic

## 1. Introduction

The development of children's Emotion Understanding (EU) is likely to be affected by the cultural and socioeconomic context the child grows up in. Different cultures may promote or constrain aspects of children's EU through cultural norms and values. Chen (2009) argues that examining developmental patterns of socio-emotional functioning from the within-cultural perspective provides a foundation for cross-cultural comparisons. The goal of this study was to examine whether cross-cultural differences in young children's EU are due to differences in the cultural or SES status of the children. Prior to discussing the existing studies on EU in diverse cultures and EU variation according to SES, the various sequences of EU development will be highlighted.

### 1.1 Children's EU in a Component Framework

EU has been defined as the way we understand, predict and explain our own and others' emotions (Harris, 1989; Saarni, 1999). Models of the development of EU (Halberstadt, Denham, & Dunsmore, 2001; Pons, Harris, & de Rosnay, 2004; Saarni, 1999) describe several aspects of EU or abilities that are part of it, from being able to label emotions to identifying emotion-eliciting situations and understanding more complex sentiments such as ambivalence and moral emotions. Harris (1989) states that it is important to differentiate between the development of children's behavioral expression and conscious acknowledgement (or understanding) of emotions. This is because the child's experience of emotions happens at an earlier age than the conscious awareness of what they are feeling.

The development of EU is a part of the broader social-cognitive development in children and, specifically, of their language development because recognizing and labeling emotions is also a linguistic process. The EU concept is a composite of nine components (e.g., Pons, Harris, & de Rosnay, 2004), which has been operationalized by Pons and Harris (2000) into the Test of Emotion Comprehension (TEC).

The development of the EU components has been organized by Pons and colleagues in a three-period developmental framework of external, mentalistic and reflective periods of understanding. An overview of the association of components and developmental periods is shown in Table 1.

Table 1. Nine components of EU by age and skills

Level	Component	Skill
External period	Recognition (3-4 y. o.)	Recognize and name the basic emotions.
	External (3-4 y. o.)	Understand how external causes affect emotions in others.
	Reminder (3-6 y. o.)	Understand the effect of past information on emotions.
Mentalistic period	Desire (3-5 y. o.)	Understand the effect of desires on the emotional reactions of others.
	Belief (4-6 y. o.)	Understand the effect of beliefs (true or false) on the emotional reactions of others.
	Hiding (4-6 y. o.)	Understand the differences between the outwardly expressed emotion and the actual, inwardly experienced emotion.
Reflective period	Regulation (8 y. o.)	Understand the effectiveness of using cognitive strategies to maintain control over emotions.
	Morality (+/- 8 y. o.)	Understand that emotions are linked to both morally reprehensible actions and praiseworthy actions.
	Mixed (+/- 8 y. o.)	Understand that a person may experience multiple emotions in response to a single situation.

*Note.* The description is based on Pons et al. (2004).

The *external period* was conceived by Pons et al. (2004) as comprising children's ability to recognize and name emotions on the basis of expressive cues (Recognition), an understanding that their feelings are affected by external events or objects (External) and an understanding of the relationship between memory and emotion (Reminder). The *mentalistic period* is characterized by an ability to connect beliefs to emotions (Belief), distinguish between the expression and experience of emotion (Hiding) and understand that people's emotional reactions depend on their desires (Desire). In the *reflective period*, children acknowledge psychological strategies to maintain control over emotions (Regulation), understand that a person may experience multiple or even contradictory emotional responses to a situation (Mixed) and realize that emotions are linked to both morally reprehensible and praiseworthy actions (Morality).

### 1.2 Socioeconomic Differences in Children's EU

Lower SES is widely accepted to have a negative effect on the well-being and development of children (Letourneau, Duffett-Leger, Levac, Watson, & Young-Morris, 2013). In a recent meta-analysis, Letourneau et al. (2013) revealed very small to small but significant effects of SES on children's literacy and language, aggression and internalizing behaviors. A review of studies addressing the relationship between SES and socio-emotional development concluded that there is little evidence of the effect of SES on very young children's emotional competence. However, studies of children from early childhood to adolescence have indicated that there is more frequent maladaptive social-emotional functioning in low SES subjects than in high SES subjects (Bradley & Corwyn, 2002). Additionally, the majority of studies have been based on data provided by parents and teachers rather than by the subjects themselves, and socio-emotional competence has often been indicated by emotional problem scores on rating scales rather than by direct measures of EU.

Only a few studies have included SES as a possible predictor of individual differences in children's EU. Some studies find a positive relationship between SES and better EU (Cutting & Dunn, 1999; Dunn & Brown, 1994), and other studies report no effect of SES on preschoolers' EU (Karstad, Wichstrom, Reinfjell, Belsky, & Berg-Nielsen, 2015; Molina, Bulgarelli, Henning, & Aschersleben, 2014). The majority of this research is dominated by research on WEIRD middle-class samples, i.e., samples from Western, Educated, Industrialized, Rich, and Democratic societies, which according Henrich, Heine, and Norenzayan (2010), may not be representative populations from which to make generalizations. Thus, the translation and standardization of TEC

for different countries and cultures have shown that this measure can be used to achieve a multifaceted examination of cross-cultural variation. This study was designed to establish a wider basis for EU by assessing children's EU in two samples of Brazilian children with different SES.

### 1.3 Culture Variation in Children's EU

There have been few cross-cultural comparison studies investigating possible cultural differences in children's development of EU. A few studies have investigated EU in non-Western cultures. Avis and Harris (1991) found that Baka children from Cameroon aged 3-5 years showed similar developmental patterns in understanding the Belief component (beliefs affect emotional reaction) and the Desire component (emotional reactions depend on desires) as Western children. In addition, Vinden (1999) compared EU in four different cultures (one Western and three non-Western) in children aged 3-11 years and reported that an understanding of Desire precedes an understanding of Belief, although the rate of this development might be different. Children from Cameroon and Papua New Guinea were shown to develop an understanding of Belief later than Western children.

The cultural disparity in EU may be attributable to differences in emotion socialization (Eisenberg, Cumberland, & Spinrad, 1998). Halberstadt (1991) divides the mechanism of *emotion socialization* into three aspects—how parents show or don't show their emotions, how they teach or don't teach their child about emotions and how they react or don't react to the emotions of others. Brazilian studies that focus on emotion socialization are rare; however, in one recent study of 60 caretaker-child dyads, the researchers found that the caretaker valued the development of the smile as an important emotional expression and emphasized the importance of developing an emotion regulation strategy during the first three years of life (Mendes & Pessôa, 2013). Different emotion socialization practices have been associated with cultures valuing independence and individuation on the one hand and interdependence and group-membership on the other; these cultural values are often called individualism and collectivism, respectively. For example, Brazil, Thailand, Ghana, China and Peru are defined as collectivistic countries, and the United States, Italy, France, England, Germany and Norway are defined as individualistic countries (Hofstede, 1991).

A few studies have compared the EU in non-Western collectivistic cultures to that in Western individualistic cultures (Gardner, Harris, Ohmoto, & Hamazaki, 1988; Joshi & MacLean, 1994). For example, Wang (2008) performed a longitudinal study of children from age 3 to 4.5 and found that Euro-American preschoolers scored higher than Chinese-American preschoolers and that Euro-American children made more rapid progress in understanding External component (feelings are affected by external events or objects) than the Chinese-American children. This difference may be because Euro-American parents often explain the causes of different emotions with their children and encourage them to articulate their emotions, whereas Chinese parents prioritize psychological discipline and behavioral standards over discussing the causes of emotions (Wang & Fivush, 2005).

It is difficult to compare different studies due to methodological differences and the fact that only a few of the nine components of EU are usually included. However, using the TEC allows the EU development of children from different cultures to be compared, and recent studies show that there are some cultural differences when comparing EU at both the overall and component levels. To the best of our knowledge, only one study has compared a non-Western population with a Western population using the TEC. Tenenbaum, Visscher, Pons, and Harris (2004) compared children from a Quechua agro-pastoralist village in Peru with the British sample reported by Pons et al. (2004). They found that the development pattern was similar between the two groups of children, but the overall scores were significantly higher for British children.

In addition, some studies comparing EU using the TEC in Western countries have been reported. One example is the study of Albanese et al. (2006), which involved 4- to 10-year-old Italian children. The findings showed age-related increases in all nine components, but these did not conform fully to the model established by Pons et al. (2004). Specifically, the development of the Desire component (emotional reactions depend on desires) was indicated in the external period for Italian and in the mentalistic period for British children, whereas indications for the Reminder component (emotional reactions depend on memories) showed the inverse. Finally, in a recent study, Molina et al. (2014) found that Italian children had higher overall TEC scores than German children at ages 3 and 5 and that more Italian preschoolers than German preschoolers understood that expressed emotions may differ from internal emotions (Hiding).

Many of the cross-cultural studies have involved a nesting of SES on cultural factors. The problem is that SES may be a source of variation that is partly independent of culture, and therefore, the effects of SES and culture may be confounded.

### 1.4 The Present Study

The goal of this study was twofold. First, we examine to what extent variation in children's EU is related to socioeconomic factors by comparing Brazilian children aged 3-5 years with different SES backgrounds (high middle- to upper-class SES versus low middle-class to poverty SES). Previous studies of the effects of SES on cognitive development suggest an expectation that the low SES sample should show a lower EU score than the high SES sample.

Second, we compare the Brazilian children's EU to that of children of the same age from studies using the TEC in both Western and non-Western populations. Previous studies have been conducted using varying methods and have not shown results that can serve as a basis to predict the results of cultural comparisons. However, we expect that collectivistic low SES Brazilian children should be more similar to the collectivistic low SES Peruvian children than the individualistic Norwegian and Italian children.

## 2. Method

### 2.1 Participants

The participants were 100 children, with 50 in each SES group. In Brazil, educational contexts are clearly aligned with socioeconomic differences: children from the middle class and upward attend private pre-schools, and children from low-income families attend public pre-schools. Public pre-schools in Brazil are fully financed by state governments, whereas private pre-schools are financed by the parents (families), and the costs are tax deductible. The low SES group comprised 30 boys and 20 girls ( $M_{age} = 4$ ,  $SD = .57$ ), and the high SES group comprised 16 boys and 34 girls ( $M_{age} = 3.7$ ,  $SD = .55$ ). The high-SES group included a majority of biological mothers (92%), and 75.5% of the parents were married. Additionally, 56% of the parents had undergraduate degrees, and an additional 38% of the parents had completed high school. When we asked how well salaries covered the family's expenses, 74% answered very well, 26% answered well and none of the parents answered not well.

The samples from other studies of children's EU that were compared to the Brazilian sample were: 882 Norwegian children ( $M_{age} 4.4$ ) (Karstad, Kvello, Wichstrom, & Berg-Nielsen, 2014), 114 Italian children ( $M_{age} 4.8$ ) (Molina et al., 2014) and 18 Peruvian children ( $M_{age} 6$ ) (Tenenbaum et al., 2004).

Table 2 shows the parents' level of education for the Brazilian high-SES children, Norwegian children and Italian children. We did not have educational information from the low-SES Brazilian and the Peruvian parents.

Table 2. Parents' level of education (%) for the Brazilian high-SES children, Norwegian children and Italian children

	Primary schooling	Secondary schooling	Higher education
Brazil High SES	6%	14%	80%
Norway	7%	19%	74%
Italy	55%	33%	8%

*Note.* The classification is based on the Comparative Analysis of Social Mobility in Industrial Nations (CASMIN) classification (Braun & Müller, 1997).

### 2.2 Procedures

#### 2.2.1 Data Collection

The children were interviewed by two students in the graduate program in social psychology at the Federal University of Paraíba, Brazil. Parents from private and public pre-schools were asked for their children's participation via a consent form after permission was obtained from the leader in the pre-schools. Assent was also required from each participant.

The children were interviewed individually in a separate room. The TEC was adapted to a Brazilian context using a pilot testing procedure that resulted in two changes. First, the scene in the Recognition component, in which the protagonist was described as waiting for the bus, contained the following additional text: "and the bus is on time". This addition was made because the criterion emotion was "neutral", but because Brazilian buses are always delayed and passengers are therefore often angry, the right answer became "angry". Second, the

illustration of a fox in the scene for the Desire component was exchanged for a wolf, which is a more familiar animal for Brazilian children.

The stories were told with neutral intonation to avoid interviewer bias. The nine components were presented to the children in a fixed order that corresponded loosely to the presumed order of difficulty of the components. The interviews lasted on average 15 minutes per child. Breaks were provided if the child felt tired. Each participant received a small token of appreciation for their participation at the end of the interview.

A socio-demographic questionnaire was administered only to parents of children in private pre-schools (high SES) because the work hours of parents of children from low-income families restricted their ability to complete the questionnaires during preschool hours in the presence of a researcher.

### 2.2.2 Data Analysis

IBM SPSS Statistics 20 was used for the data analysis. We used a two-way ANOVA on total TEC score with SES and age as two-level independent variables and an independent t-test to compare the TEC score at total and component levels. Cohen's *d* was used to measure effect size (Cohen, 1998), and Pearson's correlation coefficients were used to test associations between the components. We used a two-proportion z-test to compare the percentage of correct answers between different countries at the TEC component level and to compare the Brazilian children's responses at the item level.

### 2.3 Instrument

EU was assessed using a Brazilian-Portuguese translation (Roazzi, 2007) of the TEC (Pons & Harris, 2000). The Brazilian-Portuguese version was both forward-translated and back-translated by Roazzi (2007). The TEC was designed for children aged 3 to 11 years and consists of a book that includes a test for each of the nine components. The book is in A4 format, and each component is tested using illustrations of either a child (8 situations) or an animal (1 situation) protagonist with blank faces in scenes that are interpreted as emotional situations. The participants' EU was tested by asking them to point to the one of four schematic facial expressions provided below the scene that showed emotions of the protagonist. The facial expressions were happy, normal and two of the following: sad, scared and angry. An example from the test of the External component is shown in Figure 1. The experimenter says "This girl is looking at her little turtle, which has just died". Then, the experimenter asks the child: "How is this girl feeling? Is she happy, sad, angry or normal?" See Pons et al. (2004) for a more detailed description of the TEC.

The reliability of the scoring was assessed with Zumbo, Gadermann, and Zeisser's (2007) Theta test and yielded a value of 0.85. The Theta test was designed to improve on Cronbach's alpha by including categorically ordered data (see also, Gadermann, Guhn, & Zumbo, 2008).

#### 2.3.1 Scoring

Participants were awarded a score for passing a required number of TEC items for each of the nine components. Obtaining a passing score was dependent upon providing the correct response to a minimum of four of the five items in the Recognition and External Cause components, correct responses to all four Desire and both Morality components, and the correct response to the single items in the rest of the components. The maximum score for the test was 9.

### 2.4 Ethical Considerations

The study followed the Ethical Guidelines of the Resolução 466/2012 and was reviewed by the Ethics Committee for Health Sciences of the Universidade Federal da Paraíba (UFPB) under the protocol number: 0167.

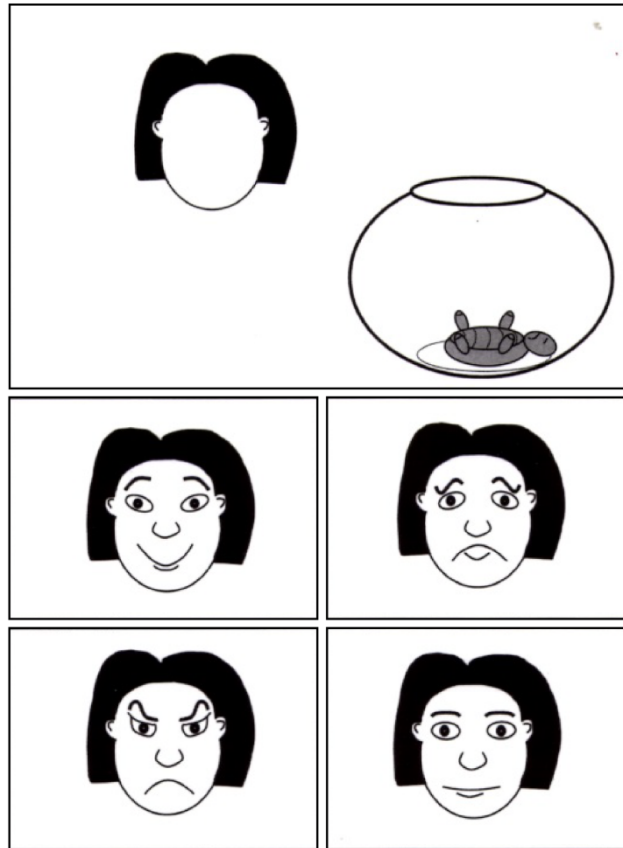


Figure 1. Example of an emotional situation for the External component

### 3. Results

#### 3.1 Comparing EU of Low and High SES Children

An analysis of the effect of SES on EU was performed by a two-way ANOVA on the overall TEC scores with SES and age as two-level independent variables of public vs. private (pre-schools) and younger ( $n = 32$ , mean age = 3.2) vs. older children ( $n = 68$ , mean age = 4.2), respectively. There was a statistically significant main effect for SES ( $F(1, 96) = 16.64, p < .001$ ) and age ( $F(1, 96) = 10.80, p = .001$ ). The high SES children ( $M = 3.14$ ) had higher scores than the low SES children ( $M = 1.94$ ), and the older children ( $M = 2.78$ ) performed better than the younger children ( $M = 2.03$ ). There were no interaction effects.

Mean scores for each of the SES samples for each of the EU components and the results of t-tests of SES differences are shown in Table 3.

Table 3. Mean EU overall and component scores and t-tests for differences of high and low SES Brazilian samples ( $n = 50$  in all instances)

Components	High SES	Low SES	t (df)
	M (SD)	M (SD)	
Recognition	.70 (.46)	.32 (.47)	4.068*** (98)
External	.26 (.44)	.12 (.33)	1.795 (90)
Reminder	.54 (.50)	.28 (.45)	2.713 ** (97)
Desire	.28 (.45)	.06 (.24)	3.032** (74)
Belief	.32 (.47)	.32 (.47)	.000 (98)

Hiding	.32 (.47)	.34 (.48)	-.211 (98)
Regulation	.26 (.44)	.12 (.33)	1.795 (90)
Morality	.14 (.35)	.06 (.24)	1.332 (87)
Mixed	.32 (.47)	.32 (.47)	.000 (98)
Overall TEC	3.14 (1.70)	1.94(1.38)	3.876*** (98)

Note. \* =  $p < .05$ , \*\* =  $p < .01$ , \*\*\* =  $p < .001$ .

Table 3 indicates that the main effects were primarily due to the differences in scores in the expected direction, in which the high SES children performed better than the low SES children for the Recognition, Desire and Reminder components. The higher mean scores of the high SES children for these components corresponded, respectively, to medium to large Cohen (1998) effect sizes of  $d = 0.82$ ,  $d = 0.70$ , and  $d = 0.55$ . The difference in the overall scores corresponded to a medium effect size of  $d = 0.78$ . Table 2 also shows markedly higher scores in the expected direction for the External, Regulation, and Morality components, with  $t$  scores corresponding to one-tail  $p$  values of, respectively, .038, .038, and .093.

Inter-item correlations between components were few and different in the two samples. The analyses of the high SES responses showed Pearson correlations at the  $p < .01$  level for Recognition and External (.29), Desire (.31), and Reminder (.27); between External and Desire (.54); and between Mixed and Morality (.47). Correlations in the low SES group were between Recognition and Hiding (.41), External and Hiding (.39), and Desire and Reminder (.41).

### 3.2 Comparison of Brazilian Children's EU with Three Different Countries

Data from three prior TEC studies could be compared to the present results and are shown in Table 4. We used a two-proportion z-test to compare the percentage of correct answers at the component level.

Table 4. Percentage of correct answers for each component and mean overall TEC comparison of samples from Brazil, Norway, Italy and Peru

Country	Brazil High SES	Brazil Low SES	Norway	Italy	Peru	Two Proportion Z Test
Age (M)	3-5 (3.7)	3-5 (4)	4-5 (4.4)	3-6 (4.8)	4-7 (6)	
Recognition	70 (84)	32 (66)	88	72	56	B-high vs. N** and P**/B-low vs. N and I**
External	26 (50)	12 (36)	49	59	28	B-high and B-low vs. N and I**
Reminder	54	28	35	42	22	B-high vs. N** and P**
Desire	40	18	52	43	6	B-high vs. P**/B-low vs. N and I**
Belief	34	38	27	37	33	
Hiding	32	34	43	48	22	
Regulation	26	12	30	30	22	B-low vs. N**
Morality	54	38	43	35	6	B-high vs. I*/ B-low vs. I**
Mixed	32	32	24	13	28	B-high and B-low vs. I**
Overall TEC (SD)	3.14 (1.7)	1.94 (1.4)	3.35 (1.3)	3.70 (2.0)	2.33 (1.1)	
N	50	50	882	114	18	

*Note.* Data for Norway (N) are based on Karstad et al. (2014), for Italy (I) on Molina et al. (2014) and for Peru (P) on Tenenbaum et al. (2004). The Peru sample used less strict scoring criteria for the Recognition and External components. The number in brackets is the recoded Brazilian data adapted to the Peruvian scoring criteria. The Italian sample included normal as the correct answer to the Belief component (in addition to happy). The Italian and Peruvian samples included two test items instead of four for Desire, and one test item instead of two for Morality. The Brazilian and Norwegian data in italics were recoded following the same scoring criteria as those used in Italy. Brazil High SES = B-high, and Brazil Low SES = B-low. \* =  $p < .05$ , \*\* =  $p < .01$ .

The results in Table 4 indicate that EU is related to SES because similar responses at both the component and overall levels are observed for samples associated with stable and relatively high living standards, such as the European samples and the high SES Brazilian group; a lower percentage of correct answers at the component level and lower overall mean values could be associated with lower living standards and poverty, such as for the Quechua children in Peru and the low SES children in Brazil.

Because the low SES Brazilian children scored very low on Recognition, we examined the percentage of correct answers to the five Recognition items (happy, normal, sad, scared and angry). High SES children showed better recognition of the emotions “happy” (80% vs. 50%) and “normal” (58% vs. 38%) compared to the low SES children ( $p < .05$ ). There were no significant differences between the two SES groups regarding the recognition of negative emotions.

We also analyzed the Brazilian children’s responses to the External component because this component was significantly lower both for the high SES and low SES children when compared to children from Norway and Italy. Two of the items stand out: first, the item where a child is receiving a birthday present, and one would expect the child to respond with “happy”. The high SES children answered “happy” (62%), “sad” (12%), “normal” (12%) and “scared” (12%), whereas the low SES children answered “happy” (36%), “sad” (10%), “normal” (20%) and “scared” (34%). Comparing the “happy” responses of the high and low SES samples revealed a significant difference ( $p < .05$ ). Additionally, the item showing the child waiting for the bus that is on time, where one would expect the child to respond with the emotion “normal”, we found that the high SES children responded “normal” (16%), “happy” (20%), “sad” (40%) and “angry” (24%) and that the low SES children responded “normal” (42%), “happy” (20%), “angry” (16%) and “sad” (22%). The difference in the percent responding “normal” between the two groups was also significant ( $p < .05$ ).

#### 4. Discussion

The results from this study showed that the main differences in EU between the Brazilian and European children and between the Brazilian and non-European children were related to SES rather than to culture. This finding may confirm the assumption that SES has an effect on children’s EU that is partly independent of culture. Hence, in future studies involving cross-cultural comparisons of EU, this factor should be controlled for.

This study also showed that in the Brazilian samples, there are differences in EU between the high and low SES children. This finding is similar to those of other studies investigating children’s socio-emotional development during early childhood (Bradley & Corwyn, 2002). The SES differences were present both at the component and overall level of the TEC interview, especially in the recognition of emotion names (Recognition) and the understanding of the effects of desires (Desire) and past information (Reminder) on emotions. The scores of the low SES children on these components suggest that emotions are not cognized (or represented) to the same degree as in high SES children. Parents with lower SES use more physical punishment and do not discuss the consequences of different behaviors and emotions (Hoff, Laursen, & Tardif, 2002), and previous research has linked this authoritarian parenting style to reduced emotional-social competences in children (Steinberg, 2001). However, similarities were also between the Brazilian samples, such as relatively high scores on the Belief, Hiding and Mixed components and relatively low scores on the External component. The analyses of the responses to the External component may indicate that the story about the bus may contribute to the low percentage of high SES Brazilian children providing the correct answer because in Brazil, many of middle class children do not take the bus. Alternatively, the information about the bus *being on time* may have been ignored, and the children may have responded with sad instead of normal because they had to take a bus instead of being driven.

In the developmental literature researchers suggest that the recognition of the emotion *happy* is the easiest and that the recognition of *angry* and *sad* emotions develop later (Felleman, Carlson, Barden, Rosenberg, & Masters, 1983; Reichenbach & Masters, 1983). However, Izard (1971) found that the recognition of the emotion *angry*



developed as early as the recognition of *happy*. Our results revealed an intriguing result: the low SES Brazilian children had more problems identifying positive and neutral emotions than negative emotions. One plausible but somewhat sad explanation may be that the low SES children are simply more familiar with negative emotions than positive ones, e.g., a birthday present may be a source of disappointment rather than joy.

The high SES Brazilian children's EU responses in this study were similar to those of children in European countries. This was evident at both the overall and component levels of EU, which showed similar variation in scores. However, there were some exceptions. For example, the Norwegian children were better than the high SES Brazilians on Recognition and External, whereas the high SES Brazilian children performed better than the Norwegians on Reminder. Additionally, the Italian children performed better on External than the high SES Brazilians, and the high SES Brazilian children acknowledged Mixed and Moral emotions better than the Italians. The difference in Recognition was not very large, and as previously mentioned, the low score on External could be attributed to misinterpretation of the interview material.

Conversely, the low SES Brazilians showed lower performance than the Norwegian and/or the Italian children on four of the nine components, but showed the same pattern of low scores on the majority of the easiest components (Recognition, External, Reminder and Desire) as the Peruvian low SES sample. This finding was expected because the low SES Brazilian children are more similar to the Peruvians in both SES and cultural values than to the European children. However, because of the low N in the analysis of the Peruvian sample and the higher mean age of the children compared with the other samples, more research applying the TEC in non-Western countries is needed to effectively address this topic. Additionally, since we compared only the TEC scores from the studies from different countries, we did not control our comparison for possible SES differences. However, as shown in Table 2, it appears as though the Brazilian high SES sample and the Norwegian sample were very similar regarding SES level, while the Italian parents seemed to have a lower educational level.

The results from this study raise some doubts regarding the relevance of the three periods in EU development illustrated in Table 1. The correlations between components shown in this study were generally low. Furthermore, an ordered sequence of gradually lower scores for components in the hypothesized "later" or "more developed" periods were not evident in the two Brazilian samples in this study. In fact, the results from this study and those obtained using four other samples (Karstad et al., 2014; Molina et al., 2014; Pons et al., 2004; Tenenbaum et al., 2004) show that Recognition is the only component that stands out as easier to develop than all the others. Scores for the other components generally show little variation with frequent and unsystematic juxtaposition compared to an idealized normative sequence. This observation suggests that studies of construct validity should be a priority in future research on and with the TEC interview.

When a socially handicapped group, such as low SES Brazilian children, is tested by persons and procedures belonging to the relatively well-off part of the community, one should be aware of potential sources of bias, such as using test materials that underestimate the competence of one group relative to another. The probability of a differential effect caused by the procedure may, however, be low in this case because all children were tested in familiar surroundings (their pre-schools). The interviewers, who tested an equal number of children in private and public pre-schools, reported that all children were eager to participate and that there were no signs of SES-related differences in their motivation.

The practical implications of this study are that children's SES may contribute to large individual differences in EU, even if they live in the same culture. Our findings show that low SES Brazilians have problems recognizing basic emotions (especially positive and neutral emotions), which are regarded in the literature as the easiest components. This finding raises a question regarding whether the lives of low SES children are less characterized by positive emotions. One can already see at this age what is evident in youth and adults—that low SES is connected with more symptoms of dysthymia and depression (Gilman, Kawachi, Fitzmaurice, & Buka, 2002). This knowledge could be relevant for both parents and teachers who socialize with preschoolers on a daily basis. Naming and experiencing positive emotions are thus an important issue for these children, and knowing how important children's EU is for their social and mental competence makes prioritizing naming and experiencing positive emotions a good investment in children's future mental health. Future research on children's EU should include observational measures of parent-child interaction and questionnaires about parents' emotion-related beliefs when comparing children from different cultures. Although individual differences in EU at the group level are quite stable (Pons & Harris, 2005), recent studies have shown that intervention programs in pre-schools providing direct training regarding the understanding of emotions enhances children's EU according to the TEC (Domitrovich, Cortes, & Greenberg, 2007; Gavazzi & Ornaghi, 2011).

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