

Are You Really Happy? Children's Understanding of Real vs. Pretend Emotions

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Abstract This paper studies children's capacity to understand that the emotions displayed in pretend play contexts do not necessarily correspond to internal emotions, and that pretend emotions may create false beliefs in an observer. A new approach is taken by asking children about pretend emotions in terms of pretence-reality instead of appearance-reality. A total of 37 four-year-olds and 33 six-year-olds were asked to participate in tasks where they had to pretend an emotion or where they were told stories in which the protagonists pretended an emotion. In each task children were asked: a) if the pretend emotion was real or just pretended and b) if an observer would think that the emotional expression was real or just pretended. Results showed that four-year-olds are capable of understanding that pretend emotions are not necessarily real. Overall, six-year-olds performed better than younger children. Furthermore, both age groups showed difficulty in understanding that pretend emotions might unintentionally mislead an observer. Results are discussed in relation to previous research on children's ability to understand pretend play and the emotional appearance-reality distinction.

Keywords Children · Pretend play · Emotional expression · Theory of mind

Introduction

The Theory of Mind (ToM) is considered as a crucial ability for children's social development, as it allows them to perceive and interpret their own mental states

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(beliefs, desires, emotions, thoughts, intentions...) and those of others (Flavell 2004; Peterson and Wellman 2009). Children develop this capacity to understand mental states gradually, as they acquire multiple concepts (Wellman and Liu 2004). For instance, around the age of three and four, children start realizing that people's behavior depend on their desires and beliefs about reality (Adrián et al. 2006). In turn, from the age of five, children learn that people's emotions depend on their desires and beliefs (Harris 2008). For example, a girl who wants a doll will be happy at receiving a gift if she believes it is a doll, no matter if she is actually going to receive something else. Developing ToM skills is thus essential for emotional understanding.

Within this area of research, a more specific topic has been children's comprehension that expressed emotions may not coincide with internal emotions, and consequently, people might be misled about other people's emotions. This understanding has been connected, for instance, to children's classroom behavior (Holmes-Lonergan 2003), and to peer acceptance (Braza et al. 2009). In the current study, we explore children's understanding that pretend emotions might be different from internal ones, and also, that pretend emotions may mislead observers. This knowledge is essential for children because it allows them to participate in pretence situations adequately, and to interact with other people playfully without confusing their intentions.

Children's capacity to differentiate internal from external emotions have typically been studied in deception contexts. In a paradigmatic research by Harris et al. (1986), children listened to stories where it was explicitly stated that the protagonists wanted to conceal an emotion from an observer, and they were asked how the protagonists really felt and what emotion they expressed. The authors concluded that four-year-olds have a limited understanding of the distinction between real and apparent emotion. They also found that the ability to make and explain this distinction improves between the ages of six and ten.

Many other investigations have used a similar method to study children's understanding of the appearance-reality distinction in the emotional realm. Most of these studies have corroborated that four-year-olds start to understand this distinction, and that important changes occur between 4 and 6 years of age (Friend and Davis 1993; Josephs 1994; Joshi and MacLean 1994; Misailidi 2006; Pons et al. 2004).

As well as age, researchers have found other variables that might affect children's understanding of the emotional appearance-reality distinction. Harris et al. (1986) found that four-year-olds showed a better understanding of this distinction when the emotion to be hidden was negative (sadness) rather than positive (happiness). This valence-related difference has been corroborated by other authors (Banerjee 1997; Hosie et al. 1998; Josephs 1994). A possible explanation is that the display of negative emotions is subjected to stronger socialization rules (Harris et al. 1986). Accordingly, the cultural conventions (or display rules) that dictate which emotions should be shown or hidden in different situations (for example: receiving a disappointing gift) would affect children's understanding of the appearance-reality distinction. To this effect, some studies have found sex differences in favor of boys (see, for instance, Gosselin et al. 2002) or girls (for example, Joshi and MacLean 1994), in some specific tasks and ages, which are not necessarily contradictory, but could reflect cultural differences in the socialization of children as a function of sex.

Research suggests that between the ages of four and six children start distinguishing internal from external emotions not only in deception situations but also in pretend play contexts. Sidera et al. (2011) told children stories in which the protagonists simulated an emotion in order to play, and children were asked about the external and internal emotions of the protagonists. Four-year-olds performed very poorly, so they attributed internal emotions to the protagonists according to their faces, without considering that they were just pretending. These results are intriguing in light of the studies suggesting that even three-year-olds are capable of distinguishing pretence from reality (for example, Flavell et al. 1987; Peskin 1996).

If three-year-olds normally differentiate pretence from reality (see, for instance: Bouchier and Davis 2002; Lillard 1994), why can't they distinguish pretence from reality in the realm of emotions? A plausible explanation is that, as in the case of objects (Flavell et al. 1987), the emotional appearance-reality distinction may be more difficult than the pretence-reality distinction. In this line, Mizokawa (2011) suggests that children's ability to distinguish pretence from reality could occur about a year later in the domain of emotions. Research has found that children as young as three use the words 'real', 'really' and 'pretend' to comment on objects, actions, events, people and animals (Bunce and Harris 2008). Therefore, it seems reasonable to hypothesize that the emotional appearance-reality task created by Sidera et al. (2011) would have been easier for the children to understand if it had been set up as a pretence-reality task. Indeed, children's understanding that pretend crying is not real seems to emerge around the age of four or five (Mizokawa 2011).

On the other side, children's understanding that pretend emotions might mislead an observer is important not only to comprehend deception situations but also to grasp shared pretend play. As Nielsen and Dissanayake (2000) propose, the understanding of beliefs is necessary to maintain sociodramatic play. Despite not being aware of any systematic research on this subject, Ruffman's comment, "*In my experience it is not at all unusual for children to persistently seek confirmation that an enacted scenario is 'not real,'*" (Ruffman 2002 p. 416), suggests that children sometimes want to make sure that their pretend play partner is aware that they are only pretending.

Several studies have addressed the issue of children's understanding that emotional expressions can be misleading. Gross and Harris (1988) used deception stories where a character wanted to hide an emotion, and asked children not only about the real and apparent emotion of the character but also about the beliefs of the observer of the emotional display. These authors found that children do not start to understand that emotions can be used to deceive an observer until the age of six or seven.

On the other hand, Sidera et al. (2012) studied children's understanding of misleading emotional expressions using pretend play stories. In these stories, the protagonists simulated an emotion in order to play, and children were asked about the beliefs of an observer who participated in the pretence. These authors suggested that children aged from four to six may not realize that the observers of pretend emotions are aware that pretend emotions might not be real. However, these authors commented that, when children attributed beliefs to an observer of a pretend emotion, it was difficult to tell whether children's answers referred to the real beliefs of the observer, or to the beliefs that the children thought the observer had inside the pretence stipulation.

In the present study, we intend to overcome this difficulty by creating pretend play tasks with two conditions: one in which the observer of a pretend emotion will be aware of the pretence scenario and another in which the observer will not be aware of the pretence, and thus, will hold a false belief. This should permit us to evaluate if children realize that the beliefs of the observer of a simulated emotion depend on whether the observer is aware or unaware of the pretence scenario.

After reviewing the literature related to children's understanding of emotional dissemblance and its consequences, we posed the following research questions:

- a) Do children understand the pretence-reality distinction in the case of emotions?
- b) Do children understand the possible misleading consequences of pretend emotions?

Method

Participants

A total of 70 children participated in the study. They were divided into two age groups: thirty-seven four-year-olds (15 boys, 22 girls; mean age: 51.42 months; SD: 1.72) and thirty-three six-year-olds (17 boys, 16 girls; mean age: 77.0 months; SD: 1.49). Children were recruited from six state schools and the tasks were carried out in Catalan language. In order to be included in the sample, children were given a task where they had to distinguish real from pretend actions. This prerequisite was used to make sure that the children understood the specific vocabulary used to test the pretence-reality distinction. A total of 16 four-year-olds (six girls, ten boys) did not participate in the study for that reason. The parents were asked to sign a consent form allowing their children to participate in the study.

Procedure

The children were tested individually in one single session in a quiet room in their schools. The interviews lasted between 15 and 25 min. Children were audio recorded in all tasks (except in the receptive vocabulary test) and video recorded in the *own pretend emotions task*. In the *real versus pretend actions task* the three pairs of videos were always presented in the same order, and half of the participants always saw the real action videos first while the other half always saw the pretend action videos first. In the *own pretend emotions task*, the order of presentation of the two types of task was counterbalanced. In the *others' pretend emotions task* the order of presentation of the four stories was counterbalanced in a Latin square design.

Instruments

We describe below the tasks used in the experiment in the same order as they were administered:

- a) Real versus pretend actions task

This task, adapted from Rosen et al. (1997), was used to study children's ability to distinguish between pretend from real actions. Participants saw three pairs of videos of a young girl. Each pair consisted of two videos: in one of them the girl performed a real action, and in the other video the girl pretended to do the same action. In the first pair of videos the girl was eating or pretending to eat a banana, in the second pair the girl was combing or pretending to comb her hair, and in the third pair she was brushing or pretending to brush her teeth.

After watching each video, children were asked a test question to check if they distinguished real from pretend actions: "*Is this girl really brushing her teeth or is she just pretending to brush her teeth?*"

Children were awarded one point when they responded correctly to each pair of videos. Thus, they were expected to label the actor either as really doing or pretending to do an action. Children obtained a total score between zero and three. Children who got a score of zero or one were not included in the sample, and were not administered any other task. Therefore, only children who responded correctly at least to two pairs of videos were included in the study.

b) Own pretend emotions task

The aim of this task was to test whether children appreciate that the emotions they simulate in a pretend play context are not real. Furthermore, it also served to investigate their understanding of how the emotions they simulate can create false beliefs in observers only when these observers are not aware of the pretend play context.

Each child was given two tasks: the car task and the mouse task. Before starting the tasks, the experimenter introduced a puppet of a man to the children: "*OK X, now we are going to play a fun game, but first I'll introduce you to a friend of mine, Enric.*" Then, the puppet entered the scene and said: "*Hello, my name is Enric. What's your name?*" Afterwards, Enric brought in either a toy car or a mouse and said: "*Look X, I brought a car/mouse.*"

The main difference between the two tasks was that in the mouse task the puppet stayed and participated in the pretend play situation ("*I'm going to stay and play with you, OK?*"), whereas in the car task the puppet left ("*Now I'm going home to have a little nap. Goodbye!*"). After that, the experimenter asked the children whether they liked the car/mouse ("*Do you like the car/mouse that Enric brought?*"), and asked them the *internal emotion question*: "*How do you feel now, happy or sad?*" That question was intended to explore what internal emotion the children believed they were experiencing. After that, the experimenter suggested the children to participate in a pretend game and to pretend to be sad (either because the car got broken or because the mouse had hurt his leg). As this part was different in each type of task, a separate explanation for each is required.

In the car task, while the puppet was away, the experimenter said: "*OK, now we'll pretend that the car got broken, and we'll put on a sad face, OK? Oh, the car has fallen...*" While the experimenter was saying that, he took the car and turned it upside down, pretending that it had crashed into the table. After that, the experimenter put on a sad face and said to the children: "*Oh, the car got broken, what a pity! Let's see how you put on a sad face.*" Afterwards, the puppet came back. The puppet was supposed to be unaware of the pretend game and to hold a false belief about the child's real

emotion. Therefore, the puppet said: “*Hi X, why do you look sad? Didn’t you like my car?*”

In the mouse task, the experimenter said: “*OK, now we’ll pretend that the mouse hurt his leg, and we’ll put on a sad face, OK?*” In order to make clear that the puppet was aware of the pretend play context, the puppet also participated in the pretence, and said: “*Come on, mouse, let’s pretend that you’ve hurt your leg!*” At this moment, the experimenter took the mouse and made it fall down, while the mouse was saying: “*Oh, I’ve hurt myself, I’ve hurt myself!*” After that, the experimenter put on a sad face and said to the children: “*Oh, the mouse got hurt, what a pity! Let’s see how you put on a sad face.*” Then, the puppet, aware of the pretence scenario, said to the children: “*Oh X, what a sad face! Let’s pet the mouse.*”

After the puppet commented on the children’s sad face, they were asked two test questions. First, the experimenter asked the children about the puppet’s beliefs about the child’s real feelings. This was the *observer’s belief question*: “*X, does the puppet think that you are really sad or does he think that you’re pretending to be sad?*” The children were also asked to justify their answers: “*Why does he think that you are really sad/you’re pretending to be sad?*” The second test question served to investigate children’s understanding of the real emotion they had when they pretended to be sad. This was the *real emotion question*: “*X, when you were putting on a sad face, were you really sad or were you pretending to be sad?*”

The children scored one point when they responded correctly to the *real emotion question* in each task, that is, when they said that they just pretended to be sad. As there were two tasks, the possible score ranged from zero to two. The same range was possible in the *observer’s belief question*. In this case, though, the correct answer varied as a function of the task. In the car task, a correct answer consisted of saying that the puppet thought that they were really sad, because in this task the puppet did not know that the child was just pretending. However, in the mouse task, since the puppet participated in the pretence, the puppet was aware the child was just pretending to be sad. Thus, in the mouse task, the children’s answers were considered correct if they said that the puppet thought that they were just pretending to be sad.

c) Others’ pretend emotions task

The goal of this task was to explore children’s understanding that the emotions pretended by other children might not be real. In order to do so, children were given four pretend play tasks (adapted from Sidera et al. 2011). In each task children were told a story about two characters that were pretending to be either happy or sad.

In two of the stories the protagonist pretended to be sad while feeling happy. These are the positive tasks. One of the positive tasks is “the doctors”, in which two children were playing doctors and a girl pretended she got injured and simulated sadness. In the other positive task, “the food”, a boy pretended with his mother that he did not like the food, and showed a sad face.

The other two stories were the negative tasks, where the protagonist pretended to be happy while really feeling sad. In “the rain” task, two children were sad because it was raining and they couldn’t go to the beach, but then they pretended they were in the beach and showed a happy face. In “the race” task, a girl was the last one in a race and she pretended with her mother that she had won, while the girl was showing a happy face.

Furthermore, in each of the four stories there was always an observer who was aware that the simulated emotion was only pretence. Each story was illustrated with two pictures. The first picture showed the protagonist's real emotion, while in the second picture the protagonist simulated a different emotion. Two memory questions were asked in each task to make sure the children understood and remembered the stories. Children who did not answer these two questions correctly were told the correct answer, and the story was repeated once more to them. When children responded correctly to the memory questions, they were asked two test questions.

Despite the narrative and memory questions being the same as in the Sidera et al.'s (2011) study, for the purpose of the present study some of the test questions were changed. The question about the protagonist's external emotion (*external emotion question*) remained the same: "How does Marta look like, happy or sad?" However, instead of asking about the protagonists' internal emotions, children were asked whether the simulated emotion was real or pretence (*real emotion question*): "Is Marta really happy/sad, or is she just pretending?"

Furthermore, children were asked about the beliefs of the observer of the pretend emotions using the *observer's belief question*: "X, does Joan think that Marta is really happy or does he think that she is pretending to be happy? A justification for the answer was required: "Why does he think that Marta is really happy/pretending to be happy?"

With reference to the scoring, in the *real emotion question* the correct answers consisted of saying that the protagonist was pretending to be happy/sad. One point was awarded for a correct answer in each story. Thus, the total score ranged from zero to four when all four tasks were taken into account and from zero to two when we just considered the positive or the negative tasks. In the *observer's belief question*, a response was considered correct when children said that the observer thought that the protagonist was pretending to be happy/sad. The same scores as in the other question were possible.

d) Receptive vocabulary test

The ELI test (Saborit and Julián 2005) was used to evaluate the children's level of receptive vocabulary (in Catalan language). In this test the experimenter says one word and the child has to identify, from five pictures, the one that corresponds to the word said by the experimenter. The total of tested words is 30, so the raw scores ranged from zero to 30.

Results

The results will be presented in the following order: vocabulary test, real versus pretend actions, own pretend emotions and others' pretend emotions. To carry out the analyses, Shapiro-Wilk normality tests were conducted, and they showed that none of the variables studied followed a normal distribution. Consequently, different non-parametric tests were used. For the between-groups analyses, the Mann-Whitney test was used when the independent variable was binomial and the dependent variable was ordinal or quantitative. In the cases where both variables were binomial, the Chi-Square test was used. For the within-groups analyses, the McNemar test was used

when the dependent variable was binomial. The Wilcoxon test was used when it was ordinal. Finally, it is important to comment that the data analyses on the real emotion question and the observer's belief question did not include the subjects who answered "I don't know".

Receptive Vocabulary Test

The Mann–Whitney test showed significant differences in the vocabulary score between the four- and the six-year-old groups ($Z=-5.531, p=.000$). The means were 17.7 in children aged four ($SD=3.37$) and 23.09 in children aged six ($SD=3.16$).

Real Versus Pretend Actions

In the four-year-old group, eight children scored two points and 29 children scored three points (mean: 2.78; $SD: .42$). In the six-year-old group only three children scored two, while 30 children scored three (mean: 2.91; $SD: .29$). The Chi-Square test showed that the differences between the two groups were not significant ($\chi^2(1, N=70)=2.068, p=.150$).

Own Pretend Emotions

In both the car and the mouse tasks, all children answered, in the *internal emotion question*, that they were happy when the puppet brought a car or a mouse. After being asked to put on a sad face, the children were asked the *real emotion question* (see Table 1). The results show that the majority of the children said that they had pretended to be sad, and this was valid for both age groups of each task. Specifically, in the car task, 75 % of four-year-olds and 78.8 % of six-year-olds answered that they had just pretended to be sad, and in the mouse task, 70.3 % of the four-year-olds and 78.8 % of the six-year-olds gave that same answer. We used the McNemar test to compare the results between the two tasks (car vs. mouse) in each age group, and no significant differences were found (four-year-olds: $\chi^2(1, N=36)=.000, p=1.000$; six-year-olds: $\chi^2(1, N=32)=.000, p=1.000$).

If we consider the percentage of children who responded correctly to both tasks, we found 67.6 % at the age of four and 72.7 % at the age of six. The Chi-Square test showed that there were no significant differences in the responses given by the

Table 1 Children's responses to the *real emotion question* of the *own pretend emotions task*, as a function of age and type of task

	Car		Mouse	
	Really sad	Pretending to be sad	Really sad	Pretending to be sad
four-year-olds ($N=37^a$)	9	27	10	26
six-year-olds ($N=33^a$)	7	26	6	26

^a One four-year-old answered "I don't know" in both tasks, and a six-year-old also answered "I don't know" in the mouse task. These results are not shown in the table

children as a function of age (car task: $\chi^2(1, N=68)=.385, p=.535$; mouse task: $\chi^2(1, N=68)=.767, p=.381$). No significant differences were found either (using Chi-Square) in the children's responses to the *real emotion question* as a function of sex ($p>.05$). In terms of the level of vocabulary, we found that it correlated almost significantly in the four-year-old group ($r=.327, p=.052$) but not in the six-year-old group ($p=.997$).

The results of the *observer's belief question* are shown in Table 2. They show a different response pattern according to age. Whereas most four-year-olds answered that the observer believed that they were pretending to be sad, independently of the task (car: 75.7 %; mouse: 73 %), the majority of six-year-olds said that the observer believed that they were really sad (car: 72.7 %; mouse: 60.6 %). The McNemar test showed that the difference between the children's responses in the two tasks was not significant either in the four-year-old group ($\chi^2(1, N=37)=.000, p=1.000$) or in the six-year-old group ($\chi^2(1, N=31)=2.25, p=.125$).

On the other hand, the Chi-Square showed that the difference in the response to the *observer's belief question* between four- and six-year-olds was significant in both tasks (car task: $\chi^2(1, 68)=19.037, p=.000$; mouse task: $\chi^2(1, 68)=9.616, p=.002$). Just one four-year-old and four six-year-olds gave correct answers to both tasks. The Chi-Square test showed no differences in children's responses to this question as a function of sex ($p>.05$). On the other hand, the correlation between the score in the vocabulary test and the sum of responses in this question was not significant ($p>.05$).

Others' Pretend Emotions

Regarding the *memory questions*, the results show that a few four-year-olds were not able to understand the stories, even after they were repeated. The breakdown of those who did not understand the stories is: one child in 'The doctors' task, two in 'The food' and in 'The rain', and five in 'The race' task.

The results of the *real emotion question* are shown in Table 3. The majority of children in both age groups said that the protagonist was *pretending to be happy* or *sad*. When comparing the sum of all four tasks (means: four-year-olds, 2.32 out of four points; six-year-olds, 3.42 out of four points), the Mann-Whitney test showed significant differences between the four- and the six-year-olds' performances ($Z=3.128, p=.002$). The Chi-Square test revealed that these age differences were significant in each of the tasks ('The doctors': $\chi^2(1, 69)=4.905, p=.027$; 'The rain': χ^2

Table 2 Children's responses to the *observer's belief question* of the *own pretend emotions task*, as a function of age and type of task

	Car		Mouse	
	Really sad	Pretending to be sad	Really sad	Pretending to be sad
four-year-olds ($N=37$)	9	28	10	27
six-year-olds ($N=33^a$)	24	8	20	11

^a Two six-year-olds answered "I don't know", one in the mouse task and the other one in both tasks. These results are not shown in the table

Table 3 Children's responses to the *real emotion question* of the *others' pretend emotions task*, as a function of age and type of task

	The doctors (+)		The food (+)		The rain (-)		The race (-)	
	Really sad	Pretending to be sad	Really sad	Pretending to be sad	Really happy	Pretending to be happy	Really happy	Pretending to be happy
four-year-olds (<i>N</i> =37 ^a)	11	25	10	25	15	20	15	17
six-year-olds (<i>N</i> =33 ^b)	3	30	1	32	6	25	9	24

^a Some four-year-olds did not respond correctly to the memory questions and thus were not asked the test questions. Therefore, the results shown in the table do not correspond to the number of participants of the study

^b In 'The rain', the results of two six-year-olds were lost

(1, 66)=4.186, $p=.041$; 'The food': $\chi^2(1, 68)=8.172, p=.004$; 'The race': $\chi^2(1, 65)=4.524, p=.033$).

We used the Wilcoxon test to compare the children's performance between the positive and the negative pretend play tasks, and we found significant differences in both age groups (four-year-olds: $Z=-2.616, p=0.09$; six-year-olds: $Z=-2.226, p=.026$). Thus, children performed better in the tasks where the protagonists pretended a sad emotion (means out of two: four-year-olds, 1.39; six-year-olds, 1.87) than in the tasks where they pretended a happy emotion (means out of two: four-year-olds, .95; six-year-olds, 1.55).

No sex differences were found in the children's responses to the *real emotion question* in any story at any age (Chi-Square, $p>.05$ in all cases). Concerning the vocabulary level, we found that it had a significant positive correlation with the sum of scores from the four tasks obtained in this question ($r=.297, p=.015$), though when the correlations were made independently for the four- and the six-year-old groups, they were not significant ($p>.05$).

The children's responses to the *observer's belief question* are shown in Table 4. On interpreting the table, a different pattern emerged depending on whether the pretend play tasks were positive or negative. Whereas in the positive pretend play tasks the majority of the children responded that the observer thought that the protagonist was pretending to be sad, in the negative pretend play tasks (except in 'The race' for six-year-olds) most of the children said that the observer thought that the protagonist was real sad. When we compared, using the Wilcoxon test, the six-year-olds' sum of correct responses in the positive tasks (mean: 1.51 out of two) with that of the negative tasks (mean: 0.9 out of two), a significant difference was observed ($Z=-2.226, p=.001$). In the group of four-year-olds, despite a difference in the means (positive tasks: 1.0 out of two; negative tasks: 0.8 out of two), it was non-significant ($p<.05$).

When we used the Chi-Square test to compare the performance between the four- and the six-year-olds, we found a significant difference in favor of the older children in 'The doctors' task ($\chi^2(1, 67)=4.962, p=.026$) and a difference close to significance in 'The food' task ($\chi^2(1, 67)=2.803, p=.094$). However, no age

Table 4 Children's responses to the *observer's belief question* of the *others' pretend emotions task*, as a function of age and type of task

	The doctors (+)		The food (+)		The rain (-)		The race (-)	
	Really sad	Pretending to be sad	Really sad	Pretending to be sad	Really happy	Pretending to be happy	Really happy	Pretending to be happy
four-year-olds (<i>N</i> =37 ^a)	16	18	16	18	19	15	17	15
six-year-olds (<i>N</i> =33 ^b)	7	26	9	24	15	17	20	13

^a The results of some four-year-olds who responded "I don't know" are not shown in the table. Specifically, two children in 'The doctors', one in 'The food', and one in 'The rain'. On the other hand, some four-year-olds did not respond correctly to the memory questions and thus were not asked the test questions. Therefore, the results shown in the table do not correspond to the number of participants

^b In 'The rain' the results of one six-year-old were lost

differences were found in the other two negative pretend play tasks. The Chi-Square test revealed no sex differences in the children's answers to the *observer's belief question* in either of the two age groups in any story. Furthermore, the correlation between the level of vocabulary and children's sum of responses in this question was not significant ($p > .05$).

Discussion

This paper aims to study children's understanding that pretend emotions might be different from real emotions, and therefore, that an observer of a pretend emotion can be misled about the real emotion of the pretender. Our first research question was: do children understand the pretence-reality distinction in the case of emotions? The results strongly suggest that the majority of children aged four understand that pretend emotions are not real, regardless of whether the pretender is another person or themselves. These results extend the findings of Rosen et al. (1997), who found that the majority of four-year-olds are capable of differentiating real from pretend actions, and show that these children are also capable of recognizing that pretend emotions are not real.

From our results we can assert that children's understanding of pretend emotions develops between the ages of four and six. As well as age, the level of vocabulary seems to play a role in the understanding of pretend emotions. This is consistent with other studies who have found a relationship between children's level of vocabulary and their performance in theory of mind tasks (for example, Schick et al. 2007).

At first sight our results seem striking when compared to those obtained by Sidera et al. (2011), who found that four-year-olds were not capable of differentiating apparent from real emotions in pretend play contexts. The data from the two studies is comparable because they used similar tasks to study the understanding of the emotions simulated by others. In both studies children were asked first about the external emotion of a character that was pretending an emotion ("What does *X* look like, happy or sad?"), and the only difference was that, in the present study, instead of

asking the children about the internal emotion of the pretender (“*How does Marta feel inside, happy or sad?*”) we asked them about their real emotion, in pretence-reality terms (“*Is Marta really sad, or is she just pretending?*”). This change produced very different results: while Sidera et al. found that four-year-olds could not distinguish between internal and external emotions, in the present research the majority of four-year-olds were capable of understanding that the protagonist was just pretending an emotion.

It is conceivable that the appearance-reality distinction in the case of emotions is not a necessary prerequisite for differentiating between pretend and real emotions. This proposal is consistent with some authors who suggested that, in the domain of objects, four-year-olds understand the pretence-reality distinction earlier than the appearance-reality distinction (Flavell et al. 1987). From this perspective it is possible that four-year-olds can distinguish a person who is really sad from a person who is pretending to be sad, and thus, understanding the difference between their intentions (one wants to play and the other not) without having acquired the concept of *internal emotion*. This suggestion is in line with Mizokawa’s (2011) results, who found that four-year-olds start to understand that pretend crying is not real.

The second research question we wanted to address was: do children understand the possible misleading consequences of pretend emotions? According to the results of our study the answer should be no. In the *own pretend emotions task*, more than 70 % of the four-year-olds responded that the puppet would think that they were just pretending to be sad. Therefore, they mostly gave correct answers in the mouse task, but not in the car task. However, the six-year-olds mostly responded that the puppet would think they really were sad. As a consequence, six-year-olds responded correctly in the mouse task but not in the car task. In general, only a few children were capable of taking the puppet’s knowledge into account in their attribution of beliefs to the observer.

Two factors could explain this poor result. First, children may not have had enough clues to realize that, in the car task, the puppet was holding a false belief about their feelings. Indeed, we did not check if the children were aware that the puppet was out of the room while the experimenter and the child planned to pretend to be sad.

Second, is possible that some children understood the whole situation as pretence, so when they were asked about the beliefs of the puppet, they responded in a ‘make-believe’ way. This could explain why the four-year-olds tended to say that the puppet thought that their simulation was ‘make-believe’, while six-year-olds, perhaps more aware of the possible misleading consequences of their facial expression, said that the puppet thought that they were “really sad” more often. In the *others’ pretend emotions task*, six-year-old children performed significantly better than the younger children in the positive pretend play tasks, where more than 70 % of the older group said that the observer would think that the protagonist was only pretending. Four-year-olds gave this answer about half the time. Therefore, while four-year-olds responded at chance level, six-year-olds seemed to be more aware, at least in the positive pretend play tasks, that the observer knew that the protagonist was only pretending.

On evaluating the results of the two tasks, it seems that four- and six-year-olds have difficulty understanding that the observer of a pretend emotion can be unintentionally deceived about the real emotion of the pretender. Gross and Harris (1988)

suggested that, before the age of six, children are not able to understand the consequences of hiding emotions on the beliefs of an observer. On the other side, Wellman et al. (2001) suggested that framing a false belief task in terms of deception or trickery improves children's performance on that task. In this sense, understanding the misleading consequences of simulated emotions could be easier in deception than in pretend play situations, because the intention to deceive could serve as a clue to connect the simulated emotional expression with the false belief.

To conclude, the results of our study suggest that, from the age of four, children are capable of distinguishing between pretend and real emotions. However, they have difficulty, especially at the age of four, understanding that an observer of a pretend emotion may hold a false belief about the real emotion of the pretender. Rosen et al. (1997) suggested that children first learn to recognize pretend acts through actions and situational cues, and only afterwards they develop representations of the pretender's thoughts. Children's understanding of pretend emotions could also develop gradually: first children would learn to recognize pretend emotions, and later they would realize that the observers of pretend acts can hold different representations of the pretender's feelings.

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References

- Adrián, J. E., Clemente, R. A., & Villanueva, L. (2006). Atribución emocional dependiente de creencias falsas: relaciones con la interacción social entre iguales y lenguaje de los niños. *Infancia y Aprendizaje*, 29(2), 191–201.
- Banerjee, M. (1997). Hidden emotions: preschoolers' knowledge of appearance-reality and emotion display rules. *Social Cognition*, 15, 107–132.
- Bourchier, A., & Davis, A. (2002). Children's understanding of the pretence—reality distinction: a review of current theory and evidence. *Developmental Science*, 5, 397–413.
- Braza, F., Aitziber, A., Muñoz, J. M., Carreras, M. R., Braza, P., García, A., Sorozabal, A., & Sánchez-Martín, J. R. (2009). Social cognitive predictors of peer acceptance at age 5 and the moderating effects of gender. *British Journal of Developmental Psychology*, 27, 703–716.
- Bunce, L., & Harris, M. (2008). I saw the real father christmas! Children's everyday uses of the words real, really, and pretend. *British Journal of Developmental Psychology*, 26, 445–455.
- Flavell, J. H. (2004). Theory-of-mind development: retrospect and prospect. *Merrill-Palmer Quarterly Journal of Developmental Psychology*, 50, 274–290.
- Flavell, J. H., Flavell, E. R., & Green, F. L. (1987). Young children's knowledge about the apparent-real and pretend-real distinctions. *Developmental Psychology*, 23, 816–822.
- Friend, M., & Davis, T. L. (1993). Appearance—reality distinction: children's understanding of the physical and affective domains. *Developmental Psychology*, 29, 907–914.
- Gosselin, P., Warren, M., & Diotte, M. (2002). Motivation to hide emotion and children's understanding of the distinction between real and apparent emotions. *Journal of Genetic Psychology*, 163, 479–495.
- Gross, D., & Harris, P. L. (1988). False beliefs about emotion: young children's understanding of misleading emotional displays. *International Journal of Behavioural Development*, 11, 475–488.
- Harris, P. L. (2008). Children's understanding of emotion. In M. Lewis, J. M. Haviland-Jones, & L. F. Barrett (Eds.), *Handbook of emotion* (pp. 320–331). New York, NY: Guilford Press.

- Harris, P. L., Donnelly, K., Guz, G. R., & Pitt-Watson, R. (1986). Children's understanding of the distinction between real and apparent emotion. *Child Development*, *57*, 895–909.
- Holmes-Lonergan, H. A. (2003). Understanding of affective false beliefs, perceptions of parental discipline, and classroom behavior in children from head start. *Early Education and Development*, *14*, 29–46.
- Hosie, J. A., Gray, C. D., Russell, P. A., Scott, C., & Hunter, N. (1998). The matching of facial expressions by deaf and hearing children and their production and comprehension of emotion labels. *Motivation and Emotion*, *22*, 293–313.
- Josephs, I. E. (1994). Display rule behavior and understanding in preschool children. *Journal of Nonverbal Behavior*, *18*, 301–326.
- Joshi, M. S., & MacLean, M. (1994). Indian and English children's understanding of the distinction between real and apparent emotion. *Journal of Nonverbal Behavior*, *18*, 301–326.
- Lillard, A. S. (1994). Making sense of pretence. In C. Lewis & P. Mitchell (Eds.), *Children's early understanding of mind: origins and development* (pp. 211–234). Hove, England: Erlbaum.
- Misailidi, P. (2006). Young children's display rule knowledge: understanding the distinction between apparent and real emotions and the motives underlying the use of display rules. *Social Behavior and Personality*, *34*, 1285–1296.
- Mizokawa, A. (2011). Young children's understanding of pretend crying: the effect of context. *British Journal of Developmental Psychology*, *29*, 489–503.
- Nielsen, M., & Dissanayake, C. (2000). An investigation of pretend play, mental state terms, and false belief understanding: in search of a metarepresentational link. *British Journal of Developmental Psychology*, *18*, 609–624.
- Peskin, J. (1996). Guise and guile: children's understanding of narratives in which the purpose of pretence is deception. *Child Development*, *67*, 1735–1751.
- Peterson, C. C., & Wellman, H. M. (2009). From fancy to reason: scaling deaf and hearing children's understanding of theory of mind and pretence. *British Journal of Developmental Psychology*, *27*, 297–310.
- Pons, F., Harris, P. L., & de Rosnay, M. (2004). Emotion comprehension between 3 and 11 years: developmental periods and hierarchical organizations. *The European Journal of Developmental Psychology*, *1*, 127–152.
- Rosen, C. S., Schwebel, D. C., & Singer, J. L. (1997). Preschoolers' Attributions of mental states in pretence. *Child Development*, *68*, 1133–1142.
- Ruffman, T. (2002). Pretence—reality confusions in children and adults. *Developmental Science*, *5*, 416–417.
- Saborit, C., & Julián, J. P. (2005). L'avaluació del llenguatge infantil. ELI. Universitat Jaume I de Castelló (UJI). Col·lecció: Educació.
- Schick, B., de Villiers, P., de Villiers, J., & Hoffmeister, R. (2007). Language and theory of mind: a study of deaf children. *Child Development*, *78*, 376–396.
- Sidera, F., Serrat, E., Rostan, C., & Sanz-Torrent, M. (2011). Do children realize that pretend emotions might be unreal? *The Journal of Genetic Psychology: Research and Theory on Human Development*, *172*, 40–55.
- Sidera, F., Serrat, E., Rostan, C., & Serrano, J. (2012). Children's attribution of beliefs about simulated emotions. *Studia Psychologica*, *54*, 67–80.
- Wellman, H. M., & Liu, D. (2004). Scaling of theory of mind tasks. *Child Development*, *75*, 523–541.
- Wellman, H. M., Cross, D., & Watson, J. (2001). Meta-analysis of theory-of-mind development: the truth about false belief. *Child Development*, *72*, 655–684.