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TALKING ABOUT THE NON-LITERAL: INTERNAL STATES AND EXPLANATIONS IN CHILD-CONSTRUCTED NARRATIVES

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Abstract

Non-literal language most often permeates interesting and informative narratives. These are the non-perceptible, inferential aspects of a story, such as the explanation of events, the attribution of internal, particularly mental, states to the characters of the story, or the evaluation of events by the participants and/or the narrator. The main aim of this paper is to examine whether non-literal uses can be promoted in 7-year-old French-speaking children's narratives through the use of a short conversational intervention (SCI) which focuses the children's attention on the causes of events. The results show that, after the SCI, the expression of non-literal aspects, even higher-order ones, may make their appearance or significantly increase in children's stories. The reasons for the effectiveness of the SCI in the promotion of non-literal uses of language and narrative skills in general, as well as the importance of using the SCI as an evaluative instrument, are discussed

Key words: Non-literal language; narratives; effects of conversational intervention; French acquisition; children

INTRODUCTION

Narratives convey decontextualized information in such a way that listeners can make sense of the events even with no prior knowledge of them. The *who*, *what*, *where* and *when* things occur make up the backbone of narratives (e.g., Peterson, 1990), about events that happened to the narrators (so-called autobiographical narratives) or to others, or about events of fictional stories. However, these building blocks, admittedly essential, remain at the surface of narratives. They are 'descriptive', in the sense of being close to perceptibly accessible aspects, which can metaphorically be called 'literal'. However, interesting narrative contents critically depend on the *how* and *why* of the 'descriptive' facts. These are the non-perceptible, inferential aspects of the stories, such as the relations among events, the underlying feelings, intentions and mental states of the protagonists of the story, or the evaluation of the happenings by the participants and/or the narrator. Narrators provide them on the basis of their own appreciation and comprehension of the events or of the story. These elements are subjectively created and it is by mentioning them explicitly that narrators can make them known to others. In this sense, they are similar to the subjectively motivated transformations of the meaning of objects and actions in children's pretend play, referred to as non-literal compared to their usual, literal meanings (e.g., Bretherton, 1984; Garvey, 1977; Howes, Unger & Matheson, 1992; Smith, 2009; Veneziano, 2002). As in pretend play, non-literal elements expand and extend the story beyond what is directly accessible to perception. These aspects are present when narrators make the 'world of action' enter the 'world of consciousness' (Bruner, 1986), or when they 'mentalize' the events, thus rendering the story interesting and worth telling (Labov, 1972; Berman & Slobin, 1994; Berman, 2004)

This paper focuses on the expression of these kinds of underlying, subjectively created inferential aspects, such as explanations and internal state attributions, that

children express while narrating monologically managed narratives based on a sequence of wordless pictures constituting a story of a misunderstanding.

What is known about this ability?

Earlier studies on fictional narratives based on wordless pictures (for example, the widely used *Frog Where Are You* picture book) have shown that young children tend to narrate descriptive stories, thus remaining close to the perceptible aspects pictured in the story images. Around 6-7 years of age, children introduce some explanations into their stories, linking the events to their underlying causes, but it is only by 9-10 years that the majority of children provide extensive explanations (e.g., Bamberg, 1994; Bamberg & Damrad-Frye, 1991; Berman & Slobin, 1994; Berman, 2009). Always for monologically managed narratives constructed on the basis of wordless pictures, some 6- to 7-year-old children can also attribute mental states to the characters of their stories (Bokus, 2004; Richner & Nicolopoulou, 2001), but they seldom mention them to account for what happens (Bamberg & Damrad-Frye, 1991; Berman & Slobin, 1994; Berman, 2009). As regards the attribution of inferentially more complex internal states, such as false beliefs, it is still later that their attribution is observed more than sporadically (Aksu-Koç & Tekdemir, 2004; Bamberg & Damrad-Frye, 1991; Küntay & Nakamura, 2004; Veneziano & Hudelot, 200, 2009).

Is it possible to promote the non-literal, inferential, content of children's narratives?

The inferential aspects of narrative content, such as the explanation of events and the attribution of internal states to the characters, particularly mental states, find

greater expression in children's narratives after different kinds of more or less lengthy intervention procedures (see Pesco & Gagné, 2015, for a meta-analysis of intervention studies in this domain).

In some studies, interventions consisted in training sessions repeated frequently over a relatively long period of time (Lever & Sénéchal, 2011; Peterson, Jesso & McCabe, 1999; Whitehurst et al., 1988), while in others the intervention involved one short session in which children were questioned about the causes of the story events and/or the internal state of the characters (Eaton, Collis, & Lewis, 1999; Shiro, 2003; Silva, Strasser & Cain, 2014; Veneziano & Hudelot, 2006, 2009; Veneziano, 2016). In some studies, the narratives obtained were conversationally co-constructed between the child and the experimenter (e.g., Eaton et al., 1999), while in others they were monologically managed (Silva et al., 2014; Veneziano & Hudelot, 2006, 2009; Veneziano, 2016). Moreover, in some cases, the comparison between the narratives involved different groups of children (Silva et al., 2014), while in others the comparison implied the same children in a mixed within-subject design (e.g., Veneziano & Hudelot, 2006, 2009; Veneziano, 2016).

In this study, we used an intervention that could be implemented easily in a single session. The intervention consisted in a short conversation focused on the causes of the events. The aim was to assess whether the expression of 'non-literal', inferential aspects of children's narratives could be improved, thus making children's stories richer and more interesting for their listeners (e.g., Hausendorf & Quasthoff, 1992).

METHOD

Participants

The participants were 30 French-speaking children aged 7;1 to 8;0 years (Mean = 7;6; SD = 3 months) attending the second grade of two primary schools in Paris, France. None of the children was reported to have language or cognitive problems.

Material

The "Stone Story"

The story used consisted of five wordless pictures, adapted from Furnari (1980) by Veneziano & Hudelot (2006, 2009) (see appendix 1). This sequence of pictures was chosen because it can be interpreted as a story of a misunderstanding between two characters and, as such, it might promote the expression of the non-literal aspects of the story, such as the mental states.

More specifically, the first picture sets the context where two characters, referred to here as P1 and P2, greet each other from a distance ('the greeting'). The second picture shows the accidental stumbling of P1 on a stone, leading P1 to push P2 (the complicating event: 'first push'). The third picture shows P2 pushing P1 (the elaboration of the complicating event: 'push back'). The fourth picture depicts P1 crying and pointing towards the stone ('resolution attempt'). The fifth image shows P2 helping P1 to get up ('the resolution').

The procedure

Children first looked at the five wordless pictures of the "*Stone story*", presented sequentially in the right order. When the child was ready, the pictures were removed and the child narrated an autonomously produced *first narrative* (without interruptions or questions from the experimenter), produced in conditions similar to those of other studies of picture-based narratives. After the first narrative, each child participated in a causal-oriented *short conversational interaction* (SCI) with the experimenter. Starting

from what the child had said in the first narrative, the experimenter focused the child's attention on the causes of the events by asking causality questions about the four main events of the story. In the presence of the pictures, children were asked about why: 1. P1 pushes P2 (both P1 and P2 were named in the same way as the child had done in his first narrative); 2. P1 pushes P2; 3. P1 shows the stone; and 4. P2 helps P1 to get up. Children were then asked to tell the story once again (the *second narrative*), also this time without any priming or questions. As was the case for the first narrative, here too the children told their story without having the pictures in front of them. All the interviews were video-recorded, transcribed verbatim in CHAT and linked to the videos through the CLAN software of the CHILDES project (see MacWhinney, 2000, and the CHILDES website[1])

Method of data analysis

In this paper, we concentrate on children's expression of inferential, non-literal aspects of the story, that is, on those aspects that go beyond what is directly represented in the pictures, implying interpretations that require making inferences and filling the 'gaps' relative to what is represented in the pictures. In particular, we will consider whether and how children make reference to the internal states of the characters, with particular attention to their mental states, and whether and how children account for the central events of the story.

1. References to the characters' internal states

All the internal states children attributed to the characters were noted. Four types were distinguished: a) *physical* states, as for example *il a mal* 'he is in pain'; b) *emotional* states, *il était pas content* 'he wasn't happy'); c) *intentional* states, as for

[1] http://childes.psy.cmu.edu

example *il voulait pas pousser son copain* 'he didn't want to push his pal'; and d) *mental* or *epistemic* states, such as believing, knowing, thinking and understanding, as for example *il croit qu'il est gentil* 'he believes that he is a nice guy').

In the present context, the coding of internal states is particularly important. Indeed, the attribution of internal states to the characters is an interpretative act that goes beyond what is accessible to perception, and can thus reveal children's ability to use language non-literally.

2. The False belief and the Rectification of the false belief

The story lends itself to the expression of more complex mental states such as the *false belief* (FB) and the *rectification of the false belief* (RFB). These are also epistemic states but they present a higher order of complexity, of inferential reasoning and displacement than just mentioning that a character knows, believes or thinks something. Indeed, for a FB to be identified, children not only had to attribute to P2 the belief that P1 had pushed him on purpose, but they ALSO had to explain that the first push had a physical and/or a non-intentional cause (e.g., *il l'a poussé à cause de la pierre* 'he pushed him because of the stone'). Moreover, in the story, the false belief is a second-order belief as it concerns the intentions of the other character (*il croyait qu'il l'avait poussé exprès* 'he thought he had pushed him on purpose').

The *Rectification of the false belief* (RFB) requires the explanation of the first push, mentioned retroactively at that point in the story, and ALSO that the explanation is addressed to the other character to change the latter's mind about the causes of the first push. For example, *il lui dit que c'est la pierre qui l'a fait pousser* 'he says to the other one that it is the stone that made him push'.

A narrative could get a score ranging from 0 to 2 on the expression of the FB depending on whether the FB was expressed with the required mentioned criteria and an epistemic

verb (2), did not contain an epistemic verb and/or the expression remained in part implicit (1) (for example, *celui à la salopette il trébuche sur une pierre et puis il le pousse / celui au short il n'a pas vu* 'the one in overalls stumbled on a stone and then he pushed him / the one in shorts he didn't see'), or it was not expressed (0).

A score ranging from 0 to 2 was also assigned to the expression of the RFB depending on whether the RFB was expressed with the required mentioned criteria (2), the expression remained in part implicit (1) (for example, *il montre que c'est le caillou* 'he showed that it is the stone'), or it was not expressed (0).

Because of their higher-order complexity, and also because the FB and the RFB have a central role in the comprehension of the story as a story of misunderstanding, the FB and the RFB will be reported separately.

3. Accounting for the central events of the story

An event was explained when a causal marker was present (e.g., *parce que* 'because', *donc* 'therefore', *pour* 'in order to, so as to', *à cause de* 'because of'), but also in certain cases where the marker was not present. When a marker was not produced, an event was considered accounted for when the relation was presented retroactively, from the event to its cause (e.g., *il l'a poussé / il est tombé sur une pierre* 'he pushed him / he fell on a stone'). When the relation was presented proactively (from the cause to the consequence), the event was considered accounted for if the antecedent or the consequent of the causal relation was a non-perceptible aspect, introduced by the child into the story, such as the internal state of a character, or the components of the causal relation were inherently linked one to the other (for example, *il trébuche et il pousse son copain* 'he stumbles and pushes his pal') (for more details on the criteria for identifying causal relations, see Veneziano & Hudelot, 2009).

Causes or motives could be physical as, for example, *il le pousse à cause de la pierre* 'he pushes him because of the stone'; make reference to socio-conventional rules as, for example, *il l'a repoussé pacque l'autre l'avait poussé* 'he pushed him back because the other one had pushed him', or to internal states as, for example, *il l'aide à se relever parcqu'il a compris* 'he helps him to stand up because he has understood'.

The use of internal states to explain events is particularly interesting from the point of view of non-literal use of language. It can in fact be considered a second-order, non-literal use, since a non-literal aspect (the internal state) is used for another non-literal aspect (the explanation of an event/behavior).

RESULTS

1. *The attribution of internal states to the character*s

As described above, four types of internal states were distinguished: physical, emotional, intentional and epistemic. Table 1 presents the number of internal states children attributed to the characters, total and by type, in the first and in the second narrative, and the proportion of each type per narrative.

[Insert Table 1 about here]

As can be seen, the total number of internal states increases from the first to the second narrative, an increase that is statistically significant ($t(29) = 2.82$, $p < .01$). Concerning the different types of internal states, in the first narrative, physical, intentional and epistemic states are mentioned at about the same level, with emotional states less frequently than each of the others[2]. Compared to the first narrative, in the second narrative, epistemic states increase in both number and proportion ($t(29) = 3.88$, $p < .001$). Intentional states increase somewhat in number but decrease proportionally;

[2] Compared to physical states: $t(29) = 2.07$, $p < .05$; compared to intentional states: $t(29) = 2.08$, $p < .05$; compared to epistemic states, only marginally lower: $t(29) = 1.66$, $p = .10$

emotional states increase in both number and proportion, while physical states decrease in both, but none of these latter changes are statistically significant.

It is thus interesting to note that internal states, and in particular epistemic states, which are the most non-literal of the internal states, can be promoted in 7-year-old children.

2. *The False belief (FB) and the Rectification of the false belief (RFB)*

Table 2 presents the mean number (and standard deviation) as well as the number and proportion of children who expressed the false belief using an epistemic verb, such as believe, think or know, as well as the number and proportion of children who expressed the RFB, per narrative.

[Insert Table 2 about here]

Already 27% of the children expressed the FB in the first narrative. The mean FB score increased from the first to the second narrative (mean gain: = + 0.20, $t(29) = 1.79$, $p < .05$, one tailed) and so did the proportion of children who expressed the FB in the second narrative (from 27 to 47%)[3].

For the RFB, the increase in its expression is higher and more apparent, both on the mean number of the RFB score (mean gain: = + 0.43, $t(29) = 4.71$, $p < .001$) and on the number and proportion of children who expressed the RFB (a change from 17 to 60%: χ^2 (1, N=30) = 10.15, p = 0.001).

These results indicate that also these high-level forms of displaced and non-literal uses of language can be increased in children of this age.

3. *Explanation of events*

[3] The difference is not statistically significant, however, as this was measured by the Chi-square test applied to a 2x2 contingency table (expression of FB x narrative), corrected for continuity: χ^2 (1, N=30) = 1.79, p = 0.18).

The first line of Table 3 shows the mean number (and standard deviation) of the total number of events that are explained by the children, before and after the short conversational intervention (SCI).

[Insert Table 3 about here]

In their first narrative, 7-year-olds can make inferences about the causes of certain events (73% of the children explained at least one event). Explanations are expressed more frequently in the narratives produced after the SCI, where the proportion of children who explained at least one event increased to 97%. In the first narrative, the events explained by most of the children were the *first push* (63% of the children) and the *push back* (40%). In the second narrative, while the proportion of children who explained the *first push* remained very similar (63% vs. 67%), it increased considerably for the *push back*, when 67% of the children explained it (compared to 40% in the first narrative).

The t-test for paired samples applied to the total number of events explained shows that children produced significantly more explanations in the second than in the first narrative (mean gain: +1.13): $t(29) = 3.35$, $p < .01$. As mentioned, the most inferentially loaded, non-literal interpretation of the *Stone story* involves a misunderstanding between the characters. There are four elements involved in this interpretation: the first push and the push back (i.e., the 'complicating event'); showing the stone and/or explaining how the first push came about (i.e., the 'attempt at resolution') and helping the other and/or becoming friends again (i.e., the 'resolution').

The second line of Table 3 presents the number and proportion of children who explained these elements, by narrative (first and second narrative). As can be seen, in the first narrative only three children (10%) could tell a story in which all four narrative elements were explained. In the second narrative, this number increased to 12. The chi-square test applied to a 2x2 contingency table, with the number of children who

produced an inferentially loaded story as one variable and the order of narratives (first or second narrative) as the other, showed that the number of children who could produce this kind of story was statistically higher after the conversational intervention (χ^2 (1, N=60) = 5.68, p=.017).

This result shows again that the SCI improves children's ability to talk about non-literal aspects, aspects that require injecting into the stories the children's own interpretations, themselves based on inferential reasoning and displacement relative to the events that are more directly accessible to perception.

4. Types of explanations

As mentioned above, three types of explanation were distinguished: physical, socio-conventional and internal state.

Physical causes were most often evoked to account for the first push (e.g., *il y a un qui trébuche sur la pierre donc il pousse l'autre* 'there is one who stumbles on a stone and so he pushes the other one'); socio-conventional rules were invoked to explain the push back (e.g. *il l'a repoussé parce qu'il l'avait poussé* 'he pushed back because he had pushed him'), while internal states were used to explain different events such as the first push (e.g. *il l'a poussé sans faire exprès* 'he pushed him without doing it on purpose'), the push back (e.g., *comme il croyait qu'il l'avait poussé exprès, il l'a poussé aussi* 'as he believed he had pushed him on purpose, he pushed him too'), or the reconciliation (e.g., *il l'a aidé à se relever parce qu'il avait compris pourquoi il l'avait poussé* 'he helped him to get up because he understood why he had pushed him').

Table 4 presents the number of each of these three types of explanations.

[Insert Table 4 about here]

As can be seen, physical and internal state explanations were the most commonly used explanations. In the first narrative, physical explanations were the most numerous, while in the second narrative, internal state explanations were the most

frequent. Moreover, while physical and socio-conventional explanations did not change much between the first and second narrative[4], internal state explanations doubled in number. The difference between the first and second narrative in the expression of internal state explanations is statistically significant ($t(29) = 3.34$, $p < .01$).

Given the particular importance of internal state explanations for the non-literal use of language, in Table 5 we present the number and percentage of the different types of internal states (physical and emotional, intentional and epistemic) that are used to explain events, in the first and in the second narrative.

[Insert Table 5 about here]

As can be seen, the three types of internal state explanations were used at about the same frequency in the first narrative. In the second narrative, instead, intentional and epistemic states increased in number, with epistemic states also increasing proportionally (the increase is statistically significant: $t(29) = 2.63$, $p < .01$).

DISCUSSION

Narrative discourse refers to events and situations that are displaced in time and space and requires representational abilities by narrators and listeners. Representational abilities are complex and multi-determined, and narrative discourse might contribute to eventually foster their mastery. There are, however, many facets to narrative discourse and they do not equally carry displaced features. In this paper we have argued that talking about the *what, when* and *where* provides only a first level of displacement.

Narrative discourse takes a second essential step towards displacement and non-literal language uses when it interconnects events and provides the narrator's interpretation on what has happened. This means injecting into the sequence of

[4] The t-tests for paired samples for physical and socio-conventional explanations, before and after the SCI, are not significant. For physical explanations: $t(29) = 0.59$, ns; for socio-conventional explanations: $t(29) = 1.30$, $p = .10$, one-tailed.

perceptibly visible, or mentally represented, events, the narrator's interpretation of the causality links that underlie the events, or the narrator's inferences about the internal states of the characters involved. Thus, explanations and internal state attributions are aspects of narratives that are central for evaluating children's ability to express non-literal meanings.

It should be noted that the expression of explanations and of internal states appears early in children's development, during the second year of life. For example, children may justify their requests or their oppositions (e.g., Dunn, 1991; Eisenberg, 1985; Veneziano & Sinclair, 1995; Veneziano 2001, 2009) or talk about past events in co-constructed conversations (Eisenberg, 1985; Lucariello & Nelson, 1987; Miller & Sperry, 1988; Veneziano & Sinclair, 1995; Veneziano, 2009). Clearly these behaviors are still primitive, and become more elaborate only later. In their second year, children also use internal state terms in their naturally occurring everyday talk (e.g., Bartsch & Wellman, 1995; Baumgartner, Devescovi & D'Amico, 2000; Shatz, 1994; Veneziano, 2009). In their second year of life, children start referring to desires, physical sensations and emotional states, while references to epistemic states are reported to appear in the third year, with reference to one's own internal states preceding reference to the internal states of others (Bretherton & Beeghly, 1982; Brown & Dunn, 1991; Dunn, Bretherton & Munn, 1987). Gradually, internal state words not only increase in number but also their meanings become more differentiated, and these words are increasingly used to explain behaviors and events (Dunn, Bretherton & Munn, 1987; Wellman, Harris, Banerjee & Sinclair, 1995).

These early abilities constitute practical responses to the immediate needs arising in familiar communicative situations in which children are active participants, with their own personal interests and goals to pursue, and where topics of discussion often bear on context-bound and familiar objects and events (e.g., Karmiloff-Smith

1981; Hickmann, 2003). However, these contextually bound behaviors lay the basis for later developments. Indeed, as it has been shown in this paper, talking about internal states and explanations presents new challenges when children function at higher levels of awareness, explicitness, and complexity of the contents to be expressed and of the language means involved, and when they have to function in communicative contexts that require the integration of multiple skills, such as producing autonomously constructed narratives. Indeed, studies of children's autonomously constructed narratives (based on wordless pictures) support this claim. They show that, in this context, it is only at 4-5 years of age that children start attributing internal states to the characters of a story (Bokus, 2004; Richner & Nicolopoulou, 2001), and that internal states are mentioned to explain behaviors only at around 8-9 years (Bamberg & Damrad-Frye, 1991; Berman & Slobin, 1994; Charman & Shmueli-Goetz, 1998; Veneziano & Hudelot, 2009; Veneziano, 2016). It is even later that children express that characters may have different perspectives on the same events, or that a character can have a false belief about an event (Aksu-Koc & Tekdemir, 2004; Küntay & Nakamura, 2004; Veneziano & Hudelot, 2009; Veneziano, 2016).

This paper confirms these earlier results showing that explanations and internal state attributions are produced only very moderately in the first narratives of 7-year-old children. However, they also show that if children are adequately solicited, and their attention specifically focused, the expression of the inferential and non-literal aspects in the narratives of these same children can be improved.

It is interesting to note that also aspects that present higher levels of displacement and cognitive complexity, such as epistemic states, improved in the second narrative. Epistemic states, and among them the expression of the false belief and of its rectification, are quite complex, both cognitively and linguistically, and even less accessible to perception than the other internal states, which may have some

perceptible traces or correlates in behavior or facial expression. Indeed, the FB requires the attribution of an epistemic state coupled with the expression of the cause of the first push. Moreover, in the story, it is often a second-order belief, in the sense that it is not a belief about the state of the world but a belief about someone else's intentions. The RFB also goes beyond the attribution of an epistemic state to a character as it requires both the expression of the cause of the first push - which, at this point in the story, is evoked retroactively with respect to its occurrence - as well as its communication to the partner in order to influence the latter's state of mind.

The use of internal states to explain events, particularly epistemic states, is also present to a greater extent in the second narrative. As already mentioned, the attribution of internal states to the characters, and even more so, epistemic states, is an interpretative act that shows already in itself the ability to use language non-literally by creating a piece of the story that is not given in the pictures but stems from the onlooker's interpretation and inferential reasoning. The use of internal states to explain events goes yet one step further: A non-literal aspect (the internal state attribution) is mentioned to express another non-literal aspect (the explanation of an event) and can thus be considered as a higher, second-order, non-literal usage.

So, the overall results show that non-literal uses of language, even those of the higher inferential level such as the expression of the FB and of the RFB, or the use of epistemic states to explain events or behaviors, can be improved after a short conversational intervention that focuses children's attention on the causes of the events, without providing information about them.

This is an important result in at least two respects. Non-literal, inferential aspects are central to good storytelling. As they create links among events, explain the behaviors of the characters and elaborate on the latter's internal states, narrators propose pieces of the story that are not given in the pictures and thus make their stories

informative and interesting to listen to, and, at the same time, provide the interlocutor with key elements that would not be accessible otherwise than through the narrator's expression.

This result is important also for evaluative purposes. Given that displaced, non-literal talk based on inferential reasoning is an important achievement in children's development, it is quite important to evaluate their competences in this domain as precisely as possible. Our results show that the first narrative children produce doesn't reveal their deeper understanding and competences in this domain, which can however be attained to a greater degree in the second narrative produced after the short conversational intervention. The SCI thus provides a useful tool to better evaluate children's ability to talk about these inferential aspects.

How does the short conversational intervention attain these goals?

The short conversational intervention may help children *segment* the story into smaller fragments and so reduce the cognitive load created by the need to integrate several aspects simultaneously into a unique behavior (the story to be narrated) (e.g., Aksu-Koç & Tekdemir , 2004;Veneziano, 2016).

By focusing children's attention on the causes of the events, the SCI may help children to decenter from the aspects imaged in the story pictures and to turn their mind towards non-literal, inferential aspects, such as the explanation of events and the internal states of the characters, an effect also enhanced by the fact that the pictures are not visible when the children narrate the story.

The repetition of the causality questions, asked about each of the four main events of the story, may have upgraded the explanations in the children's minds, at the same time supplying an implicit suggestion about the expectations of the listener towards the story she wanted to hear. This feature of the procedure is expected to increase causal links in the second narrative (after the SCI) in children for whom this

kind of help would suffice. It would not however predict, in itself, the increase in the attribution of internal states nor in the provision of psychological, mental causes, since none of these were solicited, nor implicitly suggested by the short conversational intervention. And it is interesting to note that the SCI led children to think about these higher-level non-literal elements, increase their production and the expression of the qualitatively more complex of them.

We may suppose that it is by bringing their attention to the causes of the events that children whose theory of mind is well developed, are able to envision that internal causes, and in particular a false belief, may be the motivational forces for the characters' behaviors. In this way, children may come to not only *think* but also *talk* about internal states, particularly epistemic ones that, in the case of the false belief and its rectification, require rather complex inferential reasoning and linguistic expression, as described above.

Do the different features of the SCI and of the elicitation procedure help children learn something new, or do they stimulate children to better draw upon their underlying resources and make thus better function and integrate what they already know? This question cannot be cogently answered within the present study. It is, however, possible to speculate that both of these options can take place. Children may learn something new about the pragmatic constraints on storytelling: non-literal content, such as explanations and internal state attributions, is central to making a story informative and interesting for one's listeners (e.g., Galitch & Quasthoff, 1986; Hausendorf & Quasthoff, 1992). And it may also be the case that the procedure -- by *focalizing* children's attention away from the pictured details and on inferential aspects such as the causes of the pictured events, and *segmenting* the overall story into smaller units -- helps children promote their underlying competences and improve their ability

to integrate them, all at once, into the production of an autonomously constructed narrative.

It should be pointed out, however, that not all children improve their narrative after the SCI. This inter-individual variation may be related to children's variation in underlying cognitive abilities, such as cognitive flexibility and inhibition, with children who have developed greater mastery in the latter being better able to change an initially produced literal story into an inferentially loaded story of misunderstanding between the characters (Veneziano & Bartoli, in press).

Are the improvements linked to the intervention procedure or to the fact that the children narrate the story a second time? Earlier research found that the simple repetition of an already narrated story did not lead children to improve the non-literal aspects of their second narrative, such as explanations and the attribution of internal states (Veneziano, Albert & Martin, 2009; Veneziano, 2016). These studies have shown that there are no significant improvements in the second narrative when children, instead of participating in the SCI, tell it after playing a *Memory* game with the story pictures, and some of their variations, in which the goal is to find the highest number of pairs of matching pictures.

Moreover, it was also found that the improvements obtained immediately after the SCI were still present one week later and could be generalized to an analogous story (Veneziano, 2010; Veneziano et al., 2011).

Compared to other intervention procedures that also have the effect of increasing the expression of explanations, and for some, the attribution of internal states to the characters (see the meta-analysis of intervention studies by Pesco & Gagné, 2015), the short conversational intervention used in our studies has several advantages, such as being simple and rapid to administer. Moreover, it can be taught easily to people who need to implement it and teachers can easily include the procedure from

kindergarten onwards as part of those everyday activities during which children are solicited to tell fictional stories or narrate their past personal experiences.

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Table 1 - Number and proportion of internal states, total and by type, per narrative (first and second)

Narrative	Variables	Types of internal states				Total Number
		physical	emotional	intentional	epistemic	
First	Number	15	5	16	14	50
	% of Tot	30%	10%	32%	28%	
Second	Number	12	9	20	35	76
	% of Tot	24%	12%	26%	46%	

Table 2 - Mean and SD, and number and proportion of children, who expressed the false belief (FB) and the rectification of the false belief (RFB), per narrative (first and second).

	Variables	Narrative	
		First	Second
FB	Mean (SD)	0.27 (0.45)	0.47 (0.51)
	Nb of Cs (%)	8 (27%)	14 (47%)
RFB	Mean (SD)	0.17 (0.38)	0.60 (0.50)
	Nb of Cs (%)	5 (17%)	18 (60%)

Table 3 - Mean and SD of the total number of explanations, and number and proportion of children explaining the key narrative elements, per narrative (first and second)

	Variables	Narrative	
		First	Second
Total number of events explained	Mean	1.97	3.1
	(SD)	(1.67)	(2.04)
Number and % of children expressing the explanation of the central events	No	3	12
	%	10%	40%

Table 4 - Number and proportion, Mean and Standard Deviation (SD), of the different types of explanations, per narrative (first and second)

Narrative	Variables	Types of explanations		
		physical	socio-conv	internal states
First	Number (%)	30 (52%)	5 (9%)	23 (39%)
	Mean	1	0.17	0.77
	(SD)	(0.87)	(0.46)	(1.07)
Second	Number	33 (36%)	10 (11%)	48 (53%)
	Mean	1.1	0.33	1.6
	(SD)	(0.88)	(0.54)	(1.38)

Table 5 Types of internal state explanations, per narrative (first and second)

Narrative	Variables	Types of internal state explanations		
		phem*	intentional	epistemic
First	Number	13	13	10
	%	36%	36%	28%
Second	Number	13	17	25
	%	24%	31%	45%

*physical + emotional

"The stone story"

Adapted from Furnari, E. (1980) by Veneziano, E. & Hudelot, C., 2006

