The use of questions to scaffold narrative coherence and cohesion

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Abstract

We examined the quality of 4- to 6-year-olds' production of narratives from picture sequences. Children (N = 81) first viewed a narrative picture sequence and then completed the narrative production task in each of two orders: either before or after answering a set of questions about the core elements of the story. Narratives elicited after questions were more coherent than those produced before the questions. In contrast, task order did not influence the cohesion of narratives nor the accuracy of responses to questions. An independent measure of memory was related to the gains in narrative coherence after answering questions. The results are discussed in relation to the role of questions as a guide to the structural elements of a narrative and a scaffold for understanding.

Keywords: narrative production, narrative comprehension, coherence, cohesion, working memory.

Highlights

What is already known about this topic

- Narrative is related to reading comprehension skills

- Questions can support learning

What this paper adds

- The use of questions fosters narrative coherence but not cohesion

- Questions, but not independent storytelling, constitute a scaffold for coherence

- Memory is related to gains in narrative coherence after answering questions

Implications for theory, policy or practice

- Questioning can be used to promote narrative skills in early education

- Repetition or mere exposure to narrative is not sufficient to foster narrative

  skills

The use of questions to scaffold narrative coherence and cohesion

Narratives are structured accounts of fictional or personal events (Petersen, Gillam, & Gillam, 2008). Narrative skills develop before children start formal instruction in reading, because they are exposed to narrative from an early age through a wide range of activities, such as watching television programs, talking about past events with others, and sharing books at home and/or at school (Dickinson & Snow, 1987; Schick & Melzi, 2010; Skarakis-Doyle & Dempsey, 2008). Narrative ability can be described in terms of how well it is structured at a global level, referred to as narrative coherence, and at a local level, referred to as narrative cohesion. Narrative skills in young children are considered a proxy measure of reading comprehension (Paris & Paris, 2003), and are also predictive of later reading comprehension (Oakhill & Cain, 2012; Silva & Cain, 2015). Further, the ability to produce and comprehend a story is a predictor of later writing (Griffin, Hemphill, Camp, & Wolf, 2004) and math (O'Neill, Pearce, & Pick, 2004) skills. Thus, narrative skills are critical for later literacy and wider scholastic achievement.

For these reasons, it is important to determine how best to foster narrative skills in young children. One method of support widely used to promote language at school and at home is the use of questions (de Rivera, Girolametto, Greenberg, & Weitzman, 2005; Schick & Melzi, 2010). Research to date demonstrates that questions influence the information that is included in the retelling of stories (Cassidy & DeLoache, 1995; Zevenbergen, Whitehurst, & Zevenbergen, 2003) and in the production of new stories, that is storytelling (Silva, Strasser, & Cain, 2014). In this study, we examine whether questions can promote the production of more structured narratives at a global and local level, that is, more coherent and cohesive narratives. We will also address if the effects are influenced by basic language and memory skills.

Narrative skills

Narrative is one of the preferred genres used by adults in their interactions with young children (Pentimonti, Zucker, & Justice, 2011; Skarakis-Doyle & Dempsey, 2008). Genres could be defined in terms of their text structure (Donovan & Smolkin, 2001). In the case of narratives, there are two structural aspects that have been widely studied: coherence and cohesion (Shapiro & Hudson, 1991). Establishing coherence is critical to comprehension (Kendeou, van den Broek, White, & Lynch, 2009). Coherence represents the extent to which a story is organized at a global level concerning how the events are structured in a meaningful way by completing the requirements to build a well-formed story (Justice et al., 2006; Shapiro & Hudson, 1991). There is a general agreement that the elements of a good story might include information about the setting, characters, an initiating event, problem, and resolution, and that more sophisticated stories include predictions and themes (Paris & Paris, 2003; Shapiro & Hudson, 1991).

Cohesion is also important for narrative. Cohesion refers to the local organization of a story using linguistic devices, such as connectives and pronominal reference strategies (Shapiro & Hudson, 1991). Connectives link semantic information between sentences (Halliday & Hasan, 1976). By signaling the relations between events in a text, connectives help readers (and listeners) to make sense (Cain & Nash, 2011). There are different types of connectives and they are acquired progressively: first the additive connectives (e.g. and), then the temporal (e.g. before), causal (e.g. because), and adversatives (e.g. but) (Bloom, Lahey, Hood, Lifter, & Fiess, 1980).

Another linguistic feature that helps to establish cohesion is pronominal reference. This refers to the use of linguistic expressions to link nominal words and

subsequent pronouns (Schneider & Hayward, 2010; Shapiro & Hudson, 1991). Appropriate referencing allows the listener or reader to understand the relation between events and to follow a protagonist's actions and feelings throughout the story. For example, in the following sentences: "Paul and Robert went to the shop. He left his wallet at home", the use of the pronoun 'he' is ambiguous. It is not clear whether Paul or Robert forgot his wallet. The skill of referencing develops gradually going from 'confused referencing' that usually relies on extralinguistic information (e.g., 'he went there'), to a full anaphoric reference that use names to introduce or switch reference, and pronouns to maintain the reference (Schneider & Hayward, 2010; Shapiro & Hudson, 1991).

Coherence and cohesion are both theoretically and empirically distinguishable. In adults, Long and Chong (2001) found that poor and good comprehenders differed in their ability to build coherence but not cohesion. In contrast, for adolescent readers Barth, Barnes, Francis, Vaughn and York (2015) have found differences between good and poor comprehenders in their ability to integrate text at a local level, cohesion, and also at a global level, coherence.

The current study focuses on narrative coherence (story structure) and cohesion (use of connectives and pronominal reference) and how best to foster their development. It is important to understand how best to support narrative skills in early childhood because learning how to structure a story is important in the transition to literacy (Peterson & McCabe, 1994) and, in schools, fictional narratives are often used to promote learning of different language skills (Bliss & McCabe, 2008). The task of building coherence might be parallel to some of the processes that the child needs to display during reading comprehension: integration of propositions in the text, use of prior world knowledge, and the construction of an organized global

representation of the information (Kendeou, et al., 2009; Paris & Paris, 2003). In addition, the production of cohesive devices during storytelling or story retelling, such as connectives and pronouns might be related to the use of connectives to understand written text (Cain & Nash, 2011; Cox & Sulzby, 1984).

Overall, there is evidence that narrative skills are important for broader language skills and reading comprehension. Despite this knowledge, there is little information regarding how to foster and support the development of narrative skills, and more specifically how to foster coherence and cohesion, the two key structural aspects of narratives.

The use of questions

In this study, we examined how questions might benefit narrative production. Questioning is widely used in educational settings with the broad aim of supporting learning (Andre, 1979; Callender & McDaniel, 2007) and especially in early education settings (Zucker, Justice, Piasta, & Kaderavek, 2010). The literature suggests that questions can foster different aspects of language production. For example, questions asked during shared reading improve vocabulary learning and knowledge (Blewitt, 2009; Wasik & Bond, 2001). However, the effect of questioning might not be equal for all children. For example, the benefits of questions on vocabulary are dependent on initial vocabulary knowledge (Reese & Cox, 1999; Zucker, et al., 2010).

Less is known, however, about the impact of questions on children's extended discourse. Zevenbergen et al., (2003) found that a shared reading intervention that included the use of questions, was effective in promoting the use of evaluative devices in children's narrative. In contrast, Sénéchal, Pagan, Lever and Ouellette (2008) found no relation between shared reading and narrative skills. The contradictory findings

could be explained because they used two approaches regarding shared reading. The first study was a shared reading intervention, which included elaboration through questioning, whilst the second study took a measure of shared reading based on the frequency of reading reported in a questionnaire to relate to narrative skills. Silva et al. (2014) studied the impact of questions on narrative coherence in Chilean kindergarteners. Two groups of children completed a storytelling task about a wordless picture book and also answered a set of questions about the same story. The order of the tasks was manipulated: one group completed the questions first, and the other group, told the story first. They found that questions asked prior to storytelling contributed to build a more coherent production of a story, whereas questions did not receive a benefit from the prior storytelling task.

In sum, there is some evidence supporting a positive relation between the inclusion of questions on vocabulary and narrative, however, to date, it is not clear which aspects of narrative are influenced by questions: coherence, cohesion, or both.

Why questions work?

Narrative is a social aspect of language (Schick & Melzi, 2010). Questions feature extensively in both the school and the home and affects children's learning (de Rivera et al., 2005, Schick & Melzi, 2010). Pontecorvo (1993) proposed that, while telling stories, adults provide children with information about what is valued and what should be included in narratives. On this view, questions might foster (or scaffold) narrative production in several ways. Questions have a prompting and evocative function, in that they encourage children to take turns in the conversation and to produce language, providing the opportunity to practice extended discourse (Massey, Pence, Justice, & Bowles, 2008). As previously suggested, questions direct children's attention to the critical elements that are included in a good story (Graesser,

McMahen, & Johnson, 1994; Pontecorvo, 1993). In addition, questions might help children to elaborate, helping to guide their reasoning about certain events and promoting the inclusion of structural elements in the narration that might not, otherwise, be included (Griffin et al., 2004). Thus, asking questions prior to production might minimise cognitive demands and mark important aspects or features of the task (Graesser et al., 1994).

Questions might be used to help children to identify which aspects of narrative are relevant. Previous research has found that providing students with instructions about what could be relevant from a text, results in better performance (McCrudden & Schraw, 2007). Thus, questions could be also understood as a specific instruction for children on what to focus on in the story.

Overview of Research Questions

In this study, children produced narratives from a short sequence of pictures. We examined whether questions scaffolded the coherence and cohesion of these narratives. The questions used in this study were designed to promote deeper inferential thinking by first focusing attention on a particular story feature, and then prompting elaboration of it. The structural quality of a narrative produced after questions was compared to that of a (different) narrative produced before questions. The order of the tasks was manipulated, such that children answered the questions either before or after producing their picture-prompted narrative. This manipulation was designed to test whether questions would direct children's attention to core relevant features of the narrative, which would be included in their subsequent story production (McCrudden & Schraw, 2007; Vidal-Abarca, Mañá, & Gil, 2010).

To better understand why questions might benefit narrative coherence and cohesion, independent measures of general ability, foundational oral language skills

(vocabulary and grammar), and memory were administered and related to performance on the narrative task. As noted, previous research has found a relation between the level of skill and the benefit obtained by a scaffold (Reese & Cox, 1999; Zucker et al., 2010). In this study we look at whether the effect of questions is different depending on children's level of memory, vocabulary, and grammar. The research questions and predictions were as follows:

1. Do questions scaffold the coherence and cohesion of narrative productions? It was expected that, when children were asked questions about a story prior to production, they would produce a more coherent and cohesive story than when producing a narrative without being first exposed to the questions. In addition, we did not predict differences in performance on the actual questions themselves in relation to task order, because we theorised that questions – as an interactive way of sharing information - would scaffold the production of the narrative but not vice versa.

2. Are children's general cognitive ability, memory, vocabulary and grammar related to the effect of questions prior to the production task? For the reasons outlined earlier, general cognitive ability, memory, and/or foundational language ability may each be related to the extent to which the scaffold benefits narrative performance. If that is the case, it would be expected that better performance on narrative skills will be significantly correlated to these measures. Better oral language skills, for example vocabulary and grammar, could be related to a better understanding of the questions and thus, lead to greater benefit in story production. In addition, memory skills have found to be related to learning (Alloway et al., 2005), indicating that better memory skills could also lead to superior story production.

Method

Participants

Eighty-one 4- to 6-year-olds from three UK primary schools participated in this study. All children spoke English as their first language, with the exception of one child who was learning basic English, so they were was not included in the final sample. There were 42 children from Reception classes (22 girls, $M = 5.0$ years, $SD = 0.43$) and 39 children from Year One classes (16 girls, $M = 6.2$ years, $SD = 0.25$). Teachers were asked to identify children with special educational needs and they were excluded from the study. Signed parental consent was obtained for all participants. Parental report of educational qualifications indicated a mixed sample: 15% had finished their education with GCSEs (General Certificate of Secondary Education), examinations that are usually taken at 16 years; nearly 16% of the sample had completed A-levels (Advanced level examinations) or an equivalent qualification (usually taken at 18 years); and 33% of the sample had completed a University degree. The educational attainment of the sample was broadly in line with population provided by the British Office of National Statistics: 23% reaching GCSE level, 21% A-levels, and 26% completing a University degree (Office for National Statistics, 2012).

Design and materials

Children completed two narrative tasks, a measure of cognitive ability, two memory tasks, and measures of receptive vocabulary and grammar. The experimental narrative task is described first, below, followed by the other measures.

Experimental narrative task. Two stories from the picture arrangement task of the WISC III (Wechsler, 1991) were used. Each story consisted of 4 coloured pictures. In the current study, the pictures were used as a prompt to elicit narratives (production) and to assess narrative comprehension: thus, the pictures were presented in the correct sequence and children were not asked to arrange them. One story is

about a cowboy who goes to a store to buy a lasso and he uses the rope to tie up the

shopkeeper to steal the money. The other story is about a boy who is helping his

mother in the garden, but after a while he sneaks away with some worms he found in

the soil and goes fishing. The original cards of the WISC III were scanned, enlarged,

and laminated. Two more stories from the WISC with the same characteristics and

format were used as a practice to familiarize the children with the task.

Our procedure was a modified version of the 'Narrative Comprehension' task

used by Paris and Paris (2003) and had three parts: picture viewing, narrative

production, and narrative comprehension. The latter two parts of the task were audio

recorded and transcribed by the main author in CHAT format (MacWhinney, 2000)

for later analysis.

Picture viewing. The experimenter put the pictures in the table in front of the

child in the correct order. Then, the child viewed the pictures to familiarize

him/herself with the story and its plot.

Narrative production. The child was asked to tell the story, using the pictures as

a prompt.

Narrative Comprehension. Children were asked six questions about the story to

tap their understanding of the following components: characters, setting, feelings,

thoughts, problem, and prediction. The set of questions is provided in Appendix A.

They were based on the questions used by Paris and Paris (2003) and adapted for the

stories used in this study.

Narrative production Coding. The narratives were scored for two structural

elements: coherence and cohesion. Six elements of narrative coherence that fitted the

plot of the stories were assessed: setting, characters, feelings, thoughts, problem, and

prediction. The general coding scheme was as follows: 0 point if the element was not

mentioned in the story; 1 point if the element was included; 2 points when the element was included and also elaborated (related to another event of the story). Two independent coders scored 24% of the scripts. Reliability scores were good, similar to those reported by Paris and Paris (2003): all the elements were above 80% of agreement and kappa scores ranged from .62 to 1. All discrepancies between the two coders were resolved through discussion. A total score for narrative production was calculated summing all the elements' scores.

Connective use and pronoun strategy were analysed as indices of cohesion. The number of additive, continuative, temporal, causal, and adversative connectives was calculated for each narrative production. The pronouns produced in the narratives were identified and categorized. The full anaphoric references, corresponded to the adequate use of referencing, including pronouns to maintain the reference, and names when introducing a character. The total number of full anaphoric references was calculated and used as an indicator of adequate pronoun strategy (Finestack, Fey, & Catts 2006; Shapiro & Hudson, 1991).

For cohesion, the data were prepared as follows: the number of the different types of connectives and the number of full anaphoric references were combined and reduced using principal components analysis, without rotation. The analysis yielded one single factor (cohesion) in each condition (before and after answering a set of questions) that accounted for 48 and 44% of variance respectively. A cohesion factor score was used in subsequent analyses.

Narrative comprehension coding. As in Paris and Paris (2003), each question was scored on a 0 to 2 point scale. One point was awarded for the identification of a particular element in the story (e.g. problem) and an additional point for the elaboration of the element (e.g. the cause of the problem). As above, 24% of the

transcripts were double-coded. Considering all the questions, the percentage of agreement was between 80% and 100%, and the kappa coefficient was over .82 in all cases, except for the question about prediction that was .69. All discrepancies between the two coders were resolved through discussions. A total score for narrative comprehension was calculated summing all the questions' scores.

General cognitive ability. The Matrix Reasoning subtest from the Wechsler Preschool and Primary Scale of Intelligence – Third Edition (Wechsler, 2003) was administered to evaluate (non-verbal) cognitive ability. In this task, the child is presented with a blank space and is asked to choose from a range of pictures, which one fits best. One point was awarded for each correct answer (reported Cronbach's α = .90). This and all other standardised measures were administered according to the manual guidelines. For these measures, raw and standardized scores (when available) are reported in Table 1.

Memory. Short-term memory was assessed with two tasks: a forward and a backward digit span task. In the forward digit span task, the child is required to repeat a string of numbers after listening to them read out by the experimenter. The length of the string of increases progressively from two digits, until a ceiling level of performance is reached. In the backwards digit span task, children are required to say back the numbers in the reverse order to that presented. In both tasks, one point was awarded for each item recalled in its correct position. These were experimenter-designed measures (Cronbach's α = .76 and .68 respectively).

Receptive Vocabulary. Receptive vocabulary knowledge was assessed using the British Picture Vocabulary Scale – II (Dunn, Dunn, Whetton, & Burley, 1997). In this task, the child is shown sets of four pictures. For each set, a word is spoken by the tester and the child's task is to point to the picture that depicts the spoken word. One

point was awarded for each correct answer (reported Median Cronbach's α = .93).

Knowledge of grammar. The Test for Reception of Grammar –Second Edition (Bishop, 2003) was used to assess knowledge of different grammatical structures. In this task, the child is shown sets of four pictures. For each set, a sentence is spoken by the tester and the child's task is to point to the picture that depicts the sentence. There were four items in each block, and one point was awarded for each correct response (reported split-half reliability calculated for blocks for each set of grammatical contrasts, r = .88).

Design

The order of the narrative task was manipulated (questions before the story or questions after the story) using a within-subjects design: All children performed the narrative task in both conditions. In both conditions, children first viewed the sequence of pictures. In the questions before the story condition, children were asked the set of questions and, after that, they were asked to narrate the story depicted by the picture sequence. In the questions after the story condition, children were asked to produce their narratives immediately after the picture viewing and were then asked the set of questions. All children completed both conditions. They were randomly assigned to start with either questions before the story condition or with questions after the story condition. The order of presentation and the story used were counterbalanced.

Procedure

Each child was assessed in three separate sessions, each lasting no longer than 15 minutes. In the first, receptive vocabulary and memory were assessed. In the second session, one of the short stories in either the questions before the story or questions after the story condition was administered, and also the measure of general

cognitive ability. In the final session, the second short story was presented in the appropriate condition (questions before the story / questions after the story), and knowledge of grammar was also assessed. The task was not time limited. That is, children could take as long as they needed to view the pictures, tell the story and to answer each questions. The time between each session was no longer than 3 days.

Results

The results are presented in three sections. First, we describe the descriptive statistics. Second, we present the analyses relating to the first two research questions concerning whether questions scaffold the coherence and cohesion of narrative production and whether answers to questions improved after narrative production. Finally, we present the analyses relating to our third research question that sought to determine whether the benefits from questions are dependent on a child's general cognitive ability, memory, and/or language skills.

Descriptive Statistics

The means, standard deviations, and range of scores for general ability, memory, vocabulary, and grammar are shown in Table 1. The scores indicate that general cognitive ability and receptive vocabulary were all within the normal range at each time point. However, children obtained low scores on the assessment of knowledge of grammar.

The means, standard deviations, and range of scores for narrative skills are shown in Table 2. Narrative production scores in the narrative first condition were not normally distributed (kurtosis > 2.0). We carried out data transformations, and the results obtained followed the same pattern of the analyses with the non-transformed data. Thus, all analyses reported here were conducted on the raw data.

INSERT TABLES ONE AND TWO AROUND HERE

Do questions benefit the coherence and cohesion of narrative productions?

The central aim of these sets of analyses was to determine whether answering a set of questions before telling a story supported the construction of more coherent and cohesive stories. To test this question, we carried out two 2 (Age: Reception or Year One) x 2 (Order: Narrative first or questions first) mixed-factor analyses of variance. In the first analysis, narrative production coherence was the dependent variable; in the second, cohesion factor score was the dependent variable.

In the analysis of narrative coherence scores, there was a main effect of order because, in line with our predictions, narratives produced after the questions were more coherent than narratives produced before questions, $F(1,79) = 4.24$, $p = .04$, $\eta_p^2 = .051$ (Ms = 1.89 and 2.31). There was also a main effect of age group, because the older children produced more coherent narratives than the younger children, $F(1, 79) = 7.94$, $p = .001$, $\eta_p^2 = .091$ (Ms = 1.71 and 2.51). The interaction between order and age was not significant ($F < 1.0$).

In the analysis of narrative cohesion, order did not affect performance, ($F < 1$), but there was a main effect of age group: older children perform better than younger children, $F(1,79) = 8.48$, $p < .01$, $\eta_p^2 = .10$ (Ms = -.27 and .29). The interaction between order and age was also not significant ($F < 1$).

In sum, results showed that order affects performance in the coherence of narrative production, that is, children produced more coherent narratives after answering a set of questions. Regarding age, it was found that older children produced more coherent and cohesive narratives.

Does narrative production scaffold the questions' performance?

The aim of this analysis was to determine if narratives scaffold performance on the questions. To test this, we carried out a 2 (Age: Reception or Year One) x 2

(Order: Narrative first or questions first) mixed-factor analyses of variance on the

total scores of narrative comprehension.

Order did not affect performance on narrative comprehension, ($F < 1$), but

there was a main effect of age group: again, older children perform better than

younger children, $F(1,79) = 25.09$, $p < .001$, $\eta_p^2 = .24$ (Ms = 4.89 and 7.50). The

interaction between order and age was also not significant ($F < 1$).

Do some children get a greater benefit depending on their general ability or oral

language skills?

The difference between the coherence of the narratives produced before and

after the questions was calculated as an indicator of gain in narrative skill. Multiple

regression analysis was used to develop a model for predicting benefit in narrative

coherence from children's general ability and oral language skills. Table 3 displays

the zero-order correlations and standardized regression coefficients. One of the

predictor variables had a significant zero-order correlation with narrative coherence

benefit (working memory), showing also a significant partial effect in the full model.

INSERT TABLE THREE AROUND HERE

Discussion

This study investigated whether asking children questions about the content of a

narrative fosters the production of more coherent and cohesive narratives. The order

of questions and narrative production was manipulated within participants. When

children answered the set of questions first, they produced more coherent narratives

than when they produced the stories before being asked the questions. In contrast, task

order did not influence significantly the cohesion of narratives: older children

produced more cohesive narratives than younger children, regardless of task order. In

addition, working memory skills predicted greater gains in narrative coherence from

the use of questions: children with higher levels of working memory ability gained more advantage from the questions first condition. These findings are discussed in relation to the previous literature on narrative production and the role of questions, followed by a discussion of the implications for assessment and intervention.

This study provides clear evidence that exposure to questions about the critical elements in a story can improve the coherence of narratives produced by children. This provides an important replication of earlier work on the role of questions (Silva et al., 2014) with a larger sample, in a different language and educational context, and a different set of materials. Together these findings indicate that the benefit of questions is robust. It might not be a surprise that narrative productions, when completed after answering a set of questions, were of higher structural quality. What is interesting, however, is that question answering did not benefit from prior production of a narrative. Thus, this finding demonstrates that the enhanced performance found for the narrative task was not simply due to more time spent thinking or talking about the story in any form, because it was not the case that children simply performed better in the second task regardless. The effect was specific and related to prior completion of the question-answering task. Critically, questions can be used to provide a scaffold on which the child can construct a more coherent representation of the story, in a way that simple story telling does not. Our findings demonstrate the relevance of *interaction* in the acquisition and development of narrative skills.

There are different reasons for why the interaction with questions benefited narrative production. First, questions can highlight key aspects of the story (Graesser et al., 1994), which children may not attend to unless directed in this way. In this study, the experimenter supplied information when posing a question, which may

have focused attention on critical details. For instance, asking *where* something happened indicates that location might be something important. Similarly, the phrasing of questions necessitates the inclusion of important cues. For example, if we ask 'What do you think the shopkeeper is feeling?' we are implying that the shopkeeper is feeling something. In this way, questions about feelings or dialogue, for example, might and may have helped the child to attend to key story features and identify how events are or can be related (Pontecorvo, 1993, see also Graesser et al., 1994). These functions of questions might underpin why an independent narrative production is better when produced after answering a set of questions. Second, most questions were asked while the child was looking at a particular picture, which may have minimised memory demands.

Also the benefits of questioning could be related to retrieval practices, that is, the effect of a specific task (for instance a quiz; in this case, questions) used to enhance learning. Previous research has shown that the use of evaluation supports learning (Agarwal, Bain, & Chamberlain, 2012). However, not every task supported retrieval practice or functioned as a test effect. This study showed that questions support production, which is consistent with previous literature that highlighted the role of elaboration as a way of prompting learning (Endres, Carpenter, Martin, & Renkl, 2017).

A key extension from previous research was our analysis of the cohesion of the narratives, in addition to their coherence. However, the task order effect was not significant. We think this is unlikely due to a lack of task sensitivity: there was a significant improvement in the cohesion of narratives with age. Instead, we believe that this effect was due to the content of the questions, which were designed to tap the main structural elements of a story, rather than cohesion. Further research is needed to

test other hypotheses regarding cohesion and how to improve it through questioning.

A subsidiary analysis identified that memory, but not vocabulary or grammar, explained unique variance in the gains in narrative coherence after the question task: Children with better working memory skills gained greater benefits from questions. Children with better working memory may be better able to store the information provided by the question scaffold and use that to produce a more coherent narrative. Indeed, working memory has been previously related to learning (e.g. Alloway et al., 2005) and older children's narrative comprehension (Cain, Oakhill, & Bryant, 2004).

The most salient implication to arise from these findings is that questioning can be used to boost pre-readers' ability to produce well-structured narratives. Our paradigm has many similarities to a dynamic approach to assessment, a facilitative technique typically used by speech and language therapists in which prompts can be used to scaffold performance and to identify learning potential (Elleman, Compton, Fuchs, Fuchs, & Bouton, 2011). For that reason, this technique could be used to identify which children benefited the most (and the least) from the questions to identify instructional needs to develop narrative skills. Another implication is that, because performance on the comprehension questions did not improve after narrative production, mere exposure or task repetition is not sufficient to promote the development of these skills. Instead, specific support and instruction is required to foster narrative skills.

The relation between working memory and improvement on the narrative task could be interpreted as evidence that it is important to reduce working memory demands on certain tasks (Gathercole, 2008). It might be that children with low working memory need more support to store and integrate the information as it is expected in the task used in this study. Future work could usefully explore the relation

between individual differences in working memory and the ability to perform complex tasks, such as narrative production, to identify how best to target support.

In sum, this study supports the view that children should be encouraged to tell stories, both personal and fictional, to foster language development. Critically, it demonstrates that asking them specific questions about those stories, such as what did the characters feel, why did they do something, what did they want, will improve the quality of the story, and it may very well result in better narrative production in the future. When questions are used as a guided interactional support, they might help children by providing some of the knowledge about what makes a good story that they do not currently possess. In this way, with the help of the adult, children can achieve a higher performance on the task and advance their production and comprehension skills. Further research will need to disentangle the mechanism through which this knowledge is acquired and also how this knowledge support children's narrative comprehension.

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Appendix A

Narrative Comprehension Questions and Examples of 0, 1, and 2 point responses.

1. Characters: Who are the characters in the story?

2 point response: states that characters are a cowboy and a shopkeeper /boy and his

mother

1 point response: includes only one character

0 point response: no answer or inappropriate response

2. Setting: Where does this story happen?

2 point response: includes multiple scenarios

1 point response: includes one scenario

0 point response: no answer or an inappropriate setting

3. Thoughts: What do you think the cowboy/boy is thinking here? Why would he

think that?

2 point response: an appropriate thought is inferred and connected to other events

1 point response: an appropriate thought is inferred but not connected to other events

0 point response: no answer or inappropriate thought

4. Problem: What is going on now? Why did this happen?

2 point response: identifies the problem and also a connection to other events

1 point response: identifies the problem but is not connected to other event

0 point response: no answer or problem not identified

5. Feelings: What do you think the shopkeeper/boy is feeling here? Why do you think

so?

2 point response: an appropriate feeling is identified and connected to other events

1 point response: an appropriate feeling is identified but not connected to other events

0 point response: no answer or appropriate feeling not identified

6. Prediction: This is the last picture of the story. What do you think happens next?

Why do you think so?

2 point response: prediction is identified and connected to other events

1 point response: prediction is identified but not connected to other events

0 point response: no answer or prediction not identified