

YOUNG CHILDREN'S UNDERSTANDING OF ENVY

Precursors of young children's understanding of self-conscious emotions: envy across cultures

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The study of complex emotions has become an important research field for developmental psychologists. Among the set of complex emotions is the emotion of envy. Apart from psychoanalytical theories explaining envy in childhood, developmental studies of envy have been practically non-existent compared with other non-basic emotions such as shame, guilt and pride (Barret, 2005; Reddy, 2005; Tracy, Robins, & Lagatutta, 2005).

Experiencing envy is an intrinsic part of social comparison of possessions, characteristics or qualities among people or groups. The persons involved in this social comparison are sometimes flattered or, on the contrary, sometimes damaged. When social comparisons lead to negative feelings and people are faced with the lack of a desired good (an item/object) or a trait, they may experience anger, helplessness or inferiority. Hence, some authors have stressed that envy could cause hostility towards the person envied (Miceli & Castelfranchi, 2007; Smith & Kim, 2007; Shoeck, 1966). At times, envy is disguised as contempt; sometimes it manifests itself through open aggression, harassment, sabotage or a threat in order to compensate for a lower social position. At times the envious person may attack by diminishing the pleasure or joy of the person envied (Leach, 2008; Powell, Smith, & Shultz, 2008; Vecchio, 2005; Smith, 2008).

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The aim of the present study was to explore how young children living in two different cultures (Zapotec¹ and Danish) attribute and justify actions caused by envy. In this particular case we investigate conflicts that unfold when one child wants an object that someone else possesses. We set out to study how children between three and five years of age develop an understanding of the core social components of envy and become able to offer adequate strategies for regulating conflicts arising from envy situations, while attending to issues regarding the different cultural backgrounds.

Interpersonal conflicts are challenging events for young children, however they also seem to serve important purposes in that they facilitate the child to become conscious of their own emotions (to regulate and control their emotions), to understand mental states of others and to elaborate problem-solving strategies, which all contribute to the development of pro-social skills —moral reasoning, empathy, negotiation skills and emotional understanding (Chen, 2003; Fabes & Eisenberg, 1992; Daniel, Doudin, & Pons, 2006).

One of the most frequent conflicts among children occurs over access to an object (Fabes & Eisenberg, 1992). Existing developmental studies on conflicts among young children have analysed basic emotions such as anger or sadness, emotional reactions after provocation, their control and regulation, and different types of aggression and resolution strategies (Arsenio & Lemerise, 2004; Green & Rechis, 2006; Laursen, Finkelstein, & Betts, 2001; Lemerise, Fredstorm, Kelley, Bowersox, & Waford, 2006; Sy, DeMeis, & Scheinfeld, 2003). Other studies have analysed the moral aspects of conflicts (Arsenio, 1988; Garner, 1996; Nunner-Winkler & Sodian, 1988; Wiersma & Laupa, 2000) or the relationship between sociometric status, social and cognitive skills, and types of aggression in different cultures (Farver, Welles-Nyström, Frosh, Wimbarly & Hoppe-Graff, 1997; Werner, Cassidy, & Juliano, 2006). Conflicts are often caused by envy, however, this feeling has so far also been ignored in the study of peer conflicts.

Several factors have motivated our interest to study the emotion of envy in children from a developmental and cultural perspective. From the viewpoint of developmental psychology, and specifically during infancy, children begin to display important social-cognitive skills related to emotional and mental comprehension and related to interpersonal thinking that could contribute to the recognition of envy (Astington & Baird, 2005; Brandone & Wellman, 2009; Decety, 2005). Some of these developmental achievements are related to the basic distinction between the self and others; however, in the case of envy, this basic distinction acquires an important evaluative component. Given that envy is an emotion enmeshed within a social context and that it emerges through social comparison, it seems obvious that envy is di-

1 Zapotec is a Mexican indigenous Mesoamerican culture in the south Mexican state of Oaxaca, Mexico.

rectly related to the child's development of self and self-esteem (see Quintanilla & Jensen de López, 2011 for a detailed account).

In addition, recognising envy requires mental skills in order to understand the less obvious link between the behaviour and the feeling. Importantly, envy can also be seen as a highly embodied emotion, since there is no facial or bodily expression linked to it. Furthermore, social rules typically do not permit its public expression through behaviour (Schoek, 1966; Smith & Kim, 2007). In other words, recognising envy in other people requires cognitive skills of interpersonal thought, such as perspective-taking and hetero-attributions of mental states, within the triadic situation – two individuals and one envied object – through which envy is generated.

Underlying the triadic relationship, which is basic for evoking envy, there is a network of conventional and cultural meanings about the possession and social value of objects and the object always acquires a relative value in this relationship. A typical situation that generates envy, hence involves at least 1) that an object is desired by someone, 2) that the object is possessed by someone else, and 3) that access to it is, to a certain extent, limited. Hence, we argue that ownership is another necessary implicit aspect in understanding situations of envy. Returning to early development, it is during this period that important achievements concerning ownership rules are accomplished (Blake & Harris, 2009; Eisenberg-Berg, Haake, & Bartlet, 1981; Friedman & Neary, 2008). In order to understand envy, it is necessary to capture the inequality of ownership and to understand the lack of the desired object as the cause of anger, frustration or aggression (Miceli & Castelfranchi, 2007; Smith, 2007; Vechio, 2005). The present study sets out to investigate pre-school children's thoughts and attributions to situations of envy in two cases: when resources are limited (story 1) and when resources are unlimited (story 2).

Grasping envy through child development is indicative of cognitive achievements concerning social and emotional cues, and, in addition, leads to the adoption of social strategies to cope with the emotion. Moreover, the adoption of social strategies to cope with envy is influenced by culture. Being successful in a conflict caused by envy will depend on cultural conventions, methods to cope with this feeling, and the particular socialisation models that the child is presented to (Foster, 1972; Quintanilla & Sarriá, 2009; Schoeck, 1966; Smith & Kim, 2007).

Cultural mediation of envy

In the cultures currently studied, namely Zapotec and Danish, envy is conceived differently. In the Mesoamerican culture, envy is perceived as a threatening feeling and, according to Foster's anthropological study (Foster, 1972), the most common behaviour towards this threat is to hide goods or to share

them in a symbolic mode. For example, when an individual obtains a new good, the others should touch it in order to protect it. The action of touching indicates that the other person also has access to the new good, thereby preventing envy. By touching, the good, it is believed that it will not be damaged and bad luck will not fall upon it. This can be seen as a symbolic way of sharing goods. In Mesoamerican cultures and in rural populations, envy is viewed as a threat due to the conception of “limited resources”. This type of conception means that goods are limited and non-reproducible. Consequently, obtaining more goods is only possible at the expense of other people. Envy is, therefore, conceived as a threat insofar as it seeks the loss of goods, their destruction or harm to the person who possesses them (Foster, 1972).

In the case of the Danish culture, as in many Western cultures, envy (or being envied) is perceived as a sign of social recognition. To be envied means that the object or quality possessed is desired or valued and to recognise its possession indicates a higher status. Nonetheless, people in these cultural contexts use social rules, such as modesty. In both cultures, envy is a feeling that, due to its negative values, cannot be shown. This is a characteristic that all cultures share: envy cannot be expressed, as it means admitting an undervaluing of oneself with respect to others (Schoeck, 1966).

Socialisation models in different cultures conceive the goals that children must achieve through development. Studies show how these cultural socialisation models influence the different developmental rhythms in which children acquire an understanding of complex emotions, such as shame or guilt (Cole, Brushi, & Tamang, 2002), or how feelings are used to induce moral values (Hoffman, 1983). Socialisation also guides children, indicating the expected behaviours in various social situations (Higgins, Ruble, & Hartup, 1983; Keller, 2007). Taking this into account, our hypothesis is that in a situation in which there is a conflict over an object, children of different ages and cultures will focus on different elements to explain the conflict. Conflicts about possessions are universal, but managing envy may be culturally distinct. Furthermore, specific objects do not intrinsically motivate acts of envy. We argue that the extrinsic forces underlying a specific act of envy are constructed and mediated by society (Quintanilla & Jensen de López, under review).

A natural observation of Zapotec and Danish children was performed prior to this study. Whereas Danish children frequently showed anger or hostility when another child played with a desired toy, Zapotec children did not devote much attention to the desired toy, and did not seem to express major importance to the fact that other children took toys from them. These practices about possessions lead us to the hypothesis that cultural differences will emerge when young children are asked to explain conflicts caused by envy. Although 3-year-old children understand intention and desires, differences in explanations of different age groups due to increasing cognitive and linguistic abilities were expected.

In a previous study, we explored the comprehension of envy in 3-to 5-year-old Zapotec, Danish and Spanish children using short stories that illustrate scenarios involving envy (Quintanilla & Jensen de López, 2011). In the story we presented, a girl (Theresa), who desired a new attractive backpack possessed by her friend. Theresa's parents could not afford to buy her a new backpack, so she only had an old worn backpack. We then asked the child about Theresa's emotion. In a second scenario the backpack of Theresa's friend had become damaged. Children from both cultural groups attributed initial sadness to Theresa, but later happiness when her friend's new backpack was accidentally damaged (see also Quintanilla & Sarriá, 2009; Quintanilla, Jensen de López & Sarriá, 2008). Interestingly, the later emotion is similar to what in German is defined as *schadenfreude*² and in Danish as *skadefryd*. Both concepts capture the notion that another person's misfortune is the motive for the protagonist's feeling of happiness. It is interesting to note that 3-year-old children already understood that the lack of a desired object causes sadness, whereas the destruction of the object causes happiness. No differences linked to age and cultures were found in the previous study. In the same study, we also explored possible strategies that children elaborate to avoid conflict between the two story characters that desired the same object. Spanish and Danish 3-year-old children mentioned strategies related with the distribution of goods, sharing the time using an object, and even employing distraction, whereas Zapotec children did to a less degree. In the current study, children were asked to explain aggressive behaviour, and in order to elicit this we presented a story in which the lack of the desired toy caused hostility and open aggression.

Method

Participants

We interviewed 131 children aged 3-, 4-, and 5-years. Fifty-five children were Zapotec and seventy-six children were Danish. A total of 28 children were aged 3, $M=41.68$ months, $SD: 3.4$, (11 girls), 55 children were aged 4, $M=52.8$, $SD: 3.8$, (24 girls) and 48 children were aged 5, $M=65.4$, months, $SD: 3.7$, (26 girls). All children attended early childhood education programs in their respective villages.

The Zapotec children live in the village of Ocotlán de Morelos, Southern Mexico (Oaxaca). Zapotec refers to an indigenous culture consisting of peasants, traders, and artisans. The main religion is catholic, but they com-

2 Some authors consider that *Schadenfreude* is a consequence of envy, and some ancient philosophers conceived *Schadenfreude* as part of the emotion of envy. From this view, is not considered as a discrete emotion, but as a stream of feelings (Powell, Smith, & Schurtz, 2008).

bine their pre-Hispanic beliefs with the catholic religion. Ocotlán de Morelos is one of Oaxaca's large commercial sites for agricultural products and handicrafts. The official language for education is Spanish, and despite most of the adults being bilingual (Zapotec-Spanish) the children mainly speak Spanish. Children usually help their parents with farming and other domestic activities, and material goods are sparse. The Danish children live in the village of Brovst, Northern Jutland, Denmark. The main religion is protestant and the parents mainly have paid jobs. Children spend most of their weekdays in the local kindergarten where play is the main activity.

Story 1: Destroying a child's activity

In our first story, the scenario depicted an envy situation with two characters that desired the same object, only one object to play with, and an explicit request of one of the characters to borrow the object. Finally, when faced with an implicit negative answer, the character (the envier) behaved aggressively.

The hostile character did not want the object due to its implicit or inborn value, but due to the attractive value that the other character had attributed to it. This important part of information formed part of the story. The object hence only became desirable once the character projected a meaningful purpose to it during a play activity. This specific situation was reconstructed from a natural observation made prior to this study. Our aim was to determine whether pre-school children in this condition, in which resources are limited and ownership is clear, perceive the aggression related to envy. The purpose of limiting conflict-solving strategies was to encourage participants to consider constructive solutions.

Moreover, they were asked to reflect on how they would solve the conflict so that both characters benefited.

Procedure

All children were interviewed individually in a quiet room. The children listened to a story guided by a set of pictures, and were asked to explain the character's behaviour. The instruction they received was "I am going to tell you a story, but you have to help me because the story is not finished". The experimenter began the story and at the end asked the child two target questions. The story was as follows:

Scene 1: "Here are two boys. This one is called Carl³ and this one is Thomas. They are in the playground, but they have nothing to play with."

3 The names of the protagonists were typical Zapotec names in the Zapotec version. The stories were adapted to each language through the process of translation and retranslation between Spanish and Danish.

- Scene II:* "Thomas finds a hairgrip. It's broken, but look what he does with it: he makes a road in the sand!"
- Scene III:* "Carl watches Thomas and he asks him kindly: 'Can I borrow it?' Thomas replies: "Well, I have to make lots and lots of roads'." Thomas takes a very long time making more and more roads."
- Scene IV:* "Look what Carl is doing, what is he doing?" (The researcher invites the children to describe what Carl is doing). The photograph shows Carl stepping on the roads that Thomas has drawn in the sand.

After finishing the story, the child was asked the following two target questions:

Question 1: *Why does Carl step on the roads that Thomas has drawn?*

Question 2: *What would you do to get the hairgrip without making Thomas angry?*

The aim of the first question was to obtain an explanation from the child about the hostile reaction in order to evaluate if children consider hostility as a sign of envy. The aim of the second question was to explore how children respond to a conflict where the character desires an object, but cannot have it, and which strategies they suggest to resolve the conflict.⁴

Response Categories

To categorise children's explanatory responses to the question: "Why does Carl step on the roads that Thomas has drawn?" we proceeded to classify their content.

Thus, the different responses were categorised in terms of whether they alluded to the character's internal state or to moral evaluations. We next describe each category and provide examples:

Desire-lack: The child refers to the character's intentions, desires for the object and negative feeling of lack as the main reason for the aggressive action. (e.g. "because he wants the hairgrip" or "because the other boy doesn't lend it to him"). Also, we included explanations in which children mentioned the emotional state of the character to explain the aggressive action, saying, for example, "because he is angry". However, these were very seldom.

4 We distinguish between the response "because he wants to" and the very similar response "because he wants it". In the first, the child refers to a more ambiguous general state of desire, which is more similar to "just because". In the second, "it" refers to the desired object, and we interpret it as referring to a specific desire for the ball in the story.

Moral: The child refers to a moral evaluation. The action is explained as a function of a moral evaluation (e.g. “because he is bad”).

Irrelevant: The child does not answer or his answer is unrelated to the story (“don’t know”, “because”).

In order to establish the reliability of these categories, independent coders coded 35% of the children’s responses. Overall agreement between the two coders was high: Cohen’s Kappa = .84, $p < .001$.

Results

The results are presented in accordance with the procedure in the experiment. We first present and compare the responses provided by the two cultural groups and second the results of the developmental changes observed in the children. The distribution of the three response types was then compared between the two cultures. As illustrated in Table 1, Danish and Zapotec children predominately justify the reason for Carl’s destructive behaviour caused by his desire to obtain the object. A Mann-Whitney U test showed that the two cultural groups did not show significantly different response patterns ($U = -.056, p > .05$). Most children use the desire or lacking object as a motive or explanation of Carl’s aggression.

Table 1. Proportion of categorical responses by cultural groups.

	Cultural Groups		Total
	Zapotec	Danish	
Irrelevant	31%	29%	30%
Desire-lack	62%	67%	65%
Moral	7%	4%	5%

In order to investigate the developmental trajectory of the content of children’s explanations to Carl’s destructive behaviour, we split the data into three age groups. The three-year-old children produced significantly higher proportions of irrelevant responses compared to the four and five year old groups, while there was a significant developmental increase in the proportion of desire-lack response from ages three to four, followed by a substantial decrease from ages four to five ($H(2) = 19.7, p < .001$) (Kruskal Wallis). The proportion of moral responses were few and did not differ across the age groups.

Table 2. Proportion of responses types for Carl's destructive behaviour by age group.

Strategies	Age (years)		
	Three	Four	Five
Irrelevant	64%	27%	13%
Desire-Lack	32%	67%	81%
Moral	4%	6%	6%

Children's suggestions for strategies to resolve the envy conflict

All of the children were invited to attempt to solve the problem cooperatively and asked to offer a concrete strategy. The types of strategies offered by the children were classified into the following five categories:

Active pro-social: Strategies in which the child carries out some action to obtain the object without being aggressive (e.g., "play at something else" or "go and look for something else").

Passive pro-social: Strategies in which the child simply waits (e.g., "wait until he's finished with the hairgrip" or "do nothing").

Authority: Strategies in which participants seek the authority of an adult to solve the conflict (e.g., "go tell the teacher").

Aggression: Non-pro-social strategies in which the child turns to aggression to obtain the object (e.g., "hit him so he will give him back the hairgrip").

Irrelevant: The child did not respond or alluded to issues unrelated to the strategy.

In order to establish the reliability of these categories, independent coders coded 35% of the responses. Overall agreement between the two coders was high: $\kappa = .82$, $p < .001$, disagreement was solved by consensus.

The answers provided from both cultures reflected similar distributions of the different types of responses and did not differ significantly ($U=1994.5$, $p < .05$). The results for each of the cultural groups are presented in Table 3.

Table 3. Proportion of response types for how to resolve the envy conflict by cultural group.

Strategies	Culture	
	Zapotec	Danish
Active Prosocial	38%	43%
Passive Prosocial	13%	15%
Authority	2%	1%
Aggression	24%	15%
Irrelevant	24%	27%

Both groups primarily suggested active pro-social strategies followed by passive pro-social strategies or aggression.

Turning to the developmental trajectories for each of the individual strategies, we again split the responses into three age groups (see Table 4). The children's responses within the category active pro-social strategy increased substantially with age, while the proportion of passive pro-social strategies decreased slightly from age four to five. Responses reflecting aggression decreased substantially from age four to five, while children hardly referred to strategies consisting of consulting an authority.

Table 4. Proportion of response types for strategies of how to resolve the envy conflict by age.

Strategies	Age (years)		
	Three	Four	Five
Active Prosocial	19%	22%	75%
Passive Prosocial	15%	16%	10%
Authority	0%	0%	4%
Aggression	26%	24%	8%
Irrelevant	41%	38%	2%

A Kruskal Wallis test showed that these differences are significant ($H(2) = 19.7$ $p < .001$).

Discussion

Three clear results emerged from this first story. First, most 4- and-5-year-old children explained hostility as a consequence of the lack or desire of the object. Second, a developmental pattern emerged regarding the ability to propose active pro-social strategies to resolve the conflict arising from envy. Third, when faced with a situation where resources are limited and there is a conflict generated by the desire of an object, no cultural differences were found regarding the children's suggestions for strategies to solve the inter-personal conflict. Next we discuss each result separately.

First, from 4 years of age, most of the children explained the hostile action in terms of the character's consciousness of the lack of the object at stake. However, practically no children referred to an emotional state as the main reason for the behaviour, and none explicitly mentioned "envy" to explain the behaviour. Even if most 4- and-5-year-olds were able to identify the conflict, understand the hostile reaction and explain it, while taking desires and the lack of the object into account, they still did not mention emotions nor do they specifically mention envy as the cause. Thus, it seems that at these ages, children already understand the envy situation and are able to make internal attributions about the characters, but they do not yet explain the situation in terms of specific emotions.

Second, a clear developmental pattern emerged regarding children's proposals to solve a peer conflict arising from envy. Thus, while most 3 and 4-year-old children often were unable to present solutions, most 5-year-olds (75%) proposed relevant responses, which mainly were active pro-social strategies. The 4-year-old group that did provide relevant strategies did not however yet show a clear preference for the strategies active pro-social, passive pro-social and aggression.

Finally, it is interesting to note that culture did not seem to influence children's interpretation of the envy situation and their solutions to solve the conflict. Furthermore, with development the Zapotec and Danish children improved their understanding of the conflict in terms of desire-lack, which is a central component of envy. These results are consistent with those found in previous studies mentioned above where children attribute discomfort to the character that desires a valued object, but are not able to obtain it - e.g. the backpack, in the Quintanilla & Jensen de López study (Quintanilla & Jensen de López, 2011). Likewise, both culture groups are sensitive to conditions where resources are limited, explaining the hostile reaction as a consequence of the lack and the desire to obtain the toy. However, hostility in itself is not a clear sign of envy. Due to our interest regarding the role of the object in situations of envy, the present finding that the causes of an envy situation with limited sources is not interpreted differently across cultures, we developed a second story. Recall, as we stressed earlier that the status and value of an object is not intrinsic to the object itself, but mediated within the

particular social setting or mediated through culture. With this in mind using a second story we set out to investigate whether presenting children to an envy situation with unlimited resources would cause different results in the same group of children.

Story 2: Snatching the object of envy

The aim of the second story was to explore whether children recognise aggression or hostile behaviour as a sign of envy when two characters want to play with the same object and there are enough resources for the protagonists to share. That is we wanted to disentangle the role the external objects play in children's attribution of self-conscious emotions. We presented a situation in which identical toys (two balls) were available, but ownership was now common (as it happens at school). In this case, if goods are common hostility cannot be explained by ownership. Also, if there are enough resources (toys for everyone) hostility cannot be explained by the limitation of resources. As we have observed among Western children, conflict occurs even when goods are unlimited. Children hoard toys using hostile behaviour in order to maintain high position and manage the group, avoiding other children's play and fun with toys. This hostile situation is coherent with the definition of envy "*I don't want you to have what I want*" (Parrot, 2001). To the extent that no one is the owner of goods, hoarding prevents the enjoyment of other children.

The pictures presented in story 2 intentionally depicted the same desired object, but this time there was an exact match between the number of objects and number of protagonists (two identical balls and two boys). Thus, we wanted to avoid answers from the children where the type of toy or its uniqueness was the motive for conflict, such as "one ball is better, bigger, etc., than the other ball". According to previous studies, we expected children to explain hostile behaviour regarding internal motives of the character. However, we expected different explanations from the Danish and Zapotec children due to the cultural differences regarding practices about ownership.

Method

Participants

One hundred and twenty nine 3-, 4- and 5-year-old boys and girls were individually interviewed. All Zapotec children and 76 of the Danish children had previously participated in story 1. Seventy-one children were Zapotec (22 girls) and 92 were Danish (48 girls). The distribution of the children in terms of age was as follows: 33 three-year-olds ($M= 41.2$, $SD: 3.5$), 56 four-year-olds ($M= 52.9$, $SD: 3.8$), and 40 five-year-olds ($M= 66.2$ $SD: 3.4$). The

two cultural groups resided in rural areas: Ocotlán de Morelos, Oaxaca, Southern México and in Brovst, Northern Jutland, Denmark.

Procedure

The procedure was similar to that employed in story 1. All the children listened to a story supported by coloured pictures. At the end they were asked some questions related to the story. The story was as follow:

Scene I: “Here are two boys, Markus and Peter. They are in the playground and there are many toys to play with. Tell me which toys they have”. The child was asked to label all the objects in the photograph: a car, a bucket, a spoon, two balls, a chair, etc.

Scene II: “Markus picks up a ball. Peter snatches it from him, while saying: “give it to me”.

Following the first part of the story, the child was asked the first target question to justify Peter's behaviour:

Question 1: *Why does Peter do that if there is another ball that is exactly the same?*

Then the last scene of the story was presented to the child, and was as follows:

Scene III: “Now look what happens when Markus picks up another ball, and then Peter snatches the other ball as well.”

Finally, the child was asked the second target question to justify Peter's behaviour: Question 2: *Why does he do that?*

Response Categories

To categorise children's explanatory responses about the protagonist's hostile actions, we proceeded to classify their content. The following five categories explaining the cause of the action emerged from the data:

External: The child refers to either of the balls as possessing specific characteristics that make the one more desirable than the other (“it's smaller”, “it weighs less”, “it's uglier than the other”, etc.).

Desire: The child refers to the protagonist's intentions and desires. This category includes two types of responses that reflect a similar understanding of the situation. On the one hand, some children explained the aggression by referring to the character's desire, intention or emotion to prevent the other child's access to the ball. For example, children said “he (*Peter*) is angry because he doesn't want the other child to take

the balls” and “he (*Peter*) wants to play with the two of them and he doesn’t want to lend them to the other child”. On the other hand, some children referred to the character’s desire to obtain the ball. For example, children said “he is angry because he doesn’t have the ball and he also wants it” or “because he wants that one”. Both types of responses included the basic components of the definition of envy (discontent aroused by another’s possessions) and considered hostility as a reaction to the feeling.

Moral: The child evaluates Peter’s behaviour with reference to a moral evaluation of Peter (“he is selfish”, “he is rude”, “he takes it because he is bad”, etc.).

Rules: The child refers to social rules. In this category, we have included explanations that mention norms for sharing goods (for example, “they must share it”) and those that attribute ownership and justify the action (for example, “if the ball is his, he can take it”).

Irrelevant: The child does not reply, says he does not know or says something, anything that is unrelated to the story. The response “because he wants to” was also included here.

In order to establish the reliability of these categories, independent coders coded 35% of children’s responses. Overall agreement between the two coders was moderated high (Cohen’s Kappa = .77, $p < .001$ for question 1 and kappa = .91, $p < .001$ for question 2). Disagreements were overcome by consensus.

Results

In this analysis we first describe the children’s responses by culture group and then proceed to analyse the developmental pattern expressed by the children, when justifying Peter’s two hostile actions. We first present the results for the cultural comparisons in Table 5, which shows the frequency of distribution for the response types by cultural group.

Table 5. Description of children's responses to: why he takes the ball if he already has the same ball? (1st justification) why does he take the other ball? (2nd justification).

Categories	1 st Justification		2 nd Justification	
	Zapotec	Danish	Zapotec	Danish
External	14%	9%	3%	3%
Desire	43%	57%	57%	54%
Moral	8%	4%	8%	7%
Rule	22%	0%	19%	0
Irrelevant	14%	30%	14%	36%

As shown in Table 5, the children continued to allude to the character's desire to prevent pleasure in both justifications (*'He doesn't want the other child to take them' or he wants the balls*) when explaining the act of hostility. However, the proportion of responses referring to the characteristics or properties of the ball (*external*) drastically diminished for the second justification and for both cultures. There was, however a cultural difference related to ownership with Zapotec children frequently regarding property of the ball as the motive of aggression, and for both justifications, the Zapotec children justify Peter's hostile act due to him having ownership of the ball (*rule*). Danish children, on the other hand, never provided this response.

When comparing the changes in the children's justifications to Peter's first act with those provided for his second act, they seem to perceive the second hostile act as less due to external factors, although this change is mainly observed for the Zapotec children. Similar for both cultures is that children mainly referred to the desire to prevent the non-hostile protagonist (Markus) the pleasure of playing with the ball. Lastly, only approximately 7% of the answers reflected the children dismissing aggression as a pure lack of morality, e.g. describing the envier (Peter) as rude, etc. This tendency was observed in both culture groups.

We employed two Mann-Whitney' U-tests to evaluate the cultural differences in the children's overall justifications to explain the hostile act of snatching the balls. These tests indicate significant differences between the responses provided by the children for both justifications: $U = 1176, p < .005$ for the first justification and $U = 1176, p < .001$ for justifications to the second snatching. The most relevant cultural difference is that Danish children did not allude to ownership in their explanation, whereas Zapotec children referred more often to ownership and distribution of goods (sharing) in justifying the hostile action. We then split the data into age groups in order to identify developmental patterns and we found differences across the distribution of justifications (see Table 6). For the first episode of snatching the

ball, we observed a major increase with age regarding the children's responses referring to an internal motivation (*desire*) (from 30% to 68%) and a minor increase of justifications based on *external* characteristics of the ball (from 3% to 13%).

Table 6. The Proportion of responses for the two justifications regarding the snatching of the ball by age.

		Age (years)			Total	
		Justifications	Three	Four	Five	
		External	3%	13%	13%	10%
snatch 1 st ball	Desire	30%	55%	68%	53%	
	Moral	3%	7%	5%	5%	
	Rule	6%	5%	8%	6%	
	Irrelevant	58%	20%	8%	26%	
snatch. 2 nd ball	External	3%	2%	5%	3%	
	Desire	39%	55%	69%	55%	
	Moral	3%	11%	5%	7%	
	Rule	6%	6%	5%	6%	
	Irrelevant	49%	27%	15%	29%	

A Kruskal Wallis test showed that these differences are significant ($H(2) = 14.1, p = .001$). The proportion of response types for the justification of the second action of snatching the ball displayed a similar developmental pattern, which showed significant changes ($H(2) = 6.05, p < .05$). However, in this scenario very few children (2-5%) opted for suggestions linked to external reasons. The children's proportion of irrelevant responses decreased with age.

Discussion

We identified two main results in our study. First, pre-school children often explain other children's hostile actions from the point of view of the character's internal situation, specifically on the desire to prevent the second character some kind of pleasure. This internal feeling constitutes one of the core components of the emotion envy. Second, there are significant differences linked to the child's culture background that is brought out in the

children's specific explanations of actions motivated by envy. The most salient is that Zapotec children tend to explain hostility more in terms of social rules that govern behaviour, whereas Danish children never referred to this kind of explanation. Danish children mainly referred to internal motives as desires as the cause of the child's hostile action.

Regarding the first result, we identified that preschoolers across two very different cultures are able to understand that snatching goods (hostility) means to prevent the pleasure of another, even when resources are sufficient. However, at first the children explained hostility via external characteristics of the object. Then, when hostility persisted, despite a lack of objects no longer existed, the children consequentially no longer suggested explanations related to the object itself (external causes). The result is interesting because children understand that meanings of emotional acts, in this case caused by envy, are different depending on the given context and hence take into account the underlying intentionality of the protagonists.

We should note, however, that negative emotions were rarely mentioned as the main reason for hostility, but rather as a consequence of desires or intentions. However, some pre-schoolers show the ability to state moral judgements about the aggressive action. This type of judgement likely implies a complex understanding of the situation, showing that pre-school children can judge how good or bad the character is based on their behaviour.

Considering the second main result, we posit that the children's understanding of envy, presented through a sabotage action, is likely mediated by each cultural group's conception of the property of objects. In this sense, some Zapotec children justify the aggressive action through property rules. They consider that if the objects belong to someone, that person is entitled to take them away from whoever has them. In their justifications, Zapotec children hence made statements such as "He takes them away because if he is at home [and he is the owner of the balls], and he doesn't want to play anymore, he can just take them with him". This reasoning demonstrates that Zapotec children understand that snatching is one's right when and if he/she has ownership of the object. And oppositely, the main cause of a snatching act is that one attempts to regain what is one's own.

Although the story never specified who the owner of the balls were, Zapotec children attributed ownership to the hostile character and therefore legitimise the action of taking the balls away. Oppositely, the Danish children did not mention ownership as a justification for snatching the balls, although they did allude to the moral aspect of the character (mostly being "bad"). It is difficult to say whether this pattern is mediated by the exclusive abundance of material goods in the Western society or by the highly discursive pedagogical tools that Danish children are explicitly taught in kindergartens, and unfolding moral explanations is the favoured behaviour.

Although pre-schoolers seem to understand complex situations profiling acts caused by envy, they may not yet have fully incorporated the concept of “envy” into their vocabulary. In fact, none of the children in our study expressed the term envy during our conversations with them. We suggest that pre-school children’s understanding and expressing of self-conscious emotions, such as envy, is tightly related to implicit knowledge about normal social situations, which are important precursors for the child’s development of a more full-blown and context independent understanding of self-conscious emotions. As presented in our introduction, envy is a highly embodied emotion and hence difficult to grasp by means of explicit behaviours only. By nature, understanding envy demands a certain level of interpersonal competences from the child. This is contrary to basic emotions such as, for example, sadness, which can be perceived physically, and some children mentioned anger in their explanations. We argue that by identifying children’s abilities to make relevant justifications about protagonists’ reactions to envy situations, we may gain important knowledge about their precursors for understanding complex self-conscious emotions.

General discussion

The aim of our study was to explore whether children between aged 3 and 5 attribute the feeling of envy as the motive for hostile actions (sabotage and destruction) in two different situations: limited resources and unlimited resources. Envy is known to generate conflicts and hostile actions such as sabotage, destruction and contempt. Two of these hostile actions were depicted in our stories: 1) destruction of another’s work, and 2) sabotage caused by preventing access to an object. We will first discuss children’s explanations of hostility and later the strategies that children proposed to solve the conflict.

Considering the children’s explanations of hostile behaviours, three results stand out. On the one hand, from 4 years of age, children from both cultures understand that hostility and aggression are provoked by the desire of an object and the impossibility to obtain it when the resources were limited. In this sense we could state that young children understand the components of envy as they understand that hostile behaviour is caused by the lack of the desired toy, they are able to compare the inequality between the characters and show, at least, basic knowledge about envy according to its definition.

As addressed in our introduction, envy is triadic by nature and an intrinsic part of it involves social comparison about possession and lack of a desired object. One of the elements that seem to be essential for envy comprehension is ownership and resource distribution. We show that Mesoamerican and Western children equally attribute desire and lack of an object as the

main cause of aggressive behaviour emerging from envy situations. In our study we only found cultural differences when ownership was common and there were sufficient resources (story 2). It is reasonable to think that cultural models on the distribution and property of goods as well as the rules of access to use them carry different weights. Children could use these cultural elements when faced with situations in which there is no explicit ownership. The main differentiating cultural element of the explanations provided in the second story is the use of goods and property distribution rules (he takes the balls “because they are his”) contrasting with arguments that deal with moral evaluations (he takes them because the character “is bad”). These differences are likely due to the fact that in a context in which there are sufficient resources for both characters, the meaning of the hostility has different connotations for the groups. Thus, for Zapotec children, the hostility can be linked to object ownership (if the objects are his, he can take them). These results were surprisingly contrary to that which was observed in natural sessions, but it was according with results where children prefer fairness, despite their explanations reflecting culturally differences (Carson & Banuazizi, 2008; Rochat, et al., 2009). One possible explanation is that Zapotec children usually share property with peers, but can be demanding if they are unwilling to share. In other words, according to this rule, the owner has the right to decide what he wants to share and when. This rule could be coherent with their strategy of hiding goods in order to avoid envy and protect them: “I share goods – so I avoid envy – but I must control them – so I do not lose them”. Zapotec cultures practice ancient rules for sharing goods. One of them is the “guelaguetzta”, which means to share or offer. In daily life, peasants lend help to their relatives and neighbours so they obtain individual benefits. For example, when hosting weddings and other expensive social events. “Guelaguetzas” should be returned on request and are systematically registered by the authorities of the village. Sharing goods or services in Zapotec communities can alleviate scarcity and it also was an efficient strategy to obtain wealth when money did not exist as a way of exchange.

Interestingly, none of the children explicitly mentioned the term “envy” as the motive of the aggression in either cases – resources were limited or sufficient. Likewise, general references to emotions were quite rare. This supports the notion the children’s use of words for complex emotions emerge later in development. Terms such as “envy”, “guilt” and “pride” are not typical words expressed spontaneously by pre-schoolers (Knüppel, Steensgaard & Jensen de López, 2007). However, the lack of the term does not play down the importance of the children’s explanations and the fact that the children in our study understood perfectly that the negative feeling was a consequence of the lack of the desired object. In fact they had no problem linking the two. Finally, as previously mentioned, we anticipate that children’s explanations likely reflect an implicit grasp of daily social situations.

With respect to children's development of conflict-solving strategies, we only found age differences in the following developmental pattern: three-year-old children generally do not specify the strategies they would use to solve the conflict. Four-year-olds offer all types of strategies, and five-year-olds mainly mention pro-social strategies. A possible explanation is that as children acquire more cognitive resources and social experience, they adopt more socially accepted strategies and propose more harmonious solutions. We also acknowledge that three-year-olds might have had a limited understanding of what responses were requested from them. In addition, the solution to conflicts over objects does not necessarily require a single solution, and it is possible that our analysis did not capture this issue. Even if the conflict is the same, sometimes more than one strategy is tested to solve it (Joshi, 2008). Thus, conflict-solving strategies may be linked to the specific situation in which the conflict occurs. Further analysis of the data could perhaps provide information about multi solutions for solving peer conflicts. Importantly, although children acquire norms for solving conflicts throughout development, their application in real life may differ. How children behave in conflict-solving situations and their knowledge about how they should behave are two different issues. Further research might also consider using alternative methods to interview the children, in order to obtain additional information about young children's thoughts and motives regarding complex self-conscious emotions or to investigate how children at this age and across cultures understand their role as an interlocutor.

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Key words: emotion understanding, envy, intentionality, hostility, pro-social strategies, culture, development, pre-school children.

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