CrossMark

To tell a story, to write it: developmental patterns of narrative skills from preschool to first grade

Lucia Bigozzi[1] · Giulia Vettori[1]

Abstract In this 1-year longitudinal study, the authors explored the development of narrative skills between the oral and written form. The authors aimed to assess the predictive power of textual narrative competence on early narrative text writing skills taking into account the impact of spelling ability. Eighty children (M age=5.3 years, age range=4.9–5.7 years; SD= 0.29) were followed longitudinally until entering the first grade of primary school. During kindergarten, they were tested with an oral story production task and in first grade with a written story production task. Narratives were evaluated in terms of structure, cohesion and consistency. In the first grade, children were also submitted to a dictation task to evaluate their spelling competence. Repeated measures ANOVAs were performed in order to examine narrative competence development, also considering gender differences, and regression analyses were implemented to evaluate the predictive capability of textual abilities expressed by oral narratives on textual abilities expressed by writing. The results showed some significant differences when scores in kindergarten were compared to scores in primary school. Moreover, the ability to tell well-structured, cohesive and consistent stories predicts the ability to write stories with the same qualities in the sample of participants without spelling difficulty. Instead, the predictive link is not apparent considering those children with difficulties in orthographic ability. This research allows us to reflect about how the medium of writing might interfere, on the basis of the level of mastery, with the opportunity to express narrative skills in the transition from the oral to written code. The central role of writing instrument functionality opens the way to practical implications.

Keywords Narratives · Textual abilities · Spelling · Longitudinal study · Preschoolers · Primary school children

✉ Lucia Bigozzi
lbigozzi@unifi.it; lucia.bigozzi@unifi.it

Giulia Vettori
gvettori@live.it

[1] Department of Education and Psychology, University of Florence, via di San Salvi 12, Complesso di San Salvi Padiglione 26, 50135 Florence, Italy

Springer

The roots of narrative competence

Our research interest is aimed at studying narrative development in that particular period of transition, ranging from preschool to formalised school. Well before formal instruction in primary schools, which in Italy begins when children are 6 years old, about 95 % of 3- to 5-year-old children attend preschool and are in daily contact with the language. They learn a great deal about this form of communication and its rules (Pinto et al. 2012). Language development takes place with wide variability between subjects and its unfolding occurs through interpersonal relationships (the interpersonal mode of meaning), through construction and reflection on experience (the ideational mode of meaning) and through contact and entering into discourse (the textual mode of meaning) (Shiel et al. 2012). In line with the development of oral language, which emerges with individual and sociocultural diversities, written language unfolds and is deeply rooted in the early experiences of the child's life (Ravid and Tolchinsky-Landsmann 2002). Children enter first grade having emergent literacy, that is, prior knowledge about reading, writing and story composition based on their spoken language (Adams 1990; Levin et al. 1996). They start to construct a tacit knowledge about narrative structure and produce stories through oral language (Laughton and Morris 1989; Montague et al. 1990). In other words, they show their narrative competence going beyond the single meaning unit transmitted by the word to construct a relationship network among words that are in the text (Pinto et al. 2009).

From a developmental perspective, in literature, a growing improvement has been observed: if already around 3–4 years, children are able to arrange and describe some action sequences (Bamberg 1987); later, at around 5 years old, children enrich their stories with constituents and produce longer stories (Damico and Ball 2008). Then, during the early years of schooling, most children have learned to use the narrative structure in its essential aspects and the use of interclausal connectives becomes more sophisticated between 5 and 10 years of age (Shapiro and Hudson 1991).

Girls seem to perform significantly better than boys on narrative composition. Gender differences are found in several studies. In a study of Berninger and Fuller (1992), 50 girls and 50 boys each in the first, second and third grades were tested on a variety of writing skills and their results show that girls significantly outperform boys in the most of these. In particular, gender differences were related to narrative composition fluency and to written orthographic fluency, which in turn were related to the better quality of texts. In agreement with these results, there are also some earlier findings (Englehard et al. 1994; Mäki et al. 2001) which point out better mechanics of writing and more coherent stories in girls' performances.

Studies carried out so far have considered the narratives and their development within the same means of expression, oral or written; however, we know little about the transition from oral to written code: "what happens to the child's narrative ability when changing means of expression?". Little attention has been paid to this important change that occurs between 5 and 6 years and to the variability that characterises the deveopment of the oral and written language. Considering these aspects is crucial to deepening our understanding of the mechanisms underlying normal development (Bates et al. 1995). To fill that gap, attempts were moved in the field of emergent literacy perspective. Relevant studies (i.e. Evans et al. 2000; Orsolini et al. 2006) provide an empirical foundation to the existence of significant connections between preschool abilities and performance in early and following grades of schooling. For example, Mäki et al. (2001) in their longitudinal study from preschool to the third grade gave support to the hypothesis that preschool measures of both phonological and visual-motor

skills can be used to predict mechanics of writing in the first and second grade. Other research has advanced models of competences involved in emergent literacy for English-speaking children learning an alphabetic and non-transparent writing system (i.e. Sénéchal and LeFevre 2002; Whitehurst and Lonigan 1998, 2002) and for Italian-speaking children learning a transparent writing system (i.e. Pinto et al. 2009). From this model, it emerges that textual competence is a fundamental factor in emergent literacy, demonstrating that before formalised teaching children have an idea of the text and that three main elements can be traced in their oral productions: the structure, which is characterised by the presence of components of a story (e.g. the conventional opening, the characters, the performance and the solution to the problem) (Stein and Glenn 1982), the cohesion which helps to unite the individual sentences with linguistic modalities (connectives, pronouns, etc.) and the consistency, given by lack of inconsistencies between judgments (Shapiro and Hudson 1991). This factor does not appear to be predictive of initial writing, but one might expect that it could have a successive influence on children's advanced text writing abilities.

First steps in learning to write in a highly regular language, such as Italian

Written language develops, like oral language, with individual differences and in relation to the language of belonging (Bates et al. 1995). At the age of 6 years, an important change occurs, due to exposure to a deliberate systematic teaching of writing. An important educational goal is to acquire a proper domain of instrumental writing, and this requires the development of a complex variety of skills (Struthers et al. 2013) and their gradual control: the activation and coordination of orthographic, graph-motor and several linguistic skills, including, but not limited to, semantics, syntax, spelling and writing conventions (Scott 2005; Singer and Bashir 2004).

According to Frith (1985), the learning process of writing starts with the use of the phoneme-grapheme conversion mechanism. While children are learning to read in the first year of primary education, they decode words by making a correspondence between one sign and its sounds utilising the sub-lexical route (Coltheart and Rastle 1994; Coltheart 2000). Later, when reading and writing are automatic, children start using the semantic-lexical route (Bowey et al. 1998).

The coding of the word by the sub-lexical route is based on phonological-to-orthographic conversion rules (Patterson 1986; Tainturier and Rapp 2000), and this takes place through three consequent operations: (1) its segmentation in the individual phonemes, (2) the association between each phoneme and the corresponding grapheme, and (3) the production of the word using an orthographic form. Instead, the lexical route relies on accessing word-specific memory (e.g. Barry 1994). It utilises word-specific knowledge to determine the corresponding translation. In this case, the word's orthographic representation is recalled from the lexical memory and it is immediately avaible also in the phonological form and semantic value (the meaning which the word refers). Detailed discussion of this issue can be found in Coltheart et al. (2001).

Recent studies (Notarnicola et al. 2012) show that Italian children are able to use the direct pathway (lexical route) of writing very early, but initially resort to the sub-lexical route. From the second cycle of primary school, they solve the task thanks to an efficient use of lexical strategies.

It is important to consider that the way in which a child faces the phases is tied to the features of degree of orthographic regularity. Concerning Italian children, learning to write and to transform the words that the writer wants to say into written symbols on the printed page means primarily master the spelling ability.

The complete efficiency of transparent languages' sound-letter rules might seem, at first sight, to eliminate any need to take morphemes into account for correct writing. However, although this might be true of reading, it is not true of spelling (Chliounaki and Bryant 2007). Although the Italian system is characterised by greater transparency with respect to other languages, such as English, there is a certain degree of ambiguity in the oral-to-written direction (Angelelli et al. 2010). There are some cases of unpredictable spelling, for example, the phoneme /k/ when it occurs before /w/ spelled <u> (but not elsewhere) has two different spellings solution, <c> and <q>, for example, the Italian word ['kwore] (heart) is spelt "cuore" and not "quore", whereas ['kwadro] (painting) is spelt "quadro" and not "cuadro". There is no definite rule by which to establish the correct sequence. The processes of phoneme-grapheme conversion do not guarantee correct execution (Pinto et al. 2012). An accurate performance in orthographic coding requires the recovery of correct graphemic representation, through the use of lexical processes (Angelelli et al. 2010). Skilled writers mainly use the direct pathway (lexical route), and this supports the automation of processes and the deep processing of the word, using minimally sub-lexical processes (Booth et al. 1999).

The acquisition of adequate orthographic competence is crucial for the achievement of advanced writing abilities: the rapid and correct mastery of phoneme-grapheme correspondences is a necessary condition for the beginner writer: the incomplete acquisition of this toolkit is an obstacle to accessing the semantic, syntactic and textual components of written language (Pinto et al. 2012). Furthermore, Berninger et al. (1991) proposed that difficulties in mastering transcription skills can lead children to avoid writing and develop a mind-set that they cannot write, till to arrest the development of writing.

Orthographic competence's role in writing text

It is expected that gradually, the child puts the instrumental skills of writing at the service of textuality. Text production is a complex activity that involves several processes (Hayes and Flower 1980; Scardamalia and Bereiter 1986; Swanson and Berninger 1996). Berninger (2000; Berninger and Graham 1998) develops a triangle model which conceives writing as the product of transcription (e.g. spelling accuracy and writing fluency), text generation (translation of ideas into language) and executive processes (e.g. self-regulation, attention). The process is developed through a dynamic working memory with direct links to long- and short-term memory. So, both lower and higher level processing skills are involved in text production (Hayes and Flower 1980; Graham and Harris 2000; Kellogg 1996).

In the early stages, children are mainly engaged in orthographic coding tasks; therefore, "low-level" processes are implemented (including also, the representation and the recalling of graphemes from memory, phonological coding skills and knowledge of syntactic structures). Later, when these processes are automated, the child is able to move his/her cognitive resources to the "high-level" processes, such as planning, production and revision (Swanson and Berninger 1996).

Texts in which children initially engage are mainly narrative, because they are most experimented and related to their extensive experience with this genre from a very early age

(Sulzby 1985). The ability to compose a story in written form implies the ability to select and organise the content, in accordance with a comprehensive plan of the text. An "expert" writer should be able to work simultaneously on different levels of text processing and his/her awareness of narrative structure facilitates the process of planning and review of the written product (Olive and Kellogg 2002). The mastery of writing at the level of transcription reduces the load of attention and memory, and allows the child to devote himself to the generation of ideas and the text's construction (Babayigit and Stainthorp 2011).

However, as argued by Swanson and Berninger (1996), in the early stages of writing development, orthographic coding constrains the production of written symbols. McCutchen (1996) proposed that the act of transforming the word that the writer wants to say into written symbols is so demanding for children that they minimise the use of other processes, such as planning and revising. Those children who have not yet mastered the mechanics of writing show a greater difficulty in accessing the higher order skill, with consequent worse performance (Graham 1999). De La Paz and Graham (1995) demonstrated that one advantage of removing the mechanical demands of transcription skills on writing is that children, with poorly developed transcription skills, usually produce texts with better quality. Further evidence comes from treatment studies. Converging evidence indicates that improving handwriting automaticity or spelling improves text generation and quality (Graham et al. 2002; Jones and Christensen 1999).

The literature illustrates important connections between orthographic competence and textual writing. A rapid and correct mastery of sound-sign transposition represents the primary condition for a beginner writer to use writing coding as an instrumental and non-ambiguous medium of textual competence. Conversely, orthographic difficulties risk compromising writing development. These aspects are scarcely investigated in a longitudinal perspective and, especially, taking into account Italian-speaking children learning an alphabet and transparent writing system. One might wonder what happens passing through narrated stories to written stories by investigating the development of narrative skills, taking into account gender differences. Furthermore, it will be interesting to see what happens during this step for those children who have difficulty in spelling, in order to see if the medium of writing interferes, on the basis of the level of mastery, with the opportunity to express narrative skills in the transition from the oral to written code.

Our research was designed to meet these unmet needs. The purposes of this study are as follows:

1. To explore the general developmental trend of textual ability, also differentiating the males from the females, in order to see what changes at the narrative level, going from oral stories to written ones
2. To investigate the predictive power of preschool narrative skills on written narrative skills taking into account the contribution of orthographic competence

Regarding our first goal, we expect that the natural increase in skills development, that occurs both for oral and written narrative, remains quite stable when involving a new and different means of expression. As for the second purpose, our expectation is that the mastery of the medium of writing interferes only in children with difficulties in orthographic competence.

Method

Participants

Eighty children (37 females and 43 males), randomly selected from six predominantly middle-class preschools located on the outskirts of Florence, took part in the longitudinal study.

The mean age at the beginning of the study was 5.3 years (age range=4.9–5.7 years; SD=0.29).

In Italy, formal instruction begins at the age of 6 years, the school is largely public and 95 % of children attend school. Children with certified disability were not included in this group. Parents and school authorities, as well as the children themselves, gave consent to participate in the study. According to school officials, the socioeconomic level of the participants ranged from lower-middle class (85 %) to upper-middle class (15 %).

Materials and procedure

The tasks given to the children offer a unique and ecological valid way to investigate the topic, as they do not differ from those which surround children every day and from the materials used for teaching. They were administered at a time agreed with the school respecting the requirements of privacy and informed consent requested by the Italian law (Decree DL-196/2003). Latest version of the World Medical Association Declaration of Helsinki (2013) was consulted in respect to the ethical standards for research.

Research design

Aiming to explore the hypothesis described previously a longitudinal study was conducted, articulated in two phases (see Table 1):

- In the first phase, children were attending their last year of preschool. Their textual competence was measured through an oral story production task.
- In the second phase, children were attending their first year of primary school. Their textual competence and their early instrumental competence in writing were evaluated through a group of specific writing tasks: a written story production task and a dictation.

First phase (preschool)

Oral story production task (from Pinto et al. 2009). This task, aimed to examine children's textual ability, was administered individually out of the classroom in a well-lit place, without any kind of distraction. The instruction given to children was "Would you tell me a story?"

Table 1 Research design

1. First phase—kindergarten	2. Second phase—primary school
Oral story production	Written story production
	Dictation task

Each story told was taped and a transcription was produced for the analysis conducted by two independent judges following the parameters: structure, cohesion and coherence.

To analyse story structure, we used Spinillo Galvao and Pinto's model (1994), which considers eight fundamental elements: title, conventionalised story opening, characters, setting, problem, central event, resolution and conventionalised story closing. The presence, absence or/and combinations of these elements allowed for rating of the stories into five categories, indicating varying levels of structural complexity, as shown in Table 2. Agreements between the judges was measured with Cohen's kappa, $k=0.91$.

To analyse levels of cohesion in stories, the categories proposed by Halliday and Hasan (1976) were used: causal cohesives, indicating cause-effect relationships among the elements in the story (e.g. the, thus, because, so, for, that, consequently, etc.) and temporal cohesives, indicating a chronological sequence in the story (e.g., once upon a time, when, never, before, at the end, suddenly, etc.). On the basis of the number of cohesives used, in proportion to the number of words produced, three increasing levels of cohesion were identified: absent, low, medium and high, corresponding to scores ranging from 0 to 3 (agreements between the judges: $k=0.89$).

To assess global story coherence, the children's stories were evaluated according to coherence between sentences (adaptation from Shapiro and Hudson 1997). The number of incoherencies, proportional to the total number of sentences, produced four score categories (ranging from 0 to 3), indicating growing levels of coherence (absent, low, medium and high). Agreements between the judges: $k=0.78$.

Furthermore, structure, cohesion and coherence scores were added to obtain a unitary index of narrative level, called "textual competence".

Second phase (primary school)

Written story production task The task was administered individually in the classroom. The instruction given to children was: "Would you write a story?". Each story written by the children was subsequently analysed by two independent judges following the parameters: structure (agreements between the judges: $k=0.90$), cohesion (agreements between the judges: $k=0.88$), coherence (agreements between the judges: $k=0.78$) and textual competence (as was done for the oral story production task).

Table 2 Story structure coding

Level	Definition	Score
	No telling	0
First level—non-story	Simple description of actions without characteristic of narrative style	1
Second level—sketch story	Characteristics of narrative style, such as introduction of the setting and the main characters are present, but both problem and resolution are missing	2
Third level—incomplete story	Elementary narrative structure without a central event	3
Fourth level—essential story	Non-essential structural elements are missing	4
Fifth level—complete story	All eight elements are present, only the title is considered optional	5

Source: Spinillo and Pinto (1994)

Dictation task All the participants were tested with a dictation with the purpose of obtaining a standard measure of their orthographic competence in a task in which it has been possible to evaluate it independently from the creative and organisational component, which is what we find instead in a narrative text. A dictation task taken from "*Batteria per la valutazione della scrittura e della correttezza ortografica nella scuola dell'obbligo*" (Tressoldi and Cornoldi 2000) was used. The children were asked to write the story heard, and subsequently, we proceeded to the identification of homophone and non-homophone errors, according to the classification (Pinto et al. 2012) shown in Table 3.

Each incorrectness was given a score of 1. Considering that we wanted count the maximum number of errors, we did not take into consideration the different error types. From the sum of the error types resulted an "error rate".

Data analyses

Data analyses was performed through several steps, according to the purposes of this study.

In order to examine whether children's textual competence and sub-dimensions of structure, cohesion and coherence differed across the last year of kindergarten and the first year of primary school, and descriptive analyses and a series of repeated measures ANOVAs were performed.

Regarding the second purpose of the study aimed at investigating the predictive nature of oral narrative skills in the total sample, the normal assumptions for the several measures of textual ability (textual competence, structure, cohesion and coherence) were checked. In that cases, in which normal distribution was not verified, increase monotonic transformations were applied. Consequently, a linear bivariate regression analysis was used considering textual competence, and in line with other longitudinal studies aimed at examining the preschool predictors of elementary school narrative writing skills (see Hooper et al. 2010), hierarchical regression analyses were carried out considering structure, cohesion and coherence measures at T_2 as dependent variables, and the same indicators at T_1 as independent variables.

Furthermore, aiming at investigating the predictive nature of oral narrative skills on written narrative skills in a sample of children with spelling difficulties, we proceeded to identify the

Table 3 Orthographic error coding

Error type	Error classification		
	Definition	Homophone (H)	Non-homophone (NH)
Insertion	The error consists in the insertion of a single letter	Cannot occur in Italian, because all such errors would result in a letter string with a pronunciation different from the target word, but this error type is frequent in English	*Canne* for *cane*
Omission	Omission of a single letter		*Tesro* for *tesoro*
Transposition	Misordering of two adjacent letter		*Mecrato* for *mercato*
Substitution	Replacement of one grapheme with another	*Quore* for *cuore*	*Banbina* for *bambina*

participants with relevant orthographic difficulties, taking into account their dictation errors. The identification of these children was performed by selecting the lower 85th percentile as the number of errors. These pupils were considered significantly deficient in orthographic competence. So, a group of 13 subjects was identified. Afterwards, with regard to this sub-sample, the descriptive statistics for the global score of textual competence and for the sub-dimensions of structure, cohesion and coherence were calculated. In a second moment, a bivariate and multiple hierarchical regression analyses were carried out, similarly for the global sample, by check of the observance of normal distribution of all the metric variables considered.

Results

Developmental pattern of narrative skills

First of all, descriptive statistics were calculated (Table 4). Considering the developmental trend of the stories, going from oral to written stories, the results show that the index obtained from the three textual scores of structure, cohesion and coherence (textual competence, i.e. CT), showed a significant difference when scores in kindergarten were compared to scores in primary school, specifically ($F(1,79)=14.006$, $\eta^2=0.15$, $p<0.001$ with Bonferroni's correction; kindergarten pupils: $M=5.44$, $SD=1.76$, primary school pupils: $M=6.24$, $SD=1.43$). The results also indicated that children's coherence differed significantly ($F(1,79)=44.851$, $\eta^2=0.36$, $p<0.001$ with Bonferroni's correction) and in particular increased (kindergarten pupils: $M=1.58$, $SD=0.84$; primary school pupils: $M=2.36$, $SD=0.90$). As for the other two measures, no age temporal differences emerged. The repeated measures ANOVAs were replicated separately for male and female sub-groups. No significant age temporal differences emerged for textual competence, coherence, structure and cohesion in these groups. For this reason, gender differences will not be considered in the subsequent analyses.

Predictive power of preschool narrative skills on written narrative skills

After considering the developmental trend of the stories, we moved on to investigate the predictive links between the two periods, preschool and formalised school. Regarding the total

Table 4 Descriptive statistics of all dependent and independent variables: mean, standard deviation, skewness and kurtosis

Measure	M		SD	Skewness	Kurtosis
T_1	Textual competence	5.43	1.76	−0.48	0.99
	Structure	2.68	1.16	0.47	−0.09
	Cohesion	1.19	0.55	0.06	−0.03
	Coherence	1.58	0.83	0.41	−0.70
T_2	Textual competence	6.23	1.43	−0.51	0.27
	Structure	2.71	0.88	0.27	−0.61
	Cohesion	1.16	0.53	0.12	0.19
	Coherence	2.36	0.90	−0.89	−0.89

T_1 preschool, T_2 grade school

sample of 80 subjects, the main descriptive statistics (mean, standard deviation, skewness and kurtosis) are shown in Table 4.

All the measures were normally distribuited. Moreover, M value of the textual ability measures were in a central position with respect to minimum and maximum values, excluding possible floor and ceiling effects.

The linear correlation analyses showed that oral narrative competence of children attending kindergarten was significantly correlated with textual competence in primary school ($r=0.29$, $p<0.01$). The positive Pearson's coefficient allows us to deduce that the increase in the level of textual competence at the age of five, significantly increases textual competence at the age of six.

The first hierarchical regression analyses showed that the coherence at T_2 was predicted, in the first and unique step, by coherence ($\beta=0.27$, $p<0.05$) at T_1 (Table 5), while structure at T_2 was predicted only by the cohesion at T_1 ($\beta=0.24$, $p<0.05$) (Table 6).

Cohesion at T_2, differently, was not significantly predicted by any textual competence sub-measures at T_1. In summary, the predictive relationship sub-dimensions of textual competence are shown in Fig. 1.

Motivated by the intention to investigate whether the predictive relationships that emerged between narrative ability were independent from the learnt skills of spelling, we extrapolated a sample of children with difficulties in spelling and we proceeded to check whether the predictive links were also maintained in this case.

As regard to the sub-sample of the participants with difficulties in orthographic competence, in Table 7, the descriptive statistics of the textual competence variables (total and sub-dimensions) are reported. Even in this case, all the variables were normally distributed, except for same variables underline by asterisks. For the successive linear regression analyses, this metric measure was normalised by the application of monotonic transformations.

The results pointed out no significant predictive associations between textual competence at T_1 and the same construct at T_2. Also, the correlation between the sub-dimensions measured at T_1 and those at T_2 were not statistically significant.

Discussion

Developmental trend of narrative competence (Fig. 2)

Considering the narrative level, results of the analyses show it to be quite stable when scores in kindergarten are compared to those at the primary level, taking into account gender differences. When we consider the total sample, the results underline surprisingly significant differences, in

Table 5 Regression analyses on total sample, with coherence at T_2 as dependent variable and structure, cohesion and coherence at T1 as independent variables: regression coefficients B, standard error SEB and standardised coefficient β

Independent variables	B	SEB	β
Coherence	0.29	0.12	0.27*

$R^2=0.07$; $F(1, 78)=6.27$; *$p<0.05$

Table 6 Regression analyses on total sample, with structure at T_2 as dependent variable and structure, cohesion and coherence at T_1 as independent variables: regression coefficients B, standard error SEB and standardised coefficient β

Independent variables	B	SEB	β
Cohesion	0.38	0.18	0.24*

$R^2 = 0.06$; $F(1, 78) = 4$; *$p < 0.05$

particular for the indices of textual competence and coherence, which significantly increase. We considered several explanations for this finding. The literature (Damico and Ball 2008; Shapiro and Hudson 1991; Bamberg 1987) shows a gradual improvement in the production of stories within the oral and written code; from our results, we can say that this improvement is also in the transition between the codes. The results, as also exemplified in the stories in the figure below, show an improvement in the ability to compose texts with good structure, cohesion and consistency, although the performance is expressed in a different medium, such as writing. Specifically, the improvement of the overall quality text is due to the improvement of consistency. This index is derived from sequences, which allow to structure the story, and from the presence of linguistic elements, that ensure continuity to the text (Shapiro and Hudson 1991).

This leads us to reflect on the fact that in older children there is a more effective functioning of working memory and the possibility that writing offers to repeated access, monitoring and evaluation to the text may help children to create more coherent and better quality texts. Furthermore, the growing awareness of audience determines an increase in the strategic manipulation of linguistic devices driving the reader to follow the message (Bereiter and Scardamalia 1987). These factors seem to determine a more comprehensive improvement of textual competence level.

Regarding the lack of significant differences for the indices of structure and cohesion, our explanation relates to the specific educational intentions of the early period of schooling. During the first year, the task required the child to acquire instrumental writing, that is the ability to encode and still not work on the text itself. The educational purposes of teaching how to write texts and to work with the properties that characterise it are not addressed. Furthermore, as regard to the use of cohesives, from the literature, we know that children are able to use them progressively in a more sophisticated way (Shapiro and Hudson 1991). This could result more

(1) First phase – Kindergarten	(2) Second phase – Primary school
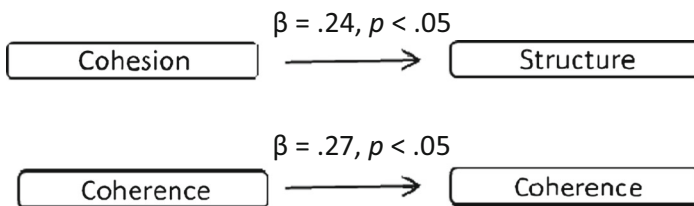
β = .24, *p* < .05

Cohesion ⟶ Structure

β = .27, *p* < .05

Coherence ⟶ Coherence

Fig. 1 Predictive relationships between textual competence and its sub-dimensions

Table 7 Descriptive statistics of all dependent and independent variables sub-sample of participants with orthographic problems (N=13): mean, standard deviation, skewness and kurtosis

Measure		M	SD	Skewness	Kurtosis
T_1	Textual competence[a]	4.53	1.94	–0.99	1.39
	Structure[a]	2.31	1.18	0.36	2.06
	Cohesion	1.08	0.64	–0.05	0.06
	Coherence[a]	0.95	0.50	–0.64	1.20
T_2	Textual competence	5.46	1.80	–0.52	–0.65
	Structure	2.08	0.64	–0.05	0.06
	Cohesion	1.23	0.72	–0.39	–0.75
	Coherence[a]	2.15	0.98	–0.35	–2.11

T_1 preschool, T_2 grade school

[a] Normalized measure

appropriate and, at the same time, more parsimonious. It may be for this reason that the scores remain fairly stable.

In summary, the improvements found are mainly due to maturational factors that occur at this age and to the development of logical and causal ability in recounting events.

Predictive power of preschool narrative skills on written narrative skills (Table 8)

As regard to the focus of this study, the results show that textual competence in childhood predicts the same ability considered one year later (from age 5 to 6 years). This predictability confirms our expectations: the mastery of writing allows children to preserve their narrative skills in the transition between the codes. Even the sub-dimensions of structure and coherence appear to be predicted. Summarizing, the relationship between predictor and criterion are shown before in Fig. 1. Cohesion in writing is generated through the use of linguistic devices that allow to combine individual sentences to give the idea of a unitary whole (Shapiro and

	C'era una volta un'oca che stava nel mare. Un giorno venne un pesce che era tutto colorato. L'oca gli disse come si chiamava e il pesce disse che si chiamava Pesce colorato. Dopo il pesce gli disse se aveva alcuni amici e l'oca gli disse non ho nessun amico. Il pesce gli disse se poteva essere suo amico e l'oca disse di sì così furono amici e si divertirono ogni giorno insieme.
	(There once was a goose that was in the sea. One day came a fish that was all colorful. The goose said what was her name and the goose said that the fish was called colored fish. After the fish told him if he had some friends and the goose told him I do not have any friends. The fish told him if he could be his friend and the goose said yes so they were friends and had fun every day together).
C'era un gatto che si lavava le mani e c'era un uccellino che mangiava in un campo dei chicchi. Il gatto voleva mangiare l'uccellino. *(There was a cat washing his hands and there was a bird eating in a field of beans. The cat wanted to eat the bird).*	
Story told by X at five years (transcription)	Story written by X at six years (transcription)

Fig. 2 Examples of stories

Table 8 Story told by Y at 5 years (transcription) and story written by Y at 6 years (transcription with misspellings reported)

Racconta una storia	Tell a story
C'era una volta una bambina di nome Cappuccetto Rosso. Andava sempre a portare il mangiare alla sua nonna. Una volta quando andava ha trovato il lupo e il lupo gli disse: «Bambina cosa fai?» e la bambina rispose: Sto cogliendo i fiori per la mia nonna». «Facciamo una cosa! Te bambina passerai dalla strada più corta e io passerò dalla strada più lunga»(..)	Once upon a time there was a girl named Little red Riding Hood. She always went to take food to her grandmother. Once she went she found the wolf and the wolf said: «Child what are you doing?» and the girl replied: «I'm collecting flowers for my grandmother». «Let's do a thing! You child will pass by the shortest route, and I will pass across the long way»
	Invent a story There was a squirrel that his parents were dead so he took what he needs so he left. In the swamp was all oxen suddenly heard a voice was a crow so said hey squirrel and tells him to spend the night so they built a (…)

Hudson 1991), and in our study, this index measured at the oral level predicts first grade stories' structure. Preschool ability to construct local connection among sentences permits to develop the capacity to give integrity and semantic unity to the narratives. It is not surprising that a relationship was found, as children who demonstrate greater sensitivity to the use of cohesives generally become better writers, producing well-organised and structured stories.

Coherence relates to the unity in meaning conveyed by a text. It is the "logic factor" of the story, and it is a property that released from the means by which it is expressed, whether this is oral or written. Then, no wonder that the result shows that children, who tell consistent stories, maintain this ability a year later, when they use writing. Instead, no predictive tie emerges for the index of structure and the index of cohesion, pointed at the age of 5 and 6 years. The absence of association between structure at T_1 and T_2 can be interpreted considering the mean and standard deviation (Table 4). The scores of structure index do not improve significantly in the transition from preschool to the period of schooling and they homogenise. In Table 4, we can observe that the standard deviation is quite high considering the M value of the scores and this can be linked to the fact that there is wide inter-individual variability in the expression of the narrative capacity, in line with the variability that characterises the development of language in general (Bates et al. 1995). M value of preschool stories is 2.68 and 2.71 for the first grade stories, so they seem to maintain around the same level which corresponds to a "sketch story" (Spinillo and Pinto 1994). This finding is plausible, especially in Italy where the educational purpose of the first year of schooling is

directed to an instrumental component, rather than towards the teaching of the organisation of texts. The structure is the embryonic ability that permits to take into account several parts of the story, but not to work on it and organise the narrative point of view. Instead, the relationship between the parties is demonstrated by consistency. Thanks to an increasing efficiency of the operation of the working memory the narrator shows him or herself increasingly able to hold the various elements of the text simultaneously present and to work on it in order to build a semantic unit.

With regard to the index of cohesion, M value of preschool stories is 1.19 and 1.16 for the first grade stories. Our hypothesis is that cohesives do not increase in number, but in the quality of their use. So, some children will use fewer connectives, but more appropriately, instead other children will use more cohesive but less functional ties. For this reason, there is no predictive link.

Interested in investigating whether the predictive relationships that emerged between narrative ability expressed at the age of five through oral language and, afterwards, at the age of six through written language, were independent from the learnt skills of spelling. We conducted the same analyses on a sample of children with spelling difficulties. A completely different pattern emerges: the results show that the predictive links fail.

So, writing, for those children who have not mastered it efficiently, becomes an obstacle. From the literature, we know that lower-level skills, which do not require higher level thinking skills, are related to writing during the early stages of formal writing (Berninger and Fuller 1992). Initially, a rapid, automatic and correct writing production may constrain the ability to transcribe ideas into a text, because a failure to master a lower-level process, such as orthographic coding, can affect the cognitive and metacognitive levels, for example in the generation of content, in the planning and organisation of the text (Swanson and Berninger 1996; Graham 1999).

In summary, we found aspects of continuity and discontinuity between the transition from oral to written language. Continuity prevails when the child uses writing quite easily; on the contrary, the medium of write become an disadvantage for the child who has difficulties in orthographic coding. This study enlarges our knowledge about the importance of the mastery of writing to preserve narrative skills in the transition from oral to written code and it opens the way to practical implications. First of all, the importance of work on skills, narrative and spelling, as both are closely linked. Children, to effectively communicate their ideas in writing, need to be fluent with transcription and write correctly, but even more, they must learn to construct a coherent texts (Struthers et al. 2013). So, it would be useless to rely only on one of them. Moreover, it could be important, especially for those children who have difficulty, to maintain the dual channel, oral and written. However, we must recognise that in the first phase of schooling the opportunity to achieve significant improvements is still open. The practical implications above may be useful, aware of the fact that the variations in performance made by some children may be normal extensions of the observed variations, in typically developing children (Bates et al. 1995). Furthermore, it has to be remembered that in Italy there are a limited number of children with difficulty in spelling, thanks to the greater transparency of this language, so it was only possible to work with a small sample. Given the findings and limitations, it would be useful to replicate this study on a larger sample, to allow a better generalisability of the predictive model and better understand the mechanisms underlying the relationships between emergent and formalised literacy.

References

Adams, M. J. (1990). *Beginning to read: thinking and learning about print*. Cambridge: Bolt, Beranek, and Newman.

Angelelli, P., Notarnicola, A., Judica, A., Zoccolotti, P., & Luzzatti, P. (2010). Spelling impairments in Italian dyslexic children: phenomenological changes in primary school. *Cortex, 46*, 1299–1311.

Babayigit, S., & Stainthorp, R. (2011). Modelling the relationships between cognitive-linguistic skills and literacy skills: new insight from a transparent orthography. *Journal of Educational Psychology, 103*, 169–189.

Bamberg, M. G. W. (1987). *The acquisition of narratives: learning to use language*. Berlin: Mouton de Gruyter.

Barry, C. (1994). Spelling routes (or roots or routes). In G. D. A. Brown & N. C. Ellis (Eds.), *Handbook of spelling: theory, process and intervention* (pp. 27–49). Chichester: Wiley.

Bates, E., Dale, P. S., & Thal, D. (1995). Individual differences and their implications for theories of language development. In P. Fletcher & B. MacWhinney (Eds.), *Handbook of child language, chapter 4*. Oxford: Basil Blackwell.

Bereiter, C., & Scardamalia, M. (1987). *The psychology of written composition*. Hillsdale: Lawrence Erlbaum Associates.

Berninger, V. (2000). Development of language by hand and its connections to language by ear, mouth, and eye. *Topics of Language Disorders, 20*, 65–84.

Berninger, V., & Fuller, F. (1992). Gender differences in orthographic, verbal and compositional fluency: implications for assessing writing disabilities in primary grade children. *Journal of School Psychology, 30*, 363–382.

Berninger, V., & Graham, S. (1998). Language by hand: a synthesis of a decade of research on handwriting. *Handwriting Review, 12*, 11–25.

Berninger, V., Mizokawa, D., & Bragg, R. (1991). Theory-based diagnosis and remediation of writing disabilities. *Journal of School Psychology, 29*, 57–79.

Booth, J. R., Perfetti, C. A., & MacWhinney, B. (1999). Quick, automatic and general activation of orthographic and phonological representations in young readers. *Developmental Psychology, 35*, 3–19.

Bowey, J. A., Vaughan, L., & Hansen, J. (1998). Beginning readers' use of orthographic analogies in word reading. *Journal of Experimental Child Psychology, 68*, 108–33.

Chliounaki, K., & Bryant, P. (2007). How children learn about morphological spelling rules. *Child Development, 78*, 1360–1373.

Coltheart, M. (2000). Dual routes from print to speech and dual routes from print to meaning: some theoretical issues. In A. Kennedy, R. Radach, J. Pynte, & D. Heller (Eds.), *Reading as a perceptual process* (pp. 475–492). Oxford: Elsevier.

Coltheart, M., & Rastle, K. (1994). Serial processing in reading aloud: evidence for dual-route models of reading. *Journal of Experimental Psychology: Human Perception and Performance, 20*, 1197–1211.

Coltheart, M., Rasile, K., Perry, C., Langdon, R., & Ziegler, J. (2001). DRC: a dual route cascaded model of visual word recognition and reading aloud. *Psychological Review, 108*, 204–256.

Damico, J. S., & Ball, M. J. (2008). Clinical sociolinguistics. In *The handbook in clinical linguistics* (pp. 107–129). Oxford: Blackwell Publishing.

De La Paz, S., & Graham, S. (1995). Dictation: Applications to writing for students with learning disabilities. In T. Scruggs & M. Mastropieri (Eds.), *Advances in learning and behavioral disabilities* (Vol. 9, pp. 227–247). Greenwich: JAI.

Decreto Legislativo 30 giugno (2003) n.196. "Codice in materia di protezione dei dati personali". Pubblicato nella Gazzetta Ufficiale, n.174 del 29 luglio 2003 – Supplemento Ordinario n.123.

Englehard, G., Walker, E. V., Gordon, B., & Gabrielson, S. (1994). Writing tasks and gender: Influences on writing quality of black and white students. *Journal of Educational Research, 87*, 197–209.

Evans, M. A., Shaw, D., & Bell, M. (2000). Home literacy activities and their influence on early literacy skills. *Canadian Journal of Experimental Psychology, 54*, 65–75.

Frith, U. (1985). Beneath the surface of developmental dyslexia. In K. Patterson, J. Marschall, & M. Coltheart (Eds.), *Surface dyslexia*. London: L.E.A.

Graham, S. (1999). The role of text production skills in writing development. *Learning Disability Quarterly, 22*, 75–77.

Graham, S., & Harris, K. R. (2000). The role of self-regulation and transcription skills in writing and writing development. *Educational Psychologist, 35*, 3–12.

Graham, S., Harris, K. R., & Fink-Chorzempa, B. (2002). Contributions of spelling instruction to the spelling, writing, and reading of poor spellers. *Journal of Educational Psychology, 94*, 669–686.

Halliday, M. A. K., & Hasan, R. (1976). *Cohesion in English*. London: Longman.

Hayes, J. R., & Flower, L. S. (1980). Identifying the organization of writing process. In L. W. Gregge & E. R. Steinberg (Eds.), *Cognitive processes in writing*. Hillsdale: Lea.

Hooper, S. R., Roberts, J. E., Nelson, L., Zeisel, S., & Fannin, D. K. (2010). Preschool predictors of narrative writing skills in elementary. *School Psychology Quarterly, 25*, 1–12.

Jones, D., & Christensen, C. (1999). The relationship between automaticity in handwriting and students' ability to generate written text. *Journal of Educational Psychology, 91*, 44–49.

Kellogg, R. T. (1996). A model of working memory in writing. In M. Levy & S. Ransdell (Eds.), *The science of writing: Theories, methods, individual differences, and applications* (pp. 57–72). Mahwah: Lawrence Erlbaum Associates.

Laughton, J., & Morris, N. (1989). Story grammar knowledge of learning disabled students. *Learning Disabilities Research, 4*, 87–95.

Levin, I., Share, D. L., & Shatil, E. (1996). A qualitative-quantitative study of preschool writing: Its development and contribution to school literacy. In C. M. Levy & S. Ransdell (Eds.), *The science of writing* (pp. 271–293). Mahwah: Lawrence Erlbaum.

Mäki, H. S., Voeten, M. J. M., Vauras, M. M. S., & Poskiparta, E. H. (2001). Predicting writing skill development with word recognition and preschool readiness skills. *Reading and Writing: An Interdisciplinary Journal, 14*, 643–672.

McCutchen, D. (1996). A capacity theory of writing: working memory in composition. *Educational Psychology Review, 8*, 299–324.

Montague, M., Maddux, C., & Dereshiwsky, M. (1990). Story grammar and comprehension and production of narrative prose by students with learning disabilities. *Journal of Learning Disabilities, 23*, 190–196.

Notarnicola, A., Angelelli, P., Judica, A., & Zoccolotti, P. (2012). The development of spelling skills in a shallow orthography: the case of the Italian language. *Reading and Writing, 25*, 1171–1194.

Olive, T., & Kellogg, R. T. (2002). Concurrent activation of high- and low-level production processing in written composition. *Memory & Cognition, 30*, 594–600.

Orsolini, M., Fanari, R., Tosi, V., De Nigris, B., & Carrier, R. (2006). From phonological recoding to lexical reading: a longitudinal study on reading development in Italian. *Language and Cognitive Processes, 21*, 576–607.

Patterson, K. E. (1986). Lexical but non-semantic spelling. *Cognitive Neuropsychology, 3*, 341–367.

Pinto, G., Bigozzi, L., Accorti Gamannossi, B., & Vezzani, C. (2009). Emergent literacy and learning to write: a predictive model for Italian language. *European Journal of Psychology of Education, 24*, 61–78.

Pinto, G., Bigozzi, L., Accorti Gamannossi, B., & Vezzani, C. (2012). Emergent literacy and early writing skills. *The Journal of Genetic Psychology: Research and Theory on Human Development, 173*, 330–354.

Ravid, D., & Tolchinsky-Landsmann, L. (2002). Developing linguistic literacy: a comprehensive model. *Journal of Child Language, 29*, 419–448.

Scardamalia, M., & Bereiter, C. (1986). Written composition. In M. Wittrock (Ed.), *Handbook of research on teaching* (pp. 778–803). New York: Macmillan.

Scott, C. (2005). Learning to write. In H. Catts & A. Kamhi (Eds.), *Language and reading disabilities* (pp. 233–273). Needham Heights: Allyn & Bacon.

Sénéchal, M., & LeFevre, J. A. (2002). Parental involvement in the development of children's reading skill: a five-year longitudinal study. *Child Development, 73*, 445–60.

Shapiro, L. R., & Hudson, J. A. (1991). Tell me a make-believe story: coherence and cohesion in young children's picture-elicited narratives. *Developmental Psychology, 27*, 960–974.

Shapiro, L. R., & Hudson, J. A. (1997). Coherence and cohesion in children's stories. In J. Costermans & M. Fayol (Eds.), *Processing interclausal relationships. Studies in the production and comprehension of text* (pp. 23–48). Mahwah: Erlbaum.

Shiel G, Cregan Á., McGough A., & Archer P. (2012). Oral language in early childhood and primary education (3–8 years). National Council for Curriculum and Assessment 24, Merrion Square, Dublin 2.

Singer, B., & Bashir, A. (2004). Developmental variations in writing composition skills. In C. A. Stone, E. R. Silliman, B. J. Ehren, & K. Apel (Eds.), *Handbook of language and literacy development and disorders* (pp. 559–582). New York: Guilford Press.

Spinillo, A. G., & Pinto, G. (1994). Children's narratives under different conditions: a comparative study. *British Journal of Development Psychology, 12*, 177–193.

Stein, N. L., & Glenn, C. G. (1982). Children's concept of time: The development of a story schema. In W. J. Friedman (Ed.), *The developmental psychology of time*. New York: Academic Press.

Struthers, L., Lapadat, J. C., & MacMillan, P. D. (2013). Assessing cohesion in children's writing: development of a checklist. *Assessing Writing, 18*, 187–201.

Sulzby, E. (1985). Children's emergent reading of favorite storybooks: a developmental study. *Reading Research Quarterly, 20*, 458–481.

Swanson, H. L., & Berninger, V. W. (1996). Individual differences in children's working memory and writing skill. *Journal of Experimental Child Psychology, 63*, 358–385.

Tainturier, M. J., & Rapp, B. (2000). The spelling process. In B. Rapp (Ed.), *What deficits reveal about the human mind: a handbook of cognitive neuropsychology* (pp. 263–289). Philadelphia: Psychology Press.

Tressoldi, P., & Cornoldi, C. (2000). *Batteria per la valutazione della scrittura e della competenza ortografica nella scuola dell'obbligo*. Firenze: Organizzazioni Speciali.

Whitehurst, G. J., & Lonigan, C. J. (1998). Child development and emergent literacy. *Child Development, 69*, 848–72.

Whitehurst, G. J., & Lonigan, C. J. (2002). Emergent literacy: development from pre-readers to readers. In S. B. Neuman & D. K. Dickinson (Eds.), *Handbook of early literacy research* (pp. 179–191). New York: Guilford Press.

World Medical Association Declaration of Helsinki. (2013). Ethical principles for medical research involving human subjects. WMA General Assembly, Fortaleza, Brazil. *World Medical Journal, 5*, 199–202.

Lucia Bigozzi. Department of Education and Psychology, University of Florence, via di San Salvi 12, Complesso di San Salvi Padiglione 26, 50135 Florence, Italy. E-mail: lbigozzi@unifi.it, lucia.bigozzi@unifi.it, Tel.: +39 055 2755010

Current themes of research:

Development of metacognition and theory of mind. Communicative and linguistic development, with special interest in lexical competence development and its relations with reading comprehension. Learning disabilities: dyslexia's and disorthography's predictors. Attention Deficit Hyperactivity Disorder (ADHD): psychodiagnosis, educative treatment and school integration interventions. Teaching and learning processes: effectiveness of teaching methods. School integration of disabled children.

Most relevant publications in the field of Psychology of Education:

Pezzica, S., Pinto, G., Bigozzi, L., & Vezzani, C. (2015). Where is my attention? Children's metaknowledge expressed through drawings. *Educational Psychology*. doi:10.1080/01443410.2014.1003035.

Bigozzi, L., Tarchi, C., Pinto, G., & Accorti Gamannossi B. (2015). Predicting dyslexia in a transparent orthography from grade-one literacy skills: a prospective cohort study. *Reading & Writing Quarterly*, ISSN:1057-3569.

Pinto, G., Tarchi, C., & Bigozzi, L. (2015). The relationship between oral and written narratives: A three-year longitudinal study of narrative cohesion, coherence, and structure. *British Journal of Educational Psychology, 85*, 551–569. doi:10.1111/bjep.12091.

Bigozzi, L., Tarchi, C., Pezzica, S., & Pinto G. (2014). Evaluating the predictive impact of an emergent literacy model on dyslexia in Italian children: a four-year prospective cohort study. *Journal of Learning Disabilities, 3*, 1–14. doi:10.1177/0022219414522708.

Pinto, G., Bigozzi, G., Accorti Gamannossi, B., & Vezzani, C. (2012). Emergent literacy and early writing skills. *The Journal of Genetic Psychology, 173*(3), 330–354.

Pinto, G., Bigozzi, L., Accorti Gamannossi, B., & Vezzani, C. (2009). Emergent literacy and learning to write: a predictive model for Italian language. *European Journal of Psychology of Education, 24*(1), 725–742.

Bigozzi, L., Biggeri, A., Boschi, F., Conti, C., & Fiorentini, C. (2002). Children "scientists" know the reason why and they are "poets" too. Non-randomized controlled trial to evaluate the effectiveness of a strategy aimed at improving the learning of scientific concepts. European Journal of Psychology of Education, 17, 343–362.

Giulia Vettori. Department of Education and Psychology, University of Florence, via di San Salvi 12, Complesso di San Salvi Padiglione 26, 50135 Florence, Italy. E-mail: gvettori@live.it

Current themes of research:

Emergent literacy processes in preschool children and their development during alphabetisation processed, with special interests in textual competence. Acquisition of writing and its relations with narrative competence.