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## The Understanding of Emotion Dissimulation in School-aged Children

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### Abstract

Two studies were designed to assess children's understanding of emotional dissimulation. In Study 1, children between the ages 5 and 10 years listened to fictitious stories describing social situations in which a main character felt emotions but decided to hide them from other protagonists. The participants were asked to identify the felt emotions and to select the facial expression the main character was likely to display. Then, they were asked to select, among four proposed explanations, the one which could best account for the selected facial expressions. Five- and 6-year-olds performed the task correctly above chance level, although their understanding of emotional dissimulation was not as good as the 9- and 10-year-olds. Study 2 was identical to Study 1, except that only two of the possible four explanations were proposed to the participants after they were read the stories. The results showed that young children tend to conceptualize emotional understanding as a phenomenon involving a change in the felt emotions. The findings are discussed in terms of children's ability to perceive the representational nature of mental states, and in terms of limitations in working memory.

### The Understanding of Emotion Dissimulation in School-aged Children

Children's ability to exert a control over their emotional expression emerges very early in life. Preschool children are able to pose various facial expressions of emotion (Lewis, Sullivan & Vasen, 1987; Field & Walden, 1982; Odom & Lemond, 1972), mask their disappointment by smiling when receiving an unattractive gift (Cole, 1986; Josephs, 1993, 1994), and amplify their distress expression. Blurton-Jones (1967), for instance, found that 3-year-olds were more likely to cry after injuring themselves if a caregiver was looking at them.

Children's understanding of emotional dissimulation has also been found to emerge in the preschool years. When given fictitious stories describing social situations in which characters experience emotions but decide to hide them, 3- and 4-year-olds have been found to select appropriate drawings of facial expression (Banerjee, 1997; Harris, Donnelly, Guz, & Pitt-Watson, 1986; Josephs, 1994). They tend to select a smile when the story characters intend to hide sadness, and a neutral face or a sadness expression when the story characters intend to hide happiness. Their understanding of emotional dissimulation is, however, rudimentary and largely implicit. Preschoolers have difficulty in verbally articulating their understanding of emotional dissimulation. For instance, there are not proficient in providing examples of situations where they would hide their emotion to other people (Saarni, 1979), and in providing justifications for dissimulating felt emotions (Gross & Harris, 1988; Harris et al., 1986). In contrast, most 6-year-olds are able to report when and why they would dissimulate their emotions to other people (Saarni, 1979). The knowledge of these topics continues to improve during later

childhood, with older children (10-11 years old) more able to take into account various factors susceptible to affect the likelihood of expressive control, such as the degree of affiliation with an interactant, status differences, and the intensity of felt emotions (Saarni, Mumme & Campos, 1998). Older children are also more prone to explain why people may dissimulate their emotions in terms of recursive thought. Harris et al. (1986) found that 10-year-olds' explanations generally take into account people's intentions to create a false belief about their mental states in others and influence their behavior. Such explanations typically include several propositions concerning mental states, embedded in each other.

Recently, Perron and Gosselin (2003) used a method very similar to that used by Harris et al. (1986) in order to examine children's reasoning about emotional dissimulation. Children between the ages of 5 and 10 years were read stories in which it was mentioned that the main protagonists wished to hide their emotions to other protagonists. After the reading of the story, they had to identify the emotion felt by the main protagonist and the facial expression the main protagonist was likely to display. Then they were asked to explain why the main protagonist would display the selected facial expression.

Like Harris et al. (1986), Perron and Gosselin (2003) found that the young children were able to select the correct felt and apparent emotions, although their accuracy was not as high of that of older children. Younger children also had much more difficulty than older children in providing appropriate justifications for the selected facial expressions. Several of them gave the same explanation for the apparent and the felt emotions. If the main story protagonist was sad because he or she had received an

unattractive gift, several young children explained that the protagonist smiled because of the unattractive gift. Close examination of the explanations provided by young children revealed another interesting fact. They tend to explain the discrepancy between felt and apparent emotions by a change in the felt emotion. For example, in the story described above, several young children said the protagonist smiled because he or she was happy, although they had mentioned a few seconds earlier that the main protagonist was sad because of the unattractive gift.

The pattern of responses in 9- and 10-year-olds was quite different, as they rarely showed this type of reasoning. Their most common error was, in fact, a minor one. Although the stories were explicit about the motivation of the main protagonist to hide the felt emotions, some older children confused the specific motivation. For example, they explained that the main protagonist smiled to avoid a negative consequence while the correct answer was because he or she wanted to gain an advantage.

Perron and Gosselin (2003) also examined the complexity of the explanations given by children for the selected facial expressions. Interestingly, none of the children aged between 5 and 6 years were able to provide explanations including three embedded propositions concerning mental states. In other words, none of them were able to explain that the main protagonist displayed a particular facial expression because he or she wanted to make the other protagonists believe he or she experienced an emotion that was different from the felt emotion. In contrast, 21% of the 7- and 8- year-olds, and 24% of the 9- and 10-year-olds, respectively, were able to do so.

Taken together, the available evidence indicates that a significant consolidation in children's understanding of emotional dissimulation takes place during the school years.

We present here two studies designed to assess our earlier findings with respect to children's understanding of emotional dissimulation. However, we modified the method used to assess children's reasoning in order to reduce the requirements of the task in terms of verbal production. Instead of asking children to verbally explain why the story protagonists displayed the selected facial expressions, we provided them with various explanations and asked them to select the appropriate one. Based on our earlier findings, we expected young children to be more prone than older children to two types of errors: giving the same explanations for the selected facial expression as for felt emotions, and explaining the selected facial expressions by a change in the felt emotions, the selected facial expressions being congruent with the second felt emotions. Older children were expected to be more likely than young children to select the wrong motivation explanation. In Study 1, we presented children with four different explanations (one correct and three incorrect), whereas, in Study 2, two (one correct and one incorrect) out of four different explanations were presented, using a counter-balanced design.

### Study 1

As mentioned above, children's understanding was assessed by providing them with the correct explanation and three incorrect explanations. The latter were those which were found to be prevalent between 5 and 10 years of age in our earlier study (Perron & Gosselin, 2003). A measure of receptive vocabulary was also included in order to ensure equivalence between younger and older children.

### Method

#### *Participants*

Twenty-nine children (15 girls and 14 boys), ranging between 5 and 6 years of age ( $M = 5.25$ ,  $SD = .25$ ), and 30 children (17 girls and 13 boys), ranging between 9 and 10 years of age ( $M = 9.75$ ,  $SD = .42$ ), participated in the study. All participants were native French speakers and were recruited from regular elementary school classes in Gatineau (Quebec, Canada). Both parental and child consent was received prior to the child's participation, and no remuneration was given for participating.

### *Material*

Short stories. Six different stories selected from Josephs (1994) and Gosselin, Warren & Diotte (2002) were used (see Appendix A). Three stories described a situation likely to induce happiness (positive stories) and three stories described a situation likely to induce sadness (negative stories) in the main character. Each story depicted a context of emotion dissimulation in which it was explicitly mentioned that the character did not wish to show others how he or she really felt. Moreover, each story had two versions: one in which the main protagonist was motivated to hide felt emotions to avoid hurting the other protagonists' feelings (prosocial version), and one in which he or she expected to gain an advantage or to avoid punishment (self-centered version). The two versions of the stories were counterbalanced between participants across age and gender. Each story was presented on a separate card.

Real Emotions Scale. Children used a "feeling thermometer" to indicate the emotion felt by the main character. It consisted of five colored regions symbolizing the emotion labels. They were ordered, from the bottom to the top, as follows: black (very sad), grey (a bit sad), white (no emotion felt), pink (a bit happy), and red (very happy).

Apparent Emotions Scale. This scale consisted of five drawings of facial expressions ordered from the bottom to the top as follows: very sad, a bit sad, neutral, a bit happy, and very happy. The facial features representing sadness and happiness were based on the description provided in the supplementary manual of the Facial Action Coding System (Ekman & Friesen, 1978).

Receptive Vocabulary Measurement. The Peabody Picture Vocabulary Test-Revised (PPVT-R), adapted to the French language, (Dunn, Thériault & Dunn, 1993) was used to assess receptive vocabulary. It includes a series of 170 items (cards), each containing four grayscale images presented in a multiple-choice format. The test has a median reliability of .81 (Dunn et al., 1993).

### *Procedure*

The experimentation took place in elementary schools where participants were met individually by the experimenter in a quiet room near their classroom. They were first told that they would be read different stories in which a main character experienced an emotion but decided not to show it to the other characters. Then the experimenter mentioned that she or he was interested in the children's understanding of the stories and, in particular, in the emotion felt by the main character and by the facial expression the main character was likely to display. The experimenter showed the participant the Real Emotion Scale, named each of the five colored circles, and asked the participant to point to the color on the feeling thermometer corresponding to each emotion. When the items of this scale were correctly learned, the experimenter introduced the Apparent Emotion Scale and tested the children in a similar way. Then, the experimenter informed the child

of the possibility that the real emotion might not always correspond to the emotion expressed by the face, and gave an example of such a situation.

This first part was followed by six test trials during which the stories were read (see Appendix B). After each story was read, the participants were asked two questions in order to ensure appropriate understanding and memory of the stories. They had to specify the event leading to the felt emotion, and why the main character wanted to hide the felt emotion. If one of these elements was misunderstood, it was reexplained, the story was read again, and the two questions asked again. If appropriate understanding was not achieved after the third reading, the experimenter proceeded with the next story.

After the participants demonstrated correct understanding of the story, they were asked to tell which emotion was felt by the main character. The five alternatives on the Real Emotion scale were enumerated. The participant responded by naming the felt emotion or by pointing to the corresponding color. Second, the participants were asked to point to the facial expression the main character was likely to display in the story, provided that he or she did not want to show his or her emotion to the other story characters. The five alternatives of the scale were enumerated, and the participants were asked to point to one of them.

Third, the experimenter asked the participants to justify why the main character displayed the selected facial expression. The participants had to choose between four explanations among which only one was correct. The three incorrect explanations were those found to be prevalent between the ages of 5 and 10 years in our previous work (Perron & Gosselin, 2003). The first one was a mention of the event leading to the felt emotion (felt emotion explanation); the second mentioned that the main character

displayed the selected facial expression because he or she felt a second emotion which was congruent with the expression (change in the felt emotion explanation); and the third one mentioned that the main character did not want to show how he or she felt to the other story characters. However, the specific reason given for hiding the emotion was wrong (wrong motivation explanation). Participants were instructed to wait until the fourth explanation was proposed before responding. If they were unable to answer after the first reading, the four explanations were repeated a second time, and a third time if necessary. After the third unsuccessful attempt, the experimenter moved on to the next story. The six stories and the four explanations were presented in a random order.

A few days later (between 3 and 7), the participants were administered the French version of the Peabody Picture Vocabulary Test. They were shown various pictures of objects and asked to point to the object named by the experimenter. Completion of the test required between 8 and 15 minutes.

#### *Assessment criteria*

To be credited with correct responses in the pointing task, participants had to select the correct felt emotion as well as the correct facial expression. The main character had to be judged a bit sad or very sad in the negative stories and a bit happy or very happy in the positive stories. The selected facial expression had to be more negative than the felt emotion in positive stories, whereas the reverse was expected in negative stories. For example, if the participant indicated that the main character was very happy in a positive story, there were four correct alternatives: weak happiness expression, neutral face, weak sadness expression, and strong sadness expression. If the main character was judged to be a bit happy, there were three correct alternatives.

## Results

### *Understanding of the distinction between real and apparent emotions*

Children correctly identified the felt emotion in both positive and negative stories. For the 5- and 6-year-olds, the mean accuracy percentages were 88.51 (SD = 18.42) for the positive stories and 88.51 (SD = 22.32) for the negative stories, whereas, for the 9- and 10-year-olds, they were 100 (SD = 0.00) and 88.89 (SD = 22.03), respectively. One-tailed  $t$  tests (for one sample) showed that the performance of the younger group was above chance level (40%) for the positive stories,  $t(28) = 14.65$ ,  $p < .0005$ , as well as for the negative stories,  $t(28) = 11.75$ ,  $p < .0005$ . The older group was also above chance level for the negative stories,  $t(29) = 11.95$ ,  $p < .0005$ , and obtained a perfect score for the positive stories.

Table 1 presents the mean percentages of accuracy for the understanding of the distinction between felt (real) and apparent emotions. One-tailed  $t$  tests showed that the performance was above chance level (28%) in all instances:  $t(28) = 5.24$  (younger group for positive stories),  $t(28) = 4.28$  (younger group for negative stories),  $t(29) = 47.93$  (older group for positive stories), and  $t(29) = 11.77$  (older group for negative stories),  $p < .0005$ .

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Insert Table 1 here

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The data were then analyzed with a 2 (Age) X 2 (Valence) ANCOVA with repeated measures for the latter, and the real emotion scores and Peabody scores as

covariables<sup>1</sup>. In order to reduce the heterogeneity of the variances, the data underwent an arcsine transformation. The analysis revealed a significant effect of Age,  $F(1, 55) = 30.60, p < .0001$ , and Valence,  $F(1, 55) = 23.13, p < .0001$ . The understanding of the distinction between real and apparent emotions was higher for older than for younger children, and higher for positive than for negative stories. Main effects of the covariates real emotion score,  $F(1, 55) = 19.31, p < .0001$ , and the Peabody score,  $F(1, 55) = 13.45, p < .0006$ , were also found, along with an interaction effect between these variables,  $F(1, 55) = 18.64, p < .0001$ .

#### *Accuracy of the justifications*

Table 2 reports the mean relative frequencies of use of the justification categories independently of the score obtained at the real and apparent emotion identification task. Two one-tailed  $t$  tests (one sample) showed that the correct justification was selected at an above-chance level (25%) for both the younger,  $t(28) = 3.48, p < .001$ , and older group,  $t(29) = 8.66, p < .0005$ . However, it is noteworthy that the accuracy of the 5- and 6-year-olds was below 50%. The data were then analyzed with a 2 (Age) X 4 (Justification category) ANCOVA with repeated measures on the second factor and with the score obtained at the Peabody test as covariable. In order to reduce the heterogeneity of variances, the data underwent an arcsine transformation. The analysis revealed a significant Age X Justification category interaction effect  $F(3, 168) = 13.29, p < .0001$ . The analysis of the simple effects for Age indicated that the older group selected the correct justification more often than the younger group,  $F(1, 56) = 9.41, p < .003$ . Older participants also selected the wrong motivation explanation more frequently than the younger participants,  $F(1, 56) = 7.19, p < .01$ . In contrast, the younger participants had a

greater tendency to select the real emotion explanation than the older participants,  $F(1, 56) = 34.59, p < .0001$ . The analysis of the simple effects of the Justification category revealed a significant effect for the younger,  $F(3, 84) = 8.24, p < .0002$ , as well as for the older group,  $F(3, 87) = 52.65, p < .0001$ . Given that the condition of the sphericity of orthogonal components was not respected, the Huynh-Feldt correction was used. The Tukey test ( $p < .05$ ) showed that 5- and 6-year-olds selected to correct justification more often than the three incorrect justifications, with no other significant differences. Children aged between 9 and 10 years were also found to select the correct justification more often than the three incorrect justifications. Moreover, they selected the felt emotion change explanation and the wrong motivation explanation more frequently than the felt emotion explanation.

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Insert table 2 here

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## Discussion

The goal of Study 1 was to examine children's reasoning about emotion dissimulation with a method less demanding in terms of verbal productive ability. Based on our earlier findings (Perron & Gosselin, 2003), we expected older children to better distinguish between felt and apparent emotions. The results indicate that the 5- and 6-year-olds clearly distinguished between felt and apparent emotions, although their understanding was not as good as that of 9- and 10-year-olds. These results are concordant with those of prior studies (Gardner et al., 1988; Gosselin et al. 2002; Harris

et al., 1986; Josephs, 1994; Perron & Gosselin, 2003). It is noteworthy that the improvement as a function of age took place even after correcting for the children's ability to identify felt emotions, and the children's receptive vocabulary.

Our examination of children's ability to select appropriate justifications for the selected facial expressions showed that their performance was above chance level in both age groups, with an improvement as a function of age. These results are also in agreement with those we obtained in our earlier work (Perron & Gosselin, 2003). We expected 5- and 6-year-olds to be more prone than older children to two types of errors when selecting an explanation for the selected facial expression: giving the same explanations for the selected facial expressions as for felt emotions, and explaining the selected facial expressions by a change in the felt emotions, the selected facial expressions being congruent with the second felt emotions. Moreover, older children were expected to be more likely than young children to select the wrong motivation explanation. Overall, these hypotheses were supported by the data. Young children were more likely than the older children to select the real emotion explanation, and less likely to select the wrong motivation explanation. Contrary to our expectations, younger children did not select the felt emotion change explanation more often than older children. However, it is interesting to note that this type of explanation accounted for a significant part of the errors made by older children. Taken together, our results confirmed the hypothesis that a significant consolidation in the understanding of emotion dissimulation takes place during later childhood.

Although the method used in this study was designed to reduce the demands of the task in terms of verbal productive abilities, the children had to memorize and compare

four different explanations. Therefore, it is possible that the improvement over age in assessing the proposed explanations could have resulted from improvement in memory and in executive functions. The second study was conducted to overcome this limitation.

## Study 2

The aim of this study was to assess children's reasoning with respect to emotional dissimulation with a task less demanding in terms of memory load and executive functions. Therefore, only two explanations were offered to the participants after they were asked to justify the selected facial expressions: the correct explanation and one out of three incorrect explanations.

## Method

### *Participants*

The participants were thirty children (22 girls and 8 boys) ranging from 5 to 6 years of age ( $M = 6.17$ ,  $SD = .33$ ) and 30 children (14 girls and 16 boys) ranging from 9 to 10 years of age ( $M = 10.08$ ,  $SD = .42$ ). They were all native French speakers, and recruited from regular elementary school classes in Gatineau (Quebec, Canada). Both parental and child consent was received prior to the child's participation. The children were not remunerated for their participation.

### *Material*

The material used was the same as for Study 1. No modifications were made to either the stories or the scales assessing the real and apparent emotions.

### *Procedure*

Three modifications were made to the procedure used in Study 1. First, only two explanations were proposed to the participants after they were asked to justify the

selected facial expression: the correct explanation and one of the three incorrect explanations. The latter were counterbalanced across stories and participants, each participant being exposed twice to the three contrasts. Second, the explanations were proposed only if the participants correctly identified the real and apparent emotions. This modification was implemented to avoid confusion when the participants selected a facial expression that was congruent with the felt emotion. Third, no measure of receptive vocabulary was taken.

## Results

### *The understanding of the distinction between real and apparent emotions*

As shown in Table 3, children's performance in the pointing task was very similar to that of Study 1, with the mean accuracy ranging between 62.22% and 73.89% in younger children and between 89.89 and 96.67 in older children. One-tailed  $t$  tests ( $p < .0005$ ) showed that the performance was above chance level (28%) in all instances,  $t(29) = 7.69$  (younger children, positive stories),  $t(29) = 4.59$  (younger children, negative stories),  $t(29) = 36.98$  (older children, positive stories), and  $t(29) = 14.30$  (older children, negative stories).

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Insert Table 3 here

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After undergoing an arcsine transformation, the data were analyzed with a 2 X 2 (Age X Valence) ANCOVA with repeated measures on the second factor, and the real emotion identification score as covariable. The analysis revealed a main effect of Age,  $F(1, 57) = 9.48, p < .003$ , as well as a significant effect of the covariable,  $F(1, 57) =$

31.34,  $p < .0001$ . The 9- and 10-year-olds had a better understanding of the distinction between felt and apparent emotions than the 5- and 6-year-olds even when the understanding of the real emotion was taken into account. We also performed a 2 X 2 (Age x Study) ANOVA to assess whether the performance levels in Study 2 were different from those of Study 1. No significant differences between the two studies were found.

#### *Understanding of the justifications*

As one can see from Table 4, accuracy levels for younger children varied between 55.56% and 81.25% and were generally lower than those reached by older children. One-tailed  $t$  tests (for one sample) showed that the 5- and 6-year-olds performed above chance level (50%) only when the correct explanation was presented along with the real emotion explanation,  $t(29) = 4.30$ ,  $p < .0005$ . In contrast, the 9- and 10-year-olds were successful irrespective of the condition  $t(29) = 3.29$ ,  $3.03$ , and  $20.14$ ,  $p < .005$ .

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Insert Table 4 here

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The data were analyzed with a 2 X 3 (Age X Condition) ANOVA with repeated measures on the second factor. The analysis revealed a main effect of Condition only,  $F(2, 96) = 7.52$ ,  $p < .001$ . The Tukey test ( $p < .05$ ) indicated that the understanding was higher when the correct explanation was presented along with the real emotion explanation than when it was presented along with the two other incorrect explanations.

#### Discussion

The results obtained in this study confirmed the idea that the understanding of emotion dissimulation improves during later childhood. As they did in Study 1, older children performed better than younger children in distinguishing between real and apparent emotions. Moreover, this improvement was observed even after correcting for the ability to judge felt emotions. Several differences between younger and older children were also found concerning the justifications of the selected facial expressions. While 5- and 6-year-olds were able to select the correct explanation only when it was presented along with the real emotion explanation, the 9- and 10-year-olds were able to do so in all of the three conditions. This finding suggests that a more articulated reasoning with respect to emotion dissimulation takes place in later childhood. Specifically, young children tended to confuse emotion dissimulation with changes in felt emotions. Younger and older children were also likely to confuse the specific motivation of the main character to hide felt emotions, but this type of error was a minor one. The fact that young children were not able to select the correct explanation when it was presented along with the change in the felt emotion explanation or the wrong motivation explanation is informative because the task used in this study was less demanding than the task used in Study 1 with respect to memory load and executive functions.

Contrary to our expectations, we did not find any significant differences between the accuracy levels of the two age groups in selecting the justifications. We think this could have resulted from a lack of power of the design we used, as the results were in the expected direction for all of the three conditions. Furthermore, the performance levels of the younger children were above chance level for only one of the three conditions,

whereas those of the older children were above chance level for all of the three conditions.

### General discussion

We think that two factors could contribute to the young children's difficulty to understand the concept of emotion dissimulation. First, it is possible that 5- and 6-year-olds do not have a firm grasp of the representational nature of mental states. For instance, Fabricius and Imbens-Bailey (2000) found that children conceptualize memory in terms of "thinking about something" instead of "remembering something" until the ages of 7 years. Lillard (1993, 1996, 1998, 1999) examined children's notion of pretending and observed that 60% of 4- and 5-year-olds think that people do not need a mind or a brain for pretending. They also think that inanimate objects have the ability to pretend. In contrast, 8-year-olds recognize that only animate objects with a brain or a mind have the ability to pretend. According to this interpretation, the limited understanding of emotion dissimulation in 5- and 6-year-olds results from their inability to perceive the intention of a person to create a false belief in the mind of the perceiver. In other words, they fail to conceptualize emotion dissimulation as a structure of related states of mind.

The second factor that could possibly explain the younger children's difficulty to understand the concept of dissimulation is linked to the complexity of the mental relations between the person's intention to hide felt emotions and observers. Halford, Wilson and Phillips (1998) and Frye (2000) suggest that limitation in the capacity of working memory is responsible for young children's failure to understand several mental states. Working memory is defined in terms of the number of elements that can be kept in memory, and in terms of the complexity of the relations that can be processed in parallel.

With respect to dissimulation, the thoughts of the person who dissimulates and those of the perceivers are different but related. The perceivers' beliefs are shaped by the person who intends to dissimulate his or her state of mind. It is therefore possible that the relations involved in the phenomenon of emotion dissimulation are too complex to be processed adequately by young children.

The results reported by Harris et al., (1986) and Perron and Gosselin (2003) are consistent with this interpretation. These authors found that very few 5- and 6-year-olds were able to explain emotion dissimulation in terms of recursive thought. For instance, none of the 5- and 6-year-olds in the study conducted by Perron and Gosselin (2003) were able to provide explanations including three embedded propositions, whereas 21% of the 7- and 8-year-olds were able to do so. Interestingly, the percentage of the 9- and 10-year-olds who provided explanations including three embedded propositions was not very much higher (24%), suggesting that the complex relations involved in emotion dissimulation are mastered only after an extended period of time.

We found in Study 2 that young children tended to justify the selected facial expressions in terms of change in felt emotions. This finding is particularly interesting because the children who selected this justification had previously selected the correct felt emotion as well as the correct facial expression. In other words, they thought the main character experienced an emotion congruent with the facial expression they had selected. One interesting way to assess the robustness of this finding would be to modify the method we used by adding a second question with respect to the felt emotion. Specifically, it would be informative to ask the children about the emotion felt by the main character as he or she displays the selected facial expression.

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Authors' note

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#### Footnotes

1. Given that prior analyses did not reveal any significant effect of the motivation (prosocial or self-centered), this factor was not considered in the main analyses.

Table 1

Accuracy in selecting felt (real) and apparent emotions in Study 1

Groups	<i>N</i>	Valence			
		Positive		Negative	
		<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>
5-6 years	29	64.37	37.66	58.62	39.50
9-10 years	30	97.78	8.45	85.56	27.24

Table 2

Relative frequencies of justification responses in Study 1

Groups	N	Justifications				
			Correct explanation	Change in felt emotion	Wrong motivation	Felt emotion explanation
5-6 years	29	M	41.95	13.22	11.49	25.86
		SD	26.21	14.35	15.50	27.67
9-10 years	30	M	62.22	14.44	22.22	1.11
		SD	23.54	14.99	17.69	4.23

Note. The relative frequencies do not add up to 100% in the younger children because they were not always able to select one of the proposed explanations.

Table 3

Accuracy (%) in selecting real and apparent emotions in Study 2

Groups	N	Valence			
		Positive		Negative	
		M	SD	M	SD
5-6 years	30	73.89	32.67	62.22	40.80
9-10 years	30	96.67	10.17	89.89	23.71

Table 4

Accuracy in selecting the justifications in Study 2

Groups	Conditions								
	Correct explanation/ Change in felt emotion			Correct explanation/ Wrong motivation			Correct explanation/ Felt emotion explanation		
	M	SD	N	M	SD	N	M	SD	N
5-6 years	55.56	44.58	27	68.00	43.01	25	81.25	35.54	24
9-10 years	73.33	38.80	30	70.00	36.19	30	96.67	12.69	30

Note. The explanations were proposed only if the participants correctly identified the felt (real) and apparent emotions.

Appendix A  
Stories Used in Study 1 and Study 2

	Source	Theme of the story
Positive story 1	Josephs (1994)	Winning a competition
Positive story 2	Josephs (1994)	Eating chocolate
Positive story 3	Josephs (1994)	Having a privilege
Negative story 1	Gosselin et al. (2002)	Receiving an unattractive gift
Negative story 2	Gosselin et al. (2002)	Underperforming a sport activity
Negative story 3	Gosselin et al. (2002)	Imposed partnership

Appendix B  
Example of the Interview Procedure

Theme: Imposed Partnership (prosocial version)

In Diana's classroom, the teacher decides that each pupil will work with another pupil on an assignment. Diana would like to work with her best friend, but the teacher tells her to work with another pupil she doesn't like. Diana does not show how she feels because she does not want to upset the other pupil.

With whom Diana has to work with? **Answer** : She has to work with someone she does not like.

What will happen to the other pupil if Diana shows how she really feels? **Answer** : The other pupil will be upset.

How does Diana really feel about working with someone she does not like? Can you show me on the feeling thermometer: Is she very happy, a bit happy, feels nothing, a bit sad or very sad?

What face will Diana show when the other pupil will look at her? Can you show me with the faces here? Does her face look very happy, a bit happy, feels nothing, a bit sad or very sad?

Why does Diana's face look \_\_\_\_? Here are the answer choices. Tell me which one is the best explanation.

- A. Because if she shows how she feels, the other pupil will be upset (correct explanation).
- B. Because she is *\_\_name of the emotion congruent with the selected expression\_\_* (change in the felt emotion explanation).
- C. Because if she shows how she feels, the teacher will be angry with her (wrong motivation explanation).
- D. Because she is *\_\_ name of the felt emotion selected by the participant \_\_* (felt emotion explanation).