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# 20

## Learning to Tell a Story of False Belief *A Study of French-Speaking Children*

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...the activity of thinking takes on a particular quality when it is employed in the activity of speaking.

**Dan I. Slobin (1987, p. 435)**

**D**an Slobin's work has been very influential on the thinking of the first author since her student years, and was an important point of reference in Mimi Sinclair's Geneva-based Genetic Psycholinguistics group where she worked for many years. What fascinated and interested the group was the importance Slobin assigned to thinking processes in language acquisition and functioning. The present work situates itself within two main strands of Dan's influential research in this area, namely, (1) the complex relations between language and cognition and (2) the study of narrative development as a particularly privileged vantage point from which to study these relations.

### INTRODUCTION

Earlier studies on children's capacity to tell a story out of wordless pictures (as in the "frog story" studies, e.g., Berman & Slobin, 1994; Strömqvist & Verhoeven, 2004) show that preschoolers can organize their storytelling to reflect the successive unfolding of events on the action/behavioral level, but expression of the reasons for events is still scarce at 6 years and increases only gradually until 9 to 10 years of age (e.g., Bamberg, 1994; Bamberg & Damrad-Frye, 1991; Berman & Slobin, 1994; Berman, 2004). Moreover, even if some 4- to 5-year-olds may attribute mental states to the character of a single picture "story" (Bokus, 2004; Richner & Nicolopoulou, 2001), references to beliefs within a structured narrative are still rather uncommon at 6 to 7 years. It is mainly around 8 to 9 years that children start to use the characters' mental states to explain their behaviors (Bamberg, 1994; Bamberg & Damrad-Frye, 1991; Berman & Slobin, 1994), while it is even later that they explicitly let know that a character has a false belief about the state of the world or about the intentions and mental states of other characters (Aksu-Koç & Tekdemir, 2004; Bamberg & Damrad-Frye, 1991; Küntay & Nakamura, 2004; Veneziano & Hudelot, 2006) and that different points of view on the same event are attributed directly to different characters, recognizing explicitly that people can interpret the same information differently, a hallmark that mental life is interpretive (e.g., Lalonde & Chandler, 2002).

The research reported in this chapter explores whether there is an impassable developmental threshold for the late appearance of children's expression of the mental stances of characters in their narratives. To this effect, the present study introduced two features intended to facilitate the expression of these aspects. One was the choice of the "Stone Story." This is made up of five wordless pictures whose sequence highlights the fact that the two characters have different viewpoints on one of the key events, something that leads to a misunderstanding between them. This characteristic of the story could promote the expression of multiple perspectives and a relativistic account of reality. The other feature was the use of intervention procedures intended to help children to focus their attention on the expression of causal connections. For one group of children the intervention consisted in a Piagetian-type of scaffolding, and for another group in a narrative told by the experimenter mentioning the reasons of events and their connections in the overall story. The intervention occurred *after* children had produced an initial narrative and before they were asked to retell the story. For each child, the first narrative (before intervention) and the second narrative (after intervention) were compared to examine the effect of the intervention on the expression of the mental stances of the characters (in particular, the characters' beliefs and their impact on behavior). We supposed that by focusing young children's attention on evaluative discourse, their mentalistic orientation would improve. Indeed, Eaton, Collis, and Lewis (1999) have shown that even some 5-year-olds talk about the internal states of the characters for explanatory purposes when they tell their story piecemeal by successively answering questions about the characters' internal states. Would the intervention procedures used in this study have a positive influence on children's expression of beliefs and false beliefs of the characters even in their single-speaker's narratives? In that case, would the new mind-oriented account of events be ephemeral or persist over time? And, would the progress be related to children's performance on first-order "false belief" tasks that provide cognitive measures of theory of mind?

If children add mentalistic content to the narratives they produce after intervention, talking about beliefs and expressing multiple perspectives on the same event, the reasons for the poverty of these expressions in their first narratives must be looked at differently and elsewhere than in cognitive limitations in theory of mind. The comparison of the different narrations produced by the same children at different times and the relation between the expression of mind-related accounts and children's performance on theory of mind tasks will contribute to our understanding of the nature of the variables involved in the limited mind-oriented references found in narratives of young children.

## METHOD

### *Subjects*

Sixty French-speaking children (30 girls and 30 boys) aged 6;0 to 7;8 years (mean age: 6;8 year, s.d.: 4 months), attending elementary schools in Paris and its suburbs, participated in the study.

### *Materials*

The "Stone Story," part of a collection of short picture-series stories for young children (Furnari, 1980), was used for data collection. It consists of five pictures with no text (see Appendix 1). The first depicts the "greeting" exchanged between two characters, referred to here as P1 and P2. The second shows the accidental stumbling of P1 on the stone, leading P1 to push P2 (the "first push"). The third picture shows P2 pushing back P1. The fourth picture depicts P1 crying and pointing backwards to the stone. The fifth shows P2 helping P1 to get back on his feet.

The story can be narrated at the simple descriptive level stating the succession of events, as in the following example:

(1) (KEN 6 ;2)

“*C'est des enfants/i s'disent salut/ après i s'bagarrent et l'autre enfant d'abord .../il tape/ après c'est l'autre enfant /après l'autre enfant i pleure.*”

‘It is two children/they say hi/then they fight and the other child at first ... /he hits/then it is the other child/then the other child cries.’

However, the story can also be told in a more elaborate manner where the first “push” is viewed as an accidental, physically caused event by P1 and as an intentionally caused one by P2, thus attributing to P2 a false belief about the state of mind of P1. Moreover, picture 4 can be interpreted within this overall framework as the time of the dissipation of the misunderstanding where P1 explains retroactively the reasons for the first push:

(2) (NAT 6;6)

“(…) *c'est deux garçons qui sont amis (...)/celui à la salopette bleue **trébuche** contre une pierre (...) et pousse (...) celui au **short et alors celui au short croit qu'il l'a fait exprès donc il pousse celui à la salopette mais après le garçon à la salopette lui dit que c'était à cause de la pierre/donc le garçon en short a compris qu'il s'était trompé/donc ils redeviennent amis***”.

‘(...) it is two boys who are friends (...)/the one in the blue overalls **stumbles** against a stone (...) and **pushes** (...) the one in shorts and then the one in shorts **thinks he did it on purpose so** he pushes the one in the overalls but then the boy in the overalls **tells him that it was because of the stone**/so the boy in shorts understood that he had been mistaken/so they become friends again.’

### Procedure

Narratives about the Stone Story were requested at different times. Before the first elicitation, children were presented with the five pictures one at a time, ending up with the whole set laid down in front of the children, who were allowed to look at it for up to two minutes. If they wished, the children could see the pictures again for a maximum of two minutes, three times at most. When the child was ready to tell the story, the pictures were removed from sight.<sup>1</sup>

After their *first narrative* children were randomly assigned to one of three conditions:

- a) The *scaffolding* condition (29 children): The experimenter systematically asked the children four questions while the pictures were visible: “How come that” (1) P1 pushes P2; (2) P2 pushes back P1; (3) P1 shows the stone, and (4) P2 helps P1 to get back on his feet?
- b) The *model* condition (21 children): The experimenter told a story to the children (see Appendix 2) while the pictures were visible. The experimenter introduced the story by saying: “Very good. That was a very nice story. Now it’s my turn to tell you the story. Listen carefully.”
- c) The *simple repetition* (control) condition (10 children): Children were asked to play a “memory” game with pairs of the five pictures of the Stone Story and four additional pairs of pictures constructed by some transformations of the original pictures.

To examine the effect of the interventions, children of all three groups were then asked to tell the story once again (the *second narrative*). As was the case for the first narrative, here also the children told their story without having the pictures in front of them. Moreover, in order to examine the stability of the eventual effects of the interventions, children of the two experimental groups (15 from the scaffolding and 11 from the model conditions) were seen again one week later. They were shown

<sup>1</sup> This mode of presentation was designed within a collaboration initiated by research grant 02 2 0615 of the ACI program of the French Ministry of Research coordinated by V. Laval.

the same five pictures and asked to tell the experimenter the story again under the same conditions (the *third narrative*).

All the interviews were audio-recorded and transcribed *verbatim*.

### *Analysis of the Data*

We focus here on three measures of children's evaluative talk: (1) the attribution of *internal states* to the characters with particular attention to epistemic states; (2) the expression of the conditions that render P2's belief a *false belief* leading to the misunderstanding; (3) the retroactive explanation of the first push serving to *rectify the false belief* of P2 and leading to the resolution of the misunderstanding.

**Attribution of Internal States to the Characters** Four types of internal states were distinguished:

1. *Physical* sensations, including perceptions, for example:
  - (3)
    - a. “*il s'est fait **mal***” (SOP 6;7)  
‘he **hurt** himself’
    - b. “*il **a pas vu** qu'il y a une pierre*” (PUL 6;11)  
he **didn't see** that there is a stone
2. *Emotional* states, for example:
  - (4)
    - a. “*y en a un qui est **fâché***” (CHA 6,6)  
‘there is one who is **angry**’
    - b. “*ils sont **contents***” (BRA 6;9)  
‘they are **happy**’
3. *Intentional* states of the characters, for example:
  - (5)
    - a. “*y en a un qui **veut** lui faire un câlin*” (STE 6;11)  
‘there is one who **wants** to hug him’
    - b. “*il le pousse sans faire exprès*” (JAN 6;11)  
‘he pushes him **not on purpose**’
4. *Epistemic* states referring to beliefs, thoughts, or knowledge of the characters, either about the state of the world (example 6a) or about the other character's internal state (example 6b), in the latter case constituting a mental state attribution of second order:
  - (6)
    - a. “*il **ne savait pas qu'il avait trébuché***” (JAN 6;11)  
‘he **didn't know that he** had stumbled’
    - b. “*il **croit qu'il l'a fait exprès de le pousser***” (CHA 6;6)  
‘he **believes that he did** it on purpose to push him’

**The False Belief (FB)** The explicit expression of a false belief (FB) has been identified when children not only attribute to P2 the belief that the push by P1 was intentional (a second order belief coded by “epistemic states”), but when they also explain that the same first push was accidental, thus creating the conditions establishing that P2's belief about the intentions of P1 is a *false belief*:

(7)

*“celui à la salopette il trébuche sur une pierre et puis il a poussé celui au short/ et celui au short il croit qu’il a fait exprès”* (BAP 6;9)

‘the one in the blue overalls **he stumbles on a stone and then he has pushed** the one in shorts/ and **the one in shorts he thinks that he has done it on purpose**’.

**Rectification of False Belief (RFB)** With the rectification of the false belief (RFB), the two different points of view are attributed explicitly to the two characters, one of them seeing the event as accidental (P1) and the other as intentionally caused (P2). The RFB was coded when, after the attribution to P2 of the false belief about P1’s intentions, children had P1 communicate the unintentional nature of his first push to P2, using either direct speech, as in example 8, or indirect speech, as in example 9:

(8) (STE 6;11, for whom the FB had been coded)

*“je t’ai pas poussé euh/ j’ai trébuché sur une pierre”*

**‘I didn’t push you/ I stumbled on a stone’**

(9) (STE 6;11, for whom the FB had been coded)

*“après l’autre il lui dit qu’il a pas fait exprès de le pousser”*

‘afterwards the other **tells him that he hasn’t pushed him on purpose**’

**Theory of Mind Tasks** All children were presented with two classic tests of theory of mind, the “deceptive box” test, using a tube of *Smarties* with a pen inside (Perner, Leekam, & Wimmer, 1987) and the “unexpected transfer” test of Maxi and the chocolate (Wimmer & Perner, 1983). The tests were considered passed if the children provided the expected answers to the following three questions: (1) the “belief” question (*Smarties*: “What will Paul say when he sees the box?”; *Maxi*: “Where is Maxi going to look for the chocolate?”), (2) the “reality” question (*Smarties*: “What is in fact inside the box?”; *Maxi*: “Where is in fact the chocolate?”), and (3) the “memory” question (*Smarties*: “When you saw the box, what did you say there was inside it?”; *Maxi*: “Where had Maxi placed the chocolate?”).

## RESULTS

### *First and Second Narratives*

Table 20.1 presents the number of children attributing any type of internal state, epistemic states, the false belief, and the rectification of the false belief to the story characters in their *first* and their *second* narratives, according to the condition they underwent in between the two narrations.

In the first narrative, none of the children, in any of the three groups, expressed any epistemic states, the false belief or the rectification of the false belief.

On the other hand, across the three groups, about one-third of the children (37%) expressed at least one non-epistemic internal state, mostly of the emotional (*fâché* ‘angry,’ *content* ‘happy’) and physical types (*avoir mal* ‘ache’), and some of the intentional type (*sans faire exprès* ‘not on purpose’). Some of our 6- to 7-year-olds could thus attribute internal states to the characters but not of the epistemic type, pointing clearly to a specific difficulty in dealing with these kinds of internal states. Before the intervention phase, the three groups of children did not show any significant differences on the measures considered here.<sup>2</sup>

How do these same children tell the story *after* intervention? While none of them mentioned epistemic states, P2’s false belief, or its rectification by P1 in their first narrative, quite a few of

<sup>2</sup> None of the children expressed epistemic states, attributed a FB or rectified it and the one-sample chi-square test applied to the number of children that in each group mentioned at least one internal state was no significant:  $\chi^2 (3 \times 1) = 1.56$  n.s., for  $df=2$ .

TABLE 20.1 Percentages of Children Producing Internal States, Epistemic States, False Belief, and Rectification of False Belief in Second and Third Narratives, According to the Two Experimental Conditions

Expression of	Narrative	Scaffolding Group (N=29)	Model Group (N=21)	Control Group (N=10)	Total (N=60)
All types of Internal States <sup>1</sup>	First Narrative	38%	43%	20%	37%
	Second Narrative	62%	71%	0%	55%
Epistemic States <sup>2</sup>	First Narrative	0%	0%	0%	0%
	Second Narrative	41%	57%	0%	40%
False Belief	First Narrative	0%	0%	0%	0%
	Second Narrative	21%	43%	0%	25%
Rectification of False Belief	First Narrative	0%	0%	0%	0%
	Second Narrative	14%	29%	0%	17%

<sup>1</sup> The figures are the percentages of children who attributed at least one internal state.

<sup>2</sup> The figures are the percentages of children who attributed at least one epistemic state.

them did so in their second narrative. For both experimental groups taken together (scaffolding and model groups), the number of children who mentioned at least one epistemic state, the false belief and its rectification showed a significant increase from the first telling.<sup>3</sup> The number of children who improved in these measures from the first to the second narrative increased also in each of the experimental groups. However, in the scaffolding group, the change in the number of children expressing the RFB did not reach significance.<sup>4</sup>

In contrast to these improvements in the experimental conditions, children in the control group (repetition only) showed no improvements on any of the measures.

It should also be noted that concerning the reference to any kind of internal state, no significant changes were found in any of the conditions, both in the number of children producing at least one of them, and in the overall number of internal states produced before and after intervention.<sup>5</sup>

The next question was whether one intervention procedure (scaffolding or model) would prove more effective than the other in leading children to produce mind-oriented narratives.

In fact, none of the measures reported here showed a significant difference between the two experimental conditions, i.e., intervention by scaffolding and by the telling of a story model.<sup>6</sup>

<sup>3</sup> Results of the  $2 \times 2$  chi-square tests (corrected for continuity) applied to the number of children mentioning at least one epistemic state, expressing the false belief or its rectification, before and after intervention, in the experimental conditions taken together, are as follows. For epistemic states:  $\chi^2 = 29.01$ ,  $p < 0.001$ ; for FB:  $\chi^2 = 15.37$ ,  $p < 0.001$ ; for RFB:  $\chi^2 = 9.0$ ,  $p < 0.01$ , all values for  $df=1$ .

<sup>4</sup> Results of the  $2 \times 2$  chi-square tests (corrected for continuity) applied to the number of children mentioning at least one epistemic state, expressing the false belief or its rectification, before and after intervention, in each of the two experimental groups, are as follows. For the scaffolding group: for epistemic states:  $\chi^2 = 12.71$ ,  $p < 0.001$ ; for FB:  $\chi^2 = 4.65$ ,  $p < 0.05$ ; for RFB:  $\chi^2 = 2.42$ ,  $p = 0.12$ , all values for  $df=1$ . For the model group: for epistemic states:  $\chi^2 = 14.12$ ,  $p < 0.001$ ; for FB:  $\chi^2 = 9.05$ ,  $p < 0.01$ ; for RFB:  $\chi^2 = 4.86$ ,  $p < 0.05$ , all values for  $df=1$ .

<sup>5</sup> Results of the  $2 \times 2$  chi-square tests (corrected for continuity) applied to the number of children mentioning at least one internal state of any kind, before and after intervention. In the scaffolding group:  $\chi^2 = 2.48$ ; in the model group:  $\chi^2 = 1.54$ ; in the control group:  $\chi^2 = 0.55$ . Similar results are obtained for the number of internal states.

<sup>6</sup> Results of the  $2 \times 2$  chi-square tests (corrected for continuity) applied to the number of children mentioning at least one epistemic state, expressing the false belief or its rectification, before and after intervention, according to the experiment group, are all nonsignificant: for internal states,  $\chi^2 = 0.0013$ ;  $\chi^2 = 0.0013$ ; for epistemic states:  $\chi^2 = 0.663$ ; for FB:  $\chi^2 = 1.89$ ; for RFB:  $\chi^2 = 0.867$ ; all values for  $df=1$ .

TABLE 20.2 Percentages of Children<sup>a</sup> Producing Internal States, Epistemic States, False Belief and Rectification of False Belief in Second and Third Narratives, According to the Two Experimental Conditions

Expression of	Narrative	Scaffolding Group (N=15)	Model Group (N=11)	Total (N=26)
All types of Internal States <sup>b</sup>	Second Narrative	60%	82%	69%
	Third Narrative	67%	82%	73%
Epistemic States <sup>c</sup>	Second Narrative	40%	55%	46%
	Third Narrative	47%	55%	50%
False Belief	Second Narrative	27%	36%	31%
	Third Narrative	33%	45%	38%
Rectification of False Belief	Second Narrative	20%	36%	27%
	Third Narrative	17%	36%	31%

<sup>a</sup> The figures in this table concern only the children who were retested for stability.

<sup>b</sup> The figures are the percentages of children who attributed at least one internal state.

<sup>c</sup> The figures are the percentages of children who attributed at least one epistemic state.

### *The Third Narrative*

In order to examine the long-term effect of the two interventions (scaffolding and model), children's mind-oriented expressions in the second narrative were compared with those in the third narrative obtained one week later from the same children. A subgroup of children, 15 from the scaffolding and 11 from the model conditions, participated in this test of stability. The results are presented in Table 20.2.

In the third narrative, the performance of these children remained stable for the production of epistemic states, false belief and rectification of false belief, and even some children who had not expressed the FB or the RFB in their second narrative did so in their third (one child in the scaffolding and one child in the model groups added the FB, while one child in the scaffolding group added the RFB). Only one child no longer mentioned the false belief he had expressed in the second narrative (in the scaffolding group).

### *The Relation Between Theory of Mind Tasks and Theory of Mind in the Narratives*

Among the 60 children across the three conditions, 43% passed both ToM tasks, 50% passed only one of the two tasks, and 7% passed neither of the two. Moreover, 92% succeeded in the "deceptive box" test, while only 45% succeeded in the "unexpected transfer" task. To examine the relationship between children's false belief performance in the cognitive tasks and in the narratives, the 50 children of the two experimental conditions were retained, given that only these children produced mind-oriented narratives after intervention. Children were assigned to one of three categories according to their performance in the ToM tasks (that is, whether they passed both items, only one item, or neither of the two). Then, for each of these three groups, the number of children expressing epistemic states, the false belief or the rectification of the false belief in their second narrative was noted (none of them had done it in the first narrative). These data are presented in Table 20.3. They show that children who expressed at least one epistemic state, the false belief or the rectification of the false belief in their second narrative tend to be found more often among the children who succeeded in both ToM tasks, although only the connection to RFB reaches significance.<sup>7</sup>

<sup>7</sup> Results of  $2 \times 3$  chi-square tests applied to the number of children mentioning at least one epistemic state, expressing FB or RFB in the second narrative, according to the three categories of success in ToM tasks, are as follows: for epistemic states:  $\chi^2 = 1.94$ ,  $p=0.37$ ; for FB:  $\chi^2 = 4.45$ ,  $p<0.108$ ; for RFB:  $\chi^2 = 5.98$ ,  $p=.05$ ; all values for  $df=2$ .

TABLE 20.3 Relationship Between Children's Performance on ToM Tasks and Expression of Epistemic States, FB and RFB in the First and Second Narratives According to the Two Experimental Conditions<sup>1</sup>

Expression of	Narrative	Number of ToM Tasks Passed		
		0 (N=4)	1 (N=23)	2 (N=23)
Epistemic States <sup>2</sup>	First Narrative	0%	0%	0%
	Second Narrative	25%	35%	52%
False Belief	First Narrative	0%	0%	0%
	Second Narrative	0%	22%	43%
Rectification of False Belief	First Narrative	0%	0%	0%
	Second Narrative	0%	9%	35%

<sup>1</sup> The figures in this table concern only the children in the two experimental conditions.

<sup>2</sup> The figures are the percentages of children who attributed at least one epistemic state.

### *Linguistic Expression of the Second-Order Belief*

When children expressed P2's belief about the intention of P1 (a second-order belief that is a necessary component of the expression of false belief as defined here), all of them expressed it in a relatively complex completive sentence structure. In French, this sentence structure requires present or imperfect tense in the principal clause, past perfect or pluperfect tense in the subordinate clause, and the subject in the principal clause to be different from that of the subordinate (see example 4.b). In order to examine whether linguistic structural complexity may have affected children's expression of this component of false belief, children's overall use of this kind of completive sentence structures was analyzed. The main purpose was to see whether children who didn't express P2's second-order belief in any of their narratives produced nevertheless completive structures for other purposes.

Among the 42 children (70% of all participants) who did not express any second order belief across narratives, 52% of them used at least a completive structure of the kind mentioned above for other purposes:

(12) (PAU 6;11)

Child: *je crois qu'ils sont fachés.*

'I think that they are angry.'

## DISCUSSION

In their first narrative, children aged 6 to 7 years did refer to characters' internal states, but these concerned mostly physical sensations, emotional and intentional states. None of the children referred to the characters' epistemic states, to P2's false belief, or the rectification of the false belief. It seems that we can thus conclude that, within the confines of the testing situation, and like similar studies (e.g., Aksu-Koç & Tekdemir, 2004; Berman 2004; Veneziano & Hudelot, 2006), 6-7-year-olds do not take on spontaneously a mind-oriented approach to storytelling. Thus, the particular nature of the story selected for this study, one which lends itself to an interpretation in terms of a misunderstanding between the characters, failed to promote mind-oriented narratives in children of this age.

However, children who experienced the scaffolding and model interventions, but not those who were simply asked to retell the story, adopted the mind-oriented approach in their second narrative, thus revealing an unexpected competence in this domain. When given the opportunity to think about causal connections, or after hearing a story containing causal links and belief attributions, a

sizeable number of children proved able to talk about intentions and beliefs about intentions, they could make clear that P2 held a false belief, while some even resolved the misunderstanding by a retroactive explanation of the first push. Results for stability across time clearly show that improvements in mind-oriented measures are not simply the result of the immediately previous conversation or, more superficially, of the story just heard from the adult. The fact that children maintained their mind-oriented approach one week later, and that some even showed it then for the first time, indicates that a good number of children genuinely improved their approach to the telling of this story.

How to explain the scarcity of mind-oriented content in children's first narratives and the improvements in narratives produced after interventions? It could be that young children do not yet appreciate the pragmatic necessity of talking about these features (e.g., Poulsen et al., 1979) and that the scaffolding and model procedures might simply have helped children understand that the expected narrative is a mind-oriented one. According to this interpretation, children have the ability to take a mind-oriented approach, but they do not consider it relevant for narrative purposes. Although this interpretation could account for some of the results, it does not explain why none of the children supposed to have a richer understanding of the story relations, talk about them, nor why only some of the children take a mind-oriented approach after the intervention procedures.

However, it could also be that the poverty of mind-oriented discourse in children's first narratives is due to cognitive and linguistic loads involved in processing the story pictures and in *thinking with a view to narrating*. Indeed, if it is true that "the activity of thinking takes on a particular quality when it is employed in the activity of speaking" (Slobin, 1987, p. 435) and that "components which must be attended to in thinking for speaking must also be mentally stored for future speaking" (Slobin, 2003, p. 178), the mobilization of children's narrative resources might interfere with their conceptualization of the story. It might also be the case that, given all of the above, children may experience difficulties in integrating the various competences involved in the task, abilities that are not completely mastered at these ages. Indeed, telling an uninterrupted story out of pictures is a complex task requiring cognitive resources at different levels. There is the interpretation load of the pictures, the thinking for narrating that requires coherence, cohesion, and "decontextualizability" (Sawyer, 2003), the communicative constraints that require taking into account the interlocutor and the goals of storytelling, and also the fact that children have no personal involvement in the story and thus need to invest the characters with motivations and beliefs that are extraneous to their immediate mental world. Under these conditions, the cognitive and linguistic resources mobilized for constructing a narrative might leave little leeway for children to apprehend and explicitly express the characters' epistemic states, particularly when these involve false beliefs (e.g., Aksu-Koç & Tekdemir, 2004) or different points of view on the same situation.

Both the model and the scaffolding conditions reduce processing loads. The story model incurs this reduction by presenting all the needed story elements in a predigested, ready-made form. The scaffolding condition does so by having children reflect about causal connections in a piecemeal fashion, an activity that may lead them to think about the epistemic and intentional states of the characters that provide coherence at the local (explaining the isolated events) and global (integrating several events and their explanations) levels.

Thus, children who did not produce mind-oriented first narratives may have had the cognitive tools for talking about mental states but the complexity of the task prevented them from talking explicitly about mental features, which are themselves still fragile and undergoing development at this age (e.g., Chandler, 2001). However, when the complexity of the storytelling task is reduced by intervention procedures, children can draw upon these competences.

Why, then, are some children not affected by the intervention procedures? Is it because those children have not yet sufficiently mastered the complexity of the linguistic structure needed to express the second-order belief of P2 (a necessary component of false belief)? This does not seem to be the case. Our results indicate that the absence of second-order belief attribution cannot be imputed to the linguistic complexity needed for its expression, since children who use complete structures either for narrating purposes or in conversation with the experimenter, do not attribute any kind of epistemic state to the characters. Is it because these children have not yet fully mastered

the basic concepts of theory of mind? Our results suggest that the cognitive mastery of first-order ToM, as instantiated by the False Belief tasks, may in part be involved, since those children who passed both ToM tasks are those who improved most. Moreover, children who failed on both tasks did not improve their expression of the false belief nor of its rectification. Success in first-order ToM tasks is not sufficient, however, since children may pass both tasks and yet not tell a mind-oriented narrative after intervention. Larger sample sizes in the different ToM categories might help clarify this issue in future research. However, success in first-order FB tasks may not be sufficient for other reasons. For this story, coding false belief requires children to present two different visions of the same event, and with the rectification of the false belief (RFB), the two different points of view are attributed directly to the two characters, one of them seeing the event as accidental (P1) and the other as intentionally caused (P2). The co-existence of these two different points of view of the *same* event evidences an interpretive level of theory of mind (e.g., Carpendale & Lewis, 2006; Lalonde & Chandler, 2002), according to which knowledge is “*relativistic*” (Veneziano & Hudelot, 2006) since it depends on the mental constructions of the people involved. Moreover, the viewpoint of P2 in this context is a second-order belief and not simply a first-order one. In future research, second-order False Belief tasks should be administered as well to better clarify the influence of cognitive development on children’s narrative expression.

Several other factors could also explain individual differences. Two are particularly worth considering in future research. One concerns children’s level of comprehension of the story independently of the explicit expression of the story elements. That is, children should be given the opportunity to manifest their understanding of the reasons of events and of the characters’ mental stances with a minimum of talk in narrative form. The other variable concerns children’s participation in the scaffolded conversations during intervention. Some of the individual variation in the second narratives could be due to the more or less active participation of the children in the scaffolded interactions. Children who offered mind-oriented elements in answer to the adult’s questions during the scaffolding phase could produce these elements in their second narrative more easily than children who did not provide answers.

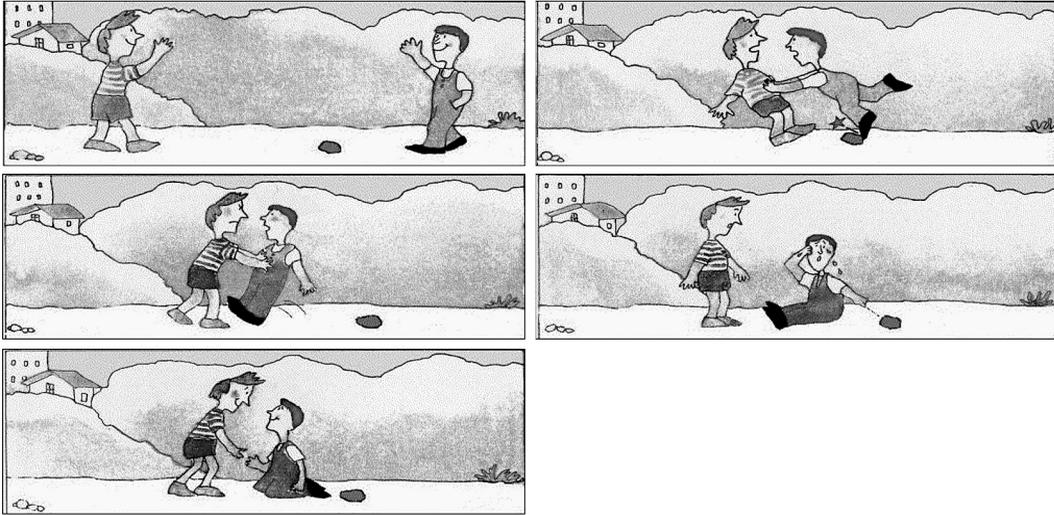
Finally, in considering the impact of different kinds of interventions, future research should consider more carefully the way children express their mental attributions and how they knit them into the overall plot. Although the scaffolding and the model interventions led a comparable number of children to take on a mind-oriented approach to narration, the general impression is that the narratives of children who participated in the scaffolding procedure were more coherent and cogently structured. This difference might reflect a deeper understanding of the more subtle intricacies of the story plot by children who participated in the scaffolding than in the model procedure, due to the fact that the piecemeal conversation on the reasons of events offers greater opportunities for thinking that is directly encoded in overt speaking.

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### APPENDIX 1: THE STONE STORY PICTURES



## APPENDIX 2: MODEL STORY

*Deux copains se disent bonjour de loin. Le garçon à la salopette va vers le garçon au short mais, comme il ne voit pas qu'il y a une pierre par terre, il trébuche sur la pierre et comme ça il pousse le copain. Le garçon avec le short croit alors que son copain a fait exprès de le pousser et il repousse le copain. Le copain avec la salopette tombe par terre et pleure. Il se dit que son ami doit avoir pensé qu'il avait fait exprès de le pousser.*

*Alors il lui montre la pierre derrière et lui dit que c'était à cause de la pierre qu'il l'avait poussé au tout début. Le copain avec le short comprend qu'il s'était trompé; il aide alors son copain à se relever et ils redeviennent amis.*

Two pals greet each other from a distance. The boy in overalls goes toward the boy in shorts but, as he doesn't see a stone on the ground, he stumbles on the stone and in this way he pushes his pal. The boy in shorts thinks that his friend has pushed him on purpose and so he pushes him back. The pal in overalls falls and cries. He says to himself that his friend must have thought he pushed him on purpose. At that point he shows his pal the stone and tells him that it was because of that stone that he had pushed him earlier. The pal in shorts understands that he had been mistaken. He helps his pal get back on his feet and they become friends again.

