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Is two better than one? Comparing children's narrative competence in an individual versus joint storytelling task

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Abstract This research looks at the potential of peer interaction practices in improving narrative competence by analyzing the efficacy of peer learning on children's oral narrative productions. Gains on a macro-level (structure and coherence of the narrative) and a micro-level (cohesion of the narrative) were analyzed. Fifty-six primary school children participated in this study. Each child told a narrative either individually (individual condition) or while interacting with a peer (joint condition). We explored whether children produced longer, more structured, coherent and cohesive narratives in a joint condition rather than individually, and in which condition the joint task was more beneficial for children's narrative competence in terms of narrative scores in the individual condition, discrepancy between the members of the same pair, and quality of the interaction. The advantage of peer learning does not derive from the direct comparison of the individual versus the joint condition but depends on specific conditions: the joint condition was beneficial for individuals with lower individual competence and for pairs with a high discrepancy between individual scores. Children's quality of interaction did not seem to influence the efficacy of peer learning on their narrative competence.

Keywords Narrative competence · Peer learning · Preschoolers · Story-telling

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1 Introduction

The ability to produce narratives is fundamental, as it allows one to render actions and events meaningful (Lyle 2000). Narrative competence is an essential skill for school success (O'Neill et al. 2004) and one of the best methods for promoting reading comprehension (Cain 2003), long-term language skills (Botting 2002) and critical thinking at a very young age (Gelmini-Hornsby et al. 2011). While children are exposed to narratives from early childhood via family routines, television watching, kindergarten play, and the like, exploring ways of improving narrative competence in the early years of schooling is vitally important. Consequently, scholars have directed their attention to peer interaction as a way to improve narrative competence (Devescovi and Baumgartner 1993; Hayes and Casey 2002), but not much research has been done on the potential effects of collaborative learning on narrative competence. This study analyzes primary school children's oral productions in individual versus joint story-telling tasks. The current research determined whether peer interaction improved oral narratives and whether its efficacy was systematic or applied to certain conditions, namely, low levels of individual performance, discrepancy in narrative competence between the two peers collaborating, or quality of the interaction.

1.1 Improving narrative competence production

The term narrative can be used for different genres: autobiographical, personal, fictional, make-believe and the like (McCabe et al. 2008). Personal and fictional narratives emerge early but follow different developmental paths (Allen et al. 1994) and display associations with different aspects of child development. For instance, past studies have provided evidence of the association between fictional narratives and later reading (Cain 2003) and writing performance (Pinto et al. 2015).

Narrative production requires both macro- (i.e., structure, coherence) and micro-level elements (i.e., cohesion) (Pinto et al. 2015, 2016). On a macro-level, a good narrative should include enough elements to enable the listener to understand the sense of the characters and the plot (Gelmini-Hornsby et al. 2011). To be understood, a narrative needs to be structured conventionally (McCabe and Peterson 1991), i.e., by the presence of main narrative components: an opening, characters, a setting, narrative development, problem resolution, and an ending (Genereux and McKeough 2007; Halliday and Hasan 1976; Stein and Glenn 1982). A narrative also needs to be coherent such that the text "hangs together" (Cain 2003; Halliday and Hasan 1976), meaning that connective devices must be used with consistency and without incongruence so that various parts of a narrative are interrelated in a meaningful way (Hudson and Shapiro 1991). Failing to do so typically hinders the reader's/listener's efforts to understand the narrative's message (Struthers et al. 2013). Finally, sentences and clauses need to be connected at a micro-level (Cain 2003; Halliday and Hasan 1976). Through the use of cohesive linguistic devices, the text is tied together on a local level as connectives express whether two events are causally or temporally related (Struthers et al. 2013).

Structure, coherence and cohesion are interdependent but separate components of narrative competence (Karmiloff-Smith 1985). Structure refers to children's knowledge of conventional elements of a narrative, coherence refers to how events are related to one another, and cohesion refers to how sentences are semantically related (Cain 2003). Structure and coherence are inter-related as they both refer to children's macro-level knowledge of narratives. Coherence and cohesion are inter-related as they both refer to how children include the structural elements inside an intertext. Coherence binds the story at a global level (e.g., indicating how the central event leads towards the resolution of the conflict), whereas cohesion binds it at a local level (e.g., indicating whether two events are causally or temporally associated or not). To establish coherence, children must draw on culturally shared knowledge, whereas to establish cohesion, children must draw on their language knowledge (Shapiro and Hudson 1991).

Children's narrative competence varies as a function of age (McCabe and Peterson 1991). Children are able to verbally tell stories early in childhood, but their ability to write narratives increases significantly during school years (Berman 1988). Typically, primary school-age children's (6–10 years old) narratives have a basic macrostructure in that they include an initiating event, goal-directed actions, and a consequence. During the same period, children's narratives trend towards reduced ambiguity, increased referential adequacy, and effective use of temporal and causal connectives (Pinto et al. 2015, 2016).

Children's narrative competence also varies as a function of whether the child is asked to write or verbalize a narrative. Pinto et al. (2015) demonstrated that children's early learning of orthography in first grade disrupts the continuity from oral to written narratives. Once orthography is mastered in second grade, continuity between oral and written narratives re-emerges.

Experience and context influence a child's ability to produce narratives (Silva et al. 2014). Asking children to tell a story is the most popular research method to assess children's narrative competence (Gazella and Stockman 2003). However, different tasks have been used to analyze children's stories, and prior studies have shown that children's performance depends on the method used to elicit the narratives. The two dominant eliciting methods are storytelling and story retelling (Lever and Sénéchal 2011; Roch et al. 2016). In a storytelling task, children have to produce a fictional narrative, sometimes based on a written prompt (Merritt and Liles 1989), one picture (Coelho 2002), several pictures (Hickmann and Hendricks 1999), a wordless storybook (Botting 2002), a video (Eaton et al. 1999), or something similar. Alternatively, in a story retelling task, children have to listen to a story and retell it at some later point, sometimes in the presence of a familiar listener (Merritt and Liles 1989) or a naive listener (Botting 2002). A few studies have confirmed that children's performance in narrative tasks is highly dependent on the context of the assessment. For instance, children's narrative competence as assessed by a storytelling task varied as a function of whether they were prompted with a title, a picture or not prompted at all (Spinillo and Pinto 1994). Children's narrative competence as assessed by a story retelling task varied as a function of the communicative context, as children reacted depending on whether they had to tell the story face to face or by telephone (Cameron and Hutchison 2009; Pinto et al.

2016). Children's narrative competence also varies as a function of the medium used, whether they are asked to tell or to write a story (Pinto et al. 2015).

If narrative production for children is context-dependent, then experimental intervention could improve performance. Most of the previous research has adopted a story-grammar approach to improve children's narrative production in which the intervention focused on the macro-level structural elements of children's narratives (see Petersen 2011, for a systematic review of narrative-based interventions with language impaired children; or Hayward and Schneider 2000 and McKeough et al. 2005, for studies with a normally developing population).

1.2 Joint story-telling among children

Narratives are constructed to be shared with other people, a reflection that led other scholars to do research on their interpersonal nature. For instance, Baumer et al. (2005) demonstrated that narrative competencies improved following a playword-practice intervention that included joint adult–child dramatization, discussion, drawing and free play. Although joint story-telling is a common activity in preschool and primary school, our understanding of peer interaction's role in the acquisition of narrative skills is limited. In fact, much of the research on joint story-telling has focused on adult–child interactions (Devescovi and Baumgartner 1993) or on spontaneous interactions between children (see for instance Hughes 1997). To the best of our knowledge, only one study has compared children's joint story-telling performance to their performance in an individual task. One such example is represented by Hayes and Casey's study (2002), in which thirty-six children (2–5 years old) were randomly assigned to either an individual or a joint condition (with a peer of the same age) and were asked to compose a narrative based on a picture of a smiling frog. The transcriptions of the interactions were coded for number of words and propositions, topic shifts and logical connectedness of successive statements, use of interclausal connectives, protagonist shifts, use of past tense, and use of story grammar nodes. The results demonstrated that jointly produced narratives were longer and included more interclausal connectives than individually produced narratives, while individually produced narratives were more logically connected, with fewer shifts and alterations in the protagonists than jointly produced narratives. Individually produced narratives contained greater use of the past tense for event descriptions compared to jointly produced narratives. Hayes and Casey's research suggests that the joint condition is not systematically better than the individual condition, advancing the hypothesis that peer interaction might foster children's narrative competence only if certain conditions are satisfied.

Asking children to work together does not automatically lead to better performance unless they engage in productive discussions for the task assigned (Devescovi and Baumgartner 1993; Prangsma et al. 2007). When children are asked to collaborate on a task, they either do so as individuals, one might do the majority (or all) of the work, or they might talk about task-unrelated topics (Topping 2005). It is particularly important to explore what type of collaboration makes joint story-telling effective. To achieve a shared participation, partners require a certain degree of intersubjectivity (i.e., shared intentions, attention and cognitive task-related

processes), which can be taken for granted (e.g., between two adults from the same culture), negotiated, or accomplished through mutual adjustments of the two partners (Devescovi and Baumgartner 1993). Being able to build on each other's ideas, partners need to enjoy the shared understanding of their collaborative product (Dillenbourg and Traum 2006), which is difficult to achieve if narrative competence is still developing.

This study analyzed children's oral productions in a joint narrative task adopting a peer learning approach within a school context. The efficacy of both macro- (structure and coherence of a narrative) and micro-level (cohesion in a narrative) narrative components were measured. It is important to note that individual and joint story telling are daily school activities since they are often used by teachers, which makes them an ecologically valid method for exploring children's narrative competence.

1.3 Peer learning and joint-narratives in school

In a peer learning environment, children are involved in tasks in which they were asked to learn through active and supportive collaboration with a peer (Ashwin 2003). This type of learning is popular in schools but is often used to label different situations. For reciprocal peer learning activities, the peers have a similar status and/or similar skills, and the two members scaffold each other in the co-construction process. Reciprocal peer learning differs from peer tutoring, which describes a school activity in which children are matched with a more expert peer that assumes a tutor role. It has been argued that peer tutoring is the only effective way to engage children in productive collaborative work (Topping 2005). Subsequently, the notion that beneficial effects of peer learning could also be extended to pairs sharing a similar level of competence has been widespread (Chan 2001; de Backer et al. 2012; De Backer et al. 2015; Duran and Monereo 2005; Greenwood et al. 2001; King et al. 1998).

With peer tutoring, a teacher pairs children based on their evaluation of the child's competences. This procedure might be biased, as the teacher might create pairs by taking into consideration one competence at the time (e.g., narrative competence), whereas in a collaborative task, there are several competences in action (e.g., narrative competence and cooperation competence). To overcome this potential problem, pairs were created randomly, and individual narrative competencies were determined post-experiment.

Scholars and teachers agree that peer interactions have a strong educational value: children construct their knowledge with peers acting as mediators, converting their interactions into learning opportunities (Duran and Monereo 2005). Research has systematically demonstrated the beneficial effect of peer collaboration on several cognitive abilities, as it fosters motivation, reflection and elaboration in many learning domains (Buchs and Butera 2001; Gelmini-Hornsby et al. 2011). Following a first generation of studies (1970–1990) on the effects of peer learning, recent research has focused more on the process, that is, the quality of the interaction between children (Duran and Monereo 2005). A peer learning approach can help our understanding of how to improve children's narrative production.

Several studies have emphasized the link between collaboration and creativity (Hämäläinen and Vähäsantanen 2011), and we believe that the efficacy of peer learning extends to narrative competence as well. Working together on narrative productions is particularly interesting because it gives children room to negotiate meaning and exchange ideas and does not force children down a predetermined path.

1.4 Aims of the study

The present study extends past research on peer interaction on joint story-telling and Hayes and Casey's study (2002) in three ways. First, past research has shown a dramatic increase in narrative competence from grades 1 through 5 (Berman 1988; McCabe and Peterson 1991). Thus, we investigated the narrative performance of primary-school children within this age range, under the expectation that a joint condition could be more effective in expanding children's individual narrative competences (*zone of proximal development,* Vygotskij 1978). Second, in this study, each participant had to tell a narrative in two conditions: individually and jointly with a peer. In this way, we treated the condition as a within-subject variable rather than a between-subjects variable. Within-subject analyses have three main advantages when compared to between-subjects analyses: internal validity does not depend on random assignment, the statistical power is substantially boosted, and they are more aligned with the theoretical mindset (Charness et al. 2012). Finally, we focused on both peer interaction and narrative competence to analyze ways in which collaboration can lead to better stories. We applied a multi-componential analysis of interactions, originally developed by Kovalainen and Kumpulainen (2005) and applied to similar studies on peer interaction in a drawing task (Tarchi and Pinto 2015) and in a reading task (Tarchi and Pinto 2016). Indeed, past studies have emphasized that the quality of the interaction has implications for learning (Barron 2003). Kovalainen and Kumpulainen developed a tool to examine communicative practices in other educational settings by analyzing the semiotic tools that the children and the teacher used to mediate the social construction of meaning and children's level of participation in the classroom discourse. We examined (1) whether children consistently produced better narratives in a joint storytelling task rather than individually and (2) under which conditions the joint storytelling task produces higher scores in narrative competence than the individual storytelling task.

2 Method

2.1 Participants

The present study derives from a larger research project on the efficacy of peer interaction on several aspects of children's development. Sixty-four children (23 females) participated in the study. The final sample included 56 participants because eight children who did not participate in both conditions were excluded from

analysis. Participants were randomly selected from a primary school located in Florence, Italy. Four classes were involved:

First grade (12 children; 6–7 years old);
Second grade (14 children; 7–8 years old);
Fourth grade (14 children; 9–10 years old);
Fifth grade (16 children; 10–11 years old).

All participants spoke Italian as their primary language. No participant was diagnosed with a physical or mental disability, nor was any included in a diagnostic process or identified by teachers as having special educational needs. All participants came from families characterized by a middle-high socio-economic background.[1] All classes belonged to the same school district, characterized by similar teaching practices that followed the national guidelines released by the Ministry of Education Data collection, and the study occurred in agreement with the school and followed the requirements of privacy and informed consent requested by the Italian law (Decree DL-196/2003). Parental and school authority consents were obtained for each of the study's participants. Regarding the ethical standards for research, the study referred to the last version of the Declaration of Helsinki (World Medical Association 2013). The present study was approved by the Ethical Committee of the Department of Psychology at the University of Florence, Italy.

2.2 Procedure

One of the authors presented the individual and joint oral narrative production tasks to the entire class. The order of the two tasks was counter-balanced. Two weeks elapsed from the individual to the joint production of narratives, or vice versa. The jointly produced narratives were produced by randomly paired children from the same class. Individual and jointly produced stories and accompanying dialogues were collected in a room adjacent to the classroom. Once in the room, and after a period of familiarization with the experimenter, each child was asked to produce an individual narrative ("I would like you to tell me an invented story"), and each pair was asked to work together on a joint narrative ("I would like you and your partner to tell me a story invented by you together"). Each narrative production, whether individual or joint, lasted from 15 to 30 min. A total of 56 individual and 28 jointly produced narratives were collected. Narratives and dialogues were recorded and transcribed. For both the individual and the joint condition, the experimenter was present in the room while the child/children was/were telling the story, with the aims of facilitating the execution of the task (in both conditions) and the interaction between the two children (in the joint condition only). In the joint condition, children could plan their performance how they preferred. Some planned first and agreed on the title and/or plot, others just started telling the story and interacted

[1] In Italy the middle-high class includes families with the following characteristics: the referent holds at least a high school diploma; the family includes on average 2–7 members; the parent's occupations are either office workers or freelancers; in most cases, they own the house they live in (Source: 2017 Annual Report by ISTAT, National Institute of Statistics).

during the construction of the story. Similarly, in the individual condition, children could take some time to think about the story before starting to tell it or could begin telling the story immediately after having received the instructions.

Storytelling in general and asking children to invent stories are common tasks in Italian schools. Storytelling as a school activity begins in kindergarten, as set by the national guidelines released by the Ministry of Education, and it continues to be implemented throughout primary school, both in oral and written forms. Hence children were familiar with the procedure applied in this study.

2.3 Coding systems

Two independent judges coded the narratives in terms of text quality in individual and joint narratives and quality of dialogue in joint narratives (analysis of discourse moves and communication functions). For each measure, we calculated the inter-rater agreement scores. Discrepancies among judges were resolved by a third independent rater.

2.3.1 Narrative competence

Children's narrative competence was assessed in terms of structure, cohesion, and coherence, using a coding scheme developed by Spinillo and Pinto (1994) and adapted by Pinto et al. (2015). Inter-rater agreement scores were strong (structure, $k = .90$; coherence, $k = .92$; cohesion, $k = .95$).

2.3.1.1 Structure Narrative structure was coded on five levels of increasing structural complexity based on eight elements: title, conventionalized narrative opening, characters and setting, problem, central event, resolution, and conventionalized narrative closing. The five levels of structural complexity were as follows:

1st level (no narrative): simple description or list of events, objects, or facts;
2nd level (sketch narrative): opening, setting, character(s), conclusion or opening, sketch of the problem, and resolution;
3rd level (incomplete narrative): opening, character(s), problem, and resolution;
4th level (essential narrative): opening, character(s), problem, central event, and resolution;
5th level (complete narrative): title, opening, character(s), setting, problem, central event, resolution, and narrative closing. Detailed examples of the different levels of structure can be found in previously published studies (Pinto et al. 2015, 2016).

2.3.1.2 Coherence The number of incoherencies was calculated (e.g., a sentence was introduced by an adversative even though it did not contradict the previous sentence). The scores of this measure were reversed for correct interpretation: a high score describes an incoherent narrative, whereas a low score describes a coherent

narrative. An example of incoherence was "the monsters wanted to make peace, but the monsters wanted to attack".

2.3.1.3 Cohesion Causal (e.g., so, then, thus, consequently, and the like) and temporal (e.g., then, after, afterward, and the like) linguistic connectives and discourse markers were counted. Linguistic connectives are words (such as "once"), and discourse markers are expressions (such as "one day"), but both function to temporally and/or causally connect sentences to each other.

2.3.1.4 Fluidity The total number of words produced was counted.

2.3.2 Dialogues

The quality of dialogue while children were jointly telling a narrative was analyzed in terms of the source, nature and function of the interaction. Two coding systems from Kovalainen and Kumpulainen (2005) were used to analyze discourse moves and communicative functions. The inter-rater agreement scores were all acceptable (discourse moves, $k = .88$; communicative functions, $k = .82$).

2.3.2.1 Discourse moves The analysis of discourse moves showed the participatory roles of each member in collective meaning making. The units of analysis were the participants' utterances. Three types of discourse moves were coded: initiation (utterances used to open discourse on a particular topic); response (utterances that elaborated on other initiations or responses); and follow-up (utterances that provided feedback on the ongoing interaction). Discourse moves could be made by the participant or the experimenter. Student initiations, student responses, and student follow-ups, experimenter initiations, experimenter responses, and experimenter follow-ups represented the six discourse move categories used in the current research. Examples for each category are provided in Table 1.

2.3.2.2 Communicative functions A communicative function analysis focused on the message unit and permitted us to explore the nature of the interaction and its construction in ongoing interactions. The units of analysis were participants' utterances. Nine categories of communicative function were used, including evidence negotiations (i.e., asking for and presenting evidence, justification or reasons); defining (i.e., asking for and providing definitions, elaboration, clarification or demonstration); experiential (i.e., asking for and sharing personal experiences, feelings or examples from one's own life); view sharing (i.e., asking for and expressing views, opinions or perspectives); information exchange (i.e., asking for and providing information, solutions or observations), orchestration of the interaction (i.e., taking charge of the interactional management of speaking turns); confirming (i.e., acknowledgment and acceptance of the topic of interaction); and evaluation (i.e., assessment of the contributions to meaning-making). Examples for each category are provided in Table 1.

Table 1 Example for discourse moves and communicative functions categories

Categories	Examples
Discourse moves	
Initiation	*I have a good idea for our story*
Response	*OK, let's hear that*
Follow-up	*The bee and the flower? Sure, I like that*
Communicative functions	
Evidence negotiations	*Well, the bear did not attack the man because … he wanted to be friends with him*
Defining	*No, not the same hunter as before. This is another one*
Experiential	*That's exactly what happened to me yesterday!*
View sharing	*I think that stories about animals are fun*
Information exchange	*But the house was not in the woods!*
Orchestration of the interaction	*Now, it's your turn to go on with the story*
Confirming	*The bee and the flower? Sure, I like that*
Evaluation	*Come on, say something, you are not helping me here*

2.4 Data analysis

Coherence and cohesion scores were divided by the total number of words used to tell the stories to create ratios in order to standardize participants' performances and check for the potentially confounding effect of narrative length. Consistent with prior studies on children's narrative competence (Pinto et al. 2015), all variables (i.e., structure, cohesion and coherence) were recoded to 3-point scale using the percentile distribution: the first point represented scores lower than the 33rd percentile, the second was scores between 33rd and 66th percentile and, finally, the third corresponded to scores higher than the 66th percentile.

Individuals who increased the structure, cohesion, coherence and fluency of their narratives from the individual to the joint condition were identified. We also identified pairs that increased, decreased, or remained stable from the individual performance of the two partners (calculated as the average of the two partners' individual performances) to the joint narrative performance in terms of structure, cohesion, coherence and fluency. An individual/pair was defined as incremental if the percentile score in the joint condition was higher than the score obtained in the individual condition. In contrast, a pair was defined as decremental if the percentile score in the joint condition was lower than the score obtained in the individual performance. Finally, an individual/pair who showed similar scores in the two conditions was defined as stable. For the purposes of the study, we only focused on incremental and decremental individual/pairs.

To determine how many individuals benefited from the joint condition, we compared the frequencies of incremental versus decremental individuals for each variable examined (structure, cohesion, coherence and fluidity) through a binomial

statistical test. Then, we proceeded to identify under what conditions the joint condition was effective in improving children's narrative competence by comparing incremental versus decremental pairs in all the variables examined in terms of (1) levels of individual performance, (2) discrepancy between individual performances, and (3) quality of interaction, through a series of Mann–Whitney's U tests. For all statistical analysis, the effect-size was estimated (Fritz et al. 2012).

3 Results

Descriptive results for narrative competence variables in the individual and joint condition (Table 2) and interaction in the joint condition (Table 3) are reported below. On a descriptive level, children were able to tell sketch narratives in both conditions and included an opening, a setting, characters' description, a problem and a resolution. They also showed similar scores in cohesion across the two conditions, however, the stories in the individual task were more coherent than the stories told in the joint task. In addition, the stories told in the joint task were longer than the ones told in the individual task. Concerning the quality of interaction, the children were able to engage in dialogues while jointly telling a story and were both elaborating the partners' inputs and giving him or her a feedback. Mostly, they interacted to define the main parts of the story, to confirm and accept each other's contributions to the development of the story and to orchestrate the interaction itself.

A correlation analysis showed a positive association between fluidity and structure in individual narratives, cohesion in joint narratives and coherence in individual narratives, and fluidity across conditions. Moreover, coherence and structure in joint analyses, and fluidity and cohesion in joint analyses were negatively associated (see Table 4).

Table 2 Descriptive statistics of narrative competence variables (structure, cohesion, coherence, fluency and total score) for the individual and joint condition

	N	Min	Max	M ± SD	Skewness	Kurtosis
Individual condition						
Structure	54	1	5	2.71 ± 1.25	−0.11 ± 0.33	−1.50 ± 0.64
Cohesion	54	0	0.12	0.06 ± 0.02	0.03 ± 0.33	0.30 ± 0.64
Coherence	54	0	0.21	0.03 ± 0.05	1.68 ± 0.33	2.62 ± 0.64
Fluency	54	12	835	180.21 ± 119.39	3.33 ± 0.33	16.65 ± 0.64
Narrative total score	54	1	3	1.83 ± 0.82	0.32 ± 0.33	−1.43 ± 0.64
Joint condition	27					
Structure	27	1	4	2.70 ± 1.14	−0.040 ± 0.45	−1.54 ± .87
Cohesion	27	0	0.23	0.07 ± 0.04	2.99 ± 0.45	13.43 ± .87
Coherence	27	0	0.18	0.06 ± 0.06	0.72 ± 0.45	−0.39 ± .87
Fluency	27	84	417	186.44 ± 91.91	1.51 ± 0.45	1.75 ± .87
Narrative total score	27	1	3	1.70 ± 0.82	0.62 ± 0.45	−1.23 ± .87

Min minimum, *Max* maximum, *M* mean, *SD* standard deviation

Table 3 Descriptive statistics of interaction variables (discourse moves and communicative functions) in the joint condition

	N	Min	Max	M	Skewness	Kurtosis
Discourse moves						
Initiations	27	0	6	1.70 ± 1.59	1.52 ± 0.45	2.40 ± 0.87
Response	27	0	16	6.19 ± 4.45	0.76 ± 0.45	−0.30 ± 0.87
Feedback	27	0	11	3.26 ± 3.12	0.90 ± 0.45	−0.07 ± 0.87
Total moves	27	2	30	11.15 ± 7.08	1.02 ± 0.45	0.71 ± 0.87
Communicative functions						
Confirming	27	0	7	1.04 ± 1.61	2.35 ± 0.45	6.67 ± 0.87
Defining	27	0	11	4.15 ± 2.85	0.89 ± 0.45	0.25 ± 0.87
Evaluation	27	0	1	0.07 ± 0.27	3.45 ± 0.45	10.67 ± 0.87
Evidence negotiations	27	0	3	0.70 ± 0.91	1.31 ± 0.45	1.16 ± 0.87
Experiential	27	0	4	0.78 ± 1.16	1.44 ± 0.45	1.23 ± 0.87
Information exchange	27	0	16	3.00 ± 3.52	2.21 ± 0.45	6.47 ± 0.87
Orchestration of the interaction	27	0	6	0.63 ± 1.31	3.11 ± 0.45	11.14 ± 0.87
View sharing	27	0	1	0.04 ± 0.19	5.20 ± 0.45	27.00 ± 0.87

Min minimum, *Max* maximum, *M* mean, *SD* standard deviation

Table 4 Correlation scores (Spearman's Rho)

	1	2	3	4	5	6	7	8
1. Structure_individual	1							
2. Cohesion_ individual	−.11	1						
3. Coherence_ individual	−.05	−.18	1					
4. Fluidity_ individual	.31*	.10	.19	1				
5. Structure_joint	.19	.06	−.14	−.001	1			
6. Cohesion_ joint	.10	.11	.35*	−.01	.03	1		
7. Coherence_ joint	−.12	−.20	.11	−.10	−.53**	.02	1	
8. Fluidity_ joint	.01	.25	−.09	.32*	.17	−.30*	−.24	1

* $p < .05$, ** $p < .01$

3.1 Effect of the joint narrative condition on individuals

To verify whether children consistently produced better narratives in a joint condition rather than individually, we split the sample into children who improved their performance from the individual to the joint condition (incremental) versus children whose performance declined. This operation was repeated for each variable (structure, cohesion, coherence, and fluency) and frequencies of incremental and decremental children were compared through a binomial distribution test. No

Table 5 Frequencies of incremental and decremental individuals in narrative competence variables (structure, cohesion, coherence, fluency, and total)

	Incremental	Decremental
Structure	18	17
Cohesion	15	18
Coherence	13	13
Fluency	20	17
Total	13	20

statistically significant result was found: the frequency of incremental individuals was statistically equal to the frequency of decremental individuals (see Table 5).

3.2 Conditions of efficacy for the joint narrative condition

We proceeded to identify the conditions under which the joint task improved children's narrative competence. The first condition of efficacy explored was levels of individual performances. We identified incremental and decremental pairs by replicating the same procedure described in the previous paragraph, but at the pair level: we identified pairs composed of children who improved their performance from the individual to the joint condition, and pairs composed of children whose performance declined from the individual to the joint condition. Then, we proceeded to compare these two groups in terms of levels of individual competence, as displayed by individual narratives. According to the results, the incremental pairs for structure [Mean rank = 7.00] had lower individual performances in structure than the decremental pairs [Mean rank = 16.00, $Z_U = -3.22$, $p = .001$, $r = .62$]. The incremental pairs for cohesion [Mean rank = 6.44] had lower individual performances in cohesion than the decremental pairs [Mean rank = 8.92, $Z_U = -3.10$, $p = .002$, $r = .59$]. The incremental pairs for coherence [Mean rank = 5.25] had lower individual performances in coherence than the decremental pairs [Mean rank = 11.14, $Z_U = -2.56$, $p = .01$, $r = .48$]. The incremental pairs for fluidity [Mean rank = 5.00] had lower individual performances in fluidity than the decremental pairs [Mean rank = 12.00, $Z_U = -2.94$, $p = .003$, $r = .54$]. The incremental pairs for narrative competence had lower individual performances in narrative competence [Mean rank (incremental) = 4.29, Mean rank (decremental) = 10.71; $Z_U = -2.99$, $p = .003$, $r = .57$] and higher performances in coherence [Mean rank (incremental) = 10.00, Mean rank (decremental) = 5.00; $Z_U = -2.29$, $p = .02$, $r = .43$] than the decremental pairs.

The second condition of efficacy explored was the discrepancy in individual performances between members of the same pair. We used the same groups created in the prior analyses (incremental and decremental pairs) and calculated the difference in scores obtained by the two members of each pair in the individual condition. According to the results, the incremental pairs for coherence [Mean rank = 5.63] had a higher discrepancy among individual scores in coherence than

the decremental pairs [Mean rank = 10.71, $Z_U = -2.21$, $p = .03$, $r = .42$]. The incremental pairs for fluency [Mean rank = 5.00] had a lower discrepancy among individual scores in fluidity than the decremental pairs [Mean rank = 12.00, $Z_U = -2.94$, $p = .003$, $r = .56$]. The incremental pairs for narrative competence [Mean rank = 9.71] had a higher discrepancy among individual scores in coherence than the decremental pairs [Mean rank = 5.29, $Z_U = -2.03$, $p = .04$, $r = .38$].

The third condition of efficacy explored was the quality of interaction. We used the same groups created in the prior analyses (incremental and decremental pairs) and compared the frequencies of discourse moves and communicative functions in the children's dialogues. According to the results, the incremental pairs for cohesion [Mean rank = 5.00] produced less children feedback than the decremental pairs [Mean rank = 9.38, $Z_U = -1.98$, $p = .04$, $r = .37$]. Additionally, the incremental pairs for cohesion [Mean rank = 3.92] asked for or produced fewer definitions than the decremental pairs [Mean rank = 10.19, $Z_U = -2.82$, $p = .01$, $r = .53$].

4 Discussion

This study compared primary school children's narrative competence in two different tasks: individually and jointly created stories. Overall, the variables were not associated across the conditions, supporting the idea that narrative competence is a relatively independent construct across conditions, except for fluidity: the longer the narratives are in one condition, the longer they are in the other condition too. Interestingly, structure and coherence were moderately associated in the joint condition: the more structured the narratives were, the less coherent they were. Working in pairs probably helps children increase the structural complexity of the story, making it more difficult to keep all elements coherently connected.

This study confirms Topping's (2005) and Prangsma et al.'s (2007) concern that not all children can exploit the opportunities offered by a peer interaction learning environment. Our data showed that the frequency of children increasing their narrative performance from the individual to the joint condition was statistically similar to the frequency of children decreasing it. Hayes and Casey (2002) found that fluency increased from the individual to the joint condition, whereas cohesion and coherence decreased. Our data did not find such a systematic effect for any of the narrative components. The difference between Hayes and Casey's and our results might depend on the age of the participants. Hayes and Casey worked with preschoolers, whereas our participants were in primary school. Higher narrative competence levels in primary school might make this construct less context-dependent than it is in preschool years (see also Pinto et al. 2016).

Our results demonstrate that the joint condition was particularly beneficial for individuals with lower individual competence in fluency, structure, cohesion, and coherence, as well as in the total narrative competence score. This finding suggests that joint story-telling can be an effective intervention for children struggling in oral narrative productions, as they can convert their interactions with the partner into meaningful learning opportunities (Duran and Monereo 2005) and better understand the components of a narrative (Hayes and Casey 2002). Additionally, the

discrepancy between individual scores of the two members of a pair proved to influence the effectiveness of peer learning on narrative competence. Our data indicate that incremental pairs (pairs characterized by children who improved their narrative production from the individual to the joint condition) were characterized by a higher discrepancy among individual scores in coherence and fluency. That pairs characterized by lower levels of individual narrative competence had a higher discrepancy among individual scores of the two members suggests that significant improvements in length and coherence of narratives are achieved when working with a more competent partner, backing up the peer tutoring approach over the reciprocal peer learning approach (Duran and Monereo 2005; King et al. 1998).

To benefit from a peer interaction, partners need to achieve a certain degree of intersubjectivity by engaging in a productive dialogue (Dillenbourg and Traum 2006; Duran and Monereo 2005). Our analysis on interaction quality did not reveal any significant pattern and did not emphasize the importance of the dialogue as a condition of efficacy of peer interaction. Our data tentatively suggest that children in incremental pairs (those that improved their narrative competence from the individual to the joint condition) were able to synchronize the co-construction of a narrative without the need to verbally mediate it by giving feedback to their partner or by asking/giving an explanation of what they meant. It is surprising that the quality of interaction (discourse moves and communicative functions) did not matter. We could interpret this result as a lack of importance for quality of interaction in promoting the efficacy of joint storytelling on children's narrative competence, but the literature does not support this hypothesis. An alternative hypothesis could derive from a post hoc reflection on the appropriateness of the coding system used in this study. Originally, the coding system was developed by Kovalainen and Kumpulainen (2005) to analyze the discursive practices of participation in interaction-rich classrooms. It might be more appropriate to capture the flow of communication in a classroom rather than the interactions within a pair. For example, frequencies might not be a reliable index.

In conclusion, this study contributed to our understanding of oral narrative competence in children in primary school and its improvement in pairs by emphasizing the conditions under which joint storytelling improves children's narrative competence. Having children work together on a task does not necessarily produce an improved narrative production. Instead, peer interaction was beneficial especially for children with lower levels of individual performance working with a more competent peer through a productive discussion. Peer interaction and narrative competence are processes that are supposed to feed each other. If children can articulate their ideas to each other, then a shared understanding is possible, which in turn allows for fewer ambiguities or misunderstandings and a more coherent building of a joint narrative. Retroactively, feeling that the narrative is going in a coherent and interesting direction might have a motivational effect on the collaborative activity.

A main limitation of this study was represented by our sample, which was heterogeneous for age and included children from first through fifth grade. Research has shown that narrative competence dramatically increases during primary school years, which in turn could affect the extent to which children benefit from working on a story with a partner. Unfortunately, the group sizes for each grade are too small

to allow us to elaborate on age patterns. Moreover, future studies should confirm whether the factors that make peer interaction effective in improving children's competence are similar or different across different tasks, for example, with ill-defined tasks. Indeed, peer interaction on an ill-defined task provides children with more room to negotiate meaning and exchange ideas, and it does not force children down a predetermined path or a conventional model. Finally, past studies have shown that children's narrative competence depends on the genre (fictional, personal, and the like, McCabe et al. 2008) and the prompt (how narratives are elicited, Spinillo and Pinto 1994), and future studies should verify whether results apply to all types of narratives or depend on other variables, such as genre or elicitation method.

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