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The Impact of Children's Lexical and Morphosyntactic Knowledge on Narrative Competence Development: A Prospective Cohort Study

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ABSTRACT

The authors investigate the contribution of children's early comprehension of relational terms and morphosyntactic knowledge to the development of narrative competence in kindergarten and Grade 1. Narrative competence was assessed through the cohesion, coherence, and structure of children's productions. The participants in this study were 714 Italian children. The authors measured their oral narrative competence through a storytelling task at the beginning and end of the kindergarten year. A total of 115 children were randomly selected and followed through Grade 1, and their narrative competence was measured again. According to the path analysis model, early morphosyntactic knowledge contributes to explain narrative competence in Grade 1. Early comprehension of relational terms contributes to narrative competence at the end of the school year. These findings confirm the importance of exploring the influence of early language skills on narrative competence development and suggests early intervention at the level of language antecedents of narrative competence.

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Narrative competence; morphosyntactic knowledge; comprehension of relational terms

Introduction

Children's early narrative competence in kindergarten plays a fundamental role for literacy acquisition (Babayigit & Stainthorp, 2011), peer adjustment (Davidson, Walton, Kansal, & Cohen, 2017), theory of mind (Pinto, Tarchi, & Bigozzi, 2016; Guajardo & Watson, 2002), and school success more in general in normally speaking (Spencer & Slocum, 2010) and children with a specific learning impairment (Paul & Smith, 1993). Few studies have investigated narrative competence as a predictor of literacy skills, such as reading (Reese, Suggate, Long, & Schaughency, 2010) or writing (Pinto, Tarchi, & Bigozzi, 2015; Babayigit & Stainthorp, 2011), whereas studies investigating language predictors of narrative competence itself are rarer (Barbosa, Nicoladis, & Keith, 2017). However, when producing a narrative, a child needs to integrate linguistic abilities at many levels (Boudreau, 2007) and an impairment in certain linguistic variables might hinder the development of narrative competence. Being a good storyteller requires being able to deploy and integrate several linguistic forms in a flexible and appropriate manner (Berman, 2008), but studies on narrative competence have neglected to analyze the specific contribution of two language predictors: children's comprehension of relational terms and morphosyntactic knowledge. In the present study, we investigated the contribution of these two variables in kindergarten to the development of narrative competence in kindergarten and Grade 1. Studying narrative

development is important theoretically, because we still have much to learn on the individual skills necessary to narrative competence development and how they influence each other across time (Lepola, Lynch, Laakkonen, Silvén, & Niemi, 2012). Studying narrative development is important also practically, and longitudinal studies might suggest which process should be targeted in kindergarten to foster narrative competence development in kindergarten and primary school and, presumably, promote later literacy acquisition (Pinto et al., 2015; Babayiğit & Stainthorp, 2011).

Narrative competence

Narration is the oral presentation of a series of actions and events, unfolding over time because of specific causes (Hughes, McGillivray, & Schmidek, 1997). Narratives generally involve talk about decontextualized events, that can be understood also by listeners who did not share the related experience (Lee, Lee, Han, & Schickedanz, 2011). Narrative competence represents a central aspect in children's development, and it is considered an ecological measure of children's language ability (Norbury, Gemmell, & Paul, 2014). Recent studies have emphasized how children's emergent narrative competence in kindergarten have a great impact on later written productions in primary school (Pinto et al., 2016), beyond the effects of orthography competence (Pinto et al., 2015). But narrative competence impacts also on other developmental aspects that are not literacy related. For instance, primary school children's narrative competence contributed to greater peer popularity and less loneliness and peer victimization a year later (Davidson et al., 2017).

A storyteller needs to target three standards of narrative competence: cohesion, coherence, and structure (Cain, 2003; Halliday & Hasan, 1976; Taboada, 2004). Cohesion represents how a story is tied together at a micro level through linguistic devices (i.e., causal connectives, such as because, or temporal connectives, such as afterward), expressing the causal or temporal relations between sentences and clauses that create a story (Cain, 2003; Favart et al., 2016). Whereas cohesion is a linguistic phenomenon, coherence is mostly a cognitive phenomenon. Coherence represents how events are interrelated at a macro level (Cain, 2003) so that the story "hangs together" (Halliday & Hasan, 1976). Generally, people are able to tell coherent stories by including a formalized introduction, a background and a setting (Hudson & Shapiro, 1991), with causal and temporal connectives used with consistency and without incongruence as not doing so would impair comprehension. Texts may show coherence, even in the absence of cohesive markers (e.g., "The wolf ate little red riding hood and the grandmother. The hunter cut the wolf's belly and freed the grandmother and her grandchild."), and texts can be cohesive without being coherent (e.g., "The wolf ate little red riding hood and the grandmother. And since that day, the grandmother and her grandchild lived happily ever after."). Finally, according to the story grammar approach, narratives are structured so to include seven categories: setting of the story, time and place of the story, initiating event, the characters' internal responses, the characters' goal-related actions; the consequences of the characters' actions, and the characters' reactions relating to the outcome of their actions (Stein & Glenn, 1979). Thus, narrative assessment needs to include an analysis of both micro- and macrostructural elements.

Narrative competence appears early in childhood (around 2 years old) and continues to develop through adulthood (Hayes & Casey, 2002). At 5 years old, children's narrative competence is still limited (Khan, Nelson, & Whyte, 2014). Five-year-old children typically are able to tell a story with a basic chronological and sequential structure (Kontos, Mackley, & Baltas, 1986; Peterson & McCabe, 1983), and provide some details on the characters' thoughts (Stein & Glenn, 1979). Their narratives can be described as sketch stories, as they include important story grammar components, such as an opening, a setting, character(s), a conclusion, and a resolution, but the problem is sketched, and a description of the central event is missing (Pinto et al., 2015). An example of sketch story told by a 5-year-old child is, "Once upon a time there was a mouse that

met a cat and then it found also a little house and it went inside with the cat and they ate cheese. The cat left the mouse and went back home.” Children’s production may increase in detail, but even 7-year-old children mostly tell sketch stories. An example of sketch story told by a 7-year-old child is, “Once upon a time there was a child who lived in a village and wanted to find a treasure. He traveled for days and found it, but it was very small, while he thought that there was going to be a lot. So a pirate appeared and said “give me this gold, or I’ll feed you to the sharks!” The child was scared but his friends destroyed the ship. The child lived happily ever after.” Moreover, primary school-age children are able to connect sentences to each other (Peterson & McCabe, 1991), but their use of cohesive devices is limited and their whole narrative includes some incoherencies (Pinto, Tarchi, Accorti Gamannossi, & Bigozzi, 2016). Once in preschool, children are exposed to and asked to tell different types of stories compared with the ones they are told at home (Schick & Melzi, 2010): classroom narratives are more scripted, are shorter in length, and can be the outcome of individual as well as peer activities (Schick & Melzi, 2010).

The two main tasks used to assess children’s narrative competence are storytelling and story retelling (Lever & Sénéchal, 2011; Pinto, Tarchi, & Accorti Gamannossi, 2018; Roch, Florit, & Levorato, 2016). In a storytelling task, children have to produce a fictional narrative, sometimes based on prompts (Botting, 2002; Merritt & Liles, 1989). Instead, in a story retelling task, children have to listen to a story and retell it at some point after (Botting, 2002; Merritt & Liles, 1989; Stadler & Ward, 2010). Although storytelling and story retelling share some cognitive processes, such as pragmatic and metacognitive skills to structure the story and adapt it to the audience (Maviş, Tunçer, & Gagarina, 2016), some scholars consider story retelling as a measure of narrative comprehension, rather than a measure of their ability to construct a narrative (Nelson, 2007). Thus, in the present study, we investigated the research questions through a storytelling task.

Contribution of language skills to narrative competence

According to the emergent literacy approach, children’s preschool competences and knowledge of the nature and conceptual meaning of a writing system begins early in life, and influences the formal learning of conventional literacy processes (Lonigan, Purpura, Wilson, Walker, & Clancy-Menchetti, 2013; Whitehurst & Lonigan, 1998). The seminal work by Whitehurst and Lonigan suggested that language skills are associated to the acquisition of formal learning processes, independently from other emergent literacy processes, such as children’s knowledge of the rules to translate sound to print and vice versa. The emergent literacy perspective suggests an interdependence between children’s semantic and syntactic knowledge, and their understanding and producing narrative (Honig, 2017; Whitehurst & Lonigan, 1998). Past studies have confirmed the importance of investigating oral language skills in an emergent literacy perspective (Saracho, 2017b). Overall, emergent literacy processes have specific predictive associations with the acquisition of formal learning processes (Ziegler et al., 2010). For instance, phoneme awareness, letter-sound knowledge, and rapid automatized naming were found to be reliable correlates of reading acquisition in several languages (Caravolas et al., 2012). Spelling acquisition in primary school was predicted by children’s emerging conceptual knowledge of the writing system kindergarten (Pinto, Bigozzi, Accorti Gamannossi, & Vezzani, 2009). Children’s competence in writing narratives in primary school was predicted by their competence in telling stories in kindergarten (Bigozzi & Vettori, 2015; Pinto, Tarchi, & Bigozzi, 2015).

Research on narrative competence development has examined the role of several foundational language factors, like vocabulary (Lepola et al., 2012), receptive word knowledge (Sénéchal, Ouellette, & Rodney, 2006), and grammatical knowledge (Kim, 2016), neglecting other linguistic skills such as comprehension of relational terms or morphosyntactic knowledge. Moreover, studies have mainly focused on the relationship between language factors and narrative comprehension (e.g., Florit, Roch, & Levorato, 2014; Lepola et al., 2012), or reading comprehension (e.g.,

Lervåg, Bråten, & Hulme, 2009), partially neglecting the analysis of the relationship between language skills and narrative production. In specific, in the present study, we analyzed the influence of two language skills on narrative production development: comprehension of relational terms and morphosyntactic knowledge.

Comprehension of relational terms. An understanding of basic relational terms is necessary for the child to understand and describe relationships between and among objects and people (Boehm, 2004). Such relations can be temporal (e.g., “I was the first to arrive”), quantitative (e.g., “I ate most of the cake”), dimensional (e.g., “a giant is very tall”), spatial (e.g., “I will draw a star on the front”), and other (e.g., “this car is different than mine”). Children first need to become aware of certain dimensions within a clause (e.g., in quantity, spatial, temporal, and the like) before they are able to see certain contrasts and eventually to describe these contrasts using inter-clausal connectives. Knowledge of relational terms represents a powerful scaffold for creating organized narratives (Nachtigäller, Rohlfing, & Karla, 2013).

Children’s use of relational terms appears early in their language production, approximately at 2 years old. In preschool, children’s ability to comprehend relational terms is necessary to comprehend stories and describe situations or events to others (Boehm, 2004). Although the comprehension of basic relational terms develops gradually over time, by the age of five children have an almost complete mastery of spatiotemporal terms (see Boehm, 2004 for an overview of development of individual basic spatiotemporal terms). The comprehension of relational terms appears to be important especially for the cohesion and the coherence components of narrative competence. For instance, knowledge of temporal terms might help the child to narrate a story based on cohesive temporal connections (e.g., “The three bears arrived *after* Goldilocks”), whereas knowledge of dimensional terms might help the child to narrate a coherent story (e.g., “The giant was tall, everyone was scared”: characterizing the giant as tall can help the child to define the giant as scary, and interpret consequently other characters’ reactions to the giant).

Morphosyntactic knowledge. Morphosyntactic knowledge is defined as children’s knowledge of form-meaning connections, that is the rules presiding over the forming of a meaningful statement through the combination of morphemes. Morphosyntactic knowledge is necessary to understand the syntactic structure of sentences and their meaning (Arfé, Di Mascio, & Gennari, 2010). Concerning children’s morphological development in oral language, word-structure knowledge begins early in childhood and develops through adolescence (Menyuk, 1987). At the beginning of kindergarten (2–3 years old) children are able to produce morphologically correct sentences (Brown, 1973; Devescovi & D’Amico, 2001). In preschool, children are able to use suffixes and compounding to coin new words (Green et al., 2003). In primary school years, children become able to infer meanings of new words on the basis of word structure, and increase their knowledge of inflections and derivational forms (Carlisle, 2000). The development of morphosyntactic knowledge is not completed until the end of primary school (10 years old).

Studies conducted on the use of context in narratives also suggest the existence of a link between morphosyntactic knowledge and narrative competence. Florit et al. (2013) asked children to understand target sentences first in isolation and out of context, and then in a context two or three sentences long. The additional semantic information provided by the context facilitated sentence understanding. Alonzo et al. (2016) compared the effect of the following prekindergarten predictors of listening comprehension: ability to understand and express relationships between words that are related by semantic class features; ability to apply word structure rules to mark inflections, derivations, and comparisons; and ability to select and use appropriate pronouns to refer to people, objects, and possessive relationships, and children’s comprehension of grammar. All the predictors correlated with children’s ability to generate inferences from narrative texts that were read to them. These results suggest that morphosyntactic knowledge (i.e., the set of predictors) is connected children’s macrostructural narrative competence, typically identified by their ability to draw inferences on the text.

Present study

This prospective cohort study investigated the contribution of children's early comprehension of relational terms and morphosyntactic knowledge in kindergarten to the development of narrative competence in kindergarten and Grade 1. From a methodological perspective, a prospective cohort study shares the advantages of a longitudinal approach, with the added value of including all children from the natural population, those at risk and not at risk for learning disorders, providing a better control of potentially confounding variables (e.g., socioeconomic status). We chose this period in children's development because narrative competence development is influenced by schooling. "Schooled narratives" are a particular type of narratives favored by teachers in school (Fang, 2001; Olson, 1986; Schick & Melzi, 2010), and are characterized by three distinctive features: they are minimally dependent on the physical and social context in which the narrative is produced (i.e., autonomy); they should include a set of conventionalized schemes, elements, and linguistic markers defined by the specific sociocultural context in which the genre is situated (i.e., conventionality); and they should use complex syntax and richer and more varied vocabulary (i.e., specialized grammar).

Narrative competence was measured through a storytelling task in terms of cohesion, coherence and structure (Halliday & Hasan, 1976; Merritt & Liles, 1989; Stein & Glenn, 1979). Children's comprehension of relational terms was measured through the Test of Relational Concepts (TRC; Edmonston & Litchfield Thane, 1988), which has been used in prior studies assessing children's spatial vocabulary and comprehension of relational concepts (Barca, Frascarelli, & Pezzulo, 2012; Mervis & John, 2008). Children's morphosyntactic knowledge was measured through the Assessment of linguistic comprehension (Rustioni & Metz Lancaster, 1994), which has been used in previous studies to assess children's morphosyntactic knowledge (Arfé et al., 2010; Florit et al., 2013). We analyzed the contribution of children's comprehension of relational terms and morphosyntactic knowledge to narrative competence development after controlling for the autoregressive effect of narrative competence itself. From the analysis of previous literature, we expected: for (a) narrative competence to be a construct that includes cohesion, coherence, and structure at all three time points; (b) narrative competence to be associated across time (i.e., auto-regressive effect); (c) and comprehension of relational concepts and morphosyntactic knowledge to be associated with narrative competence at all three time points (see expected model represented in Figure 1).

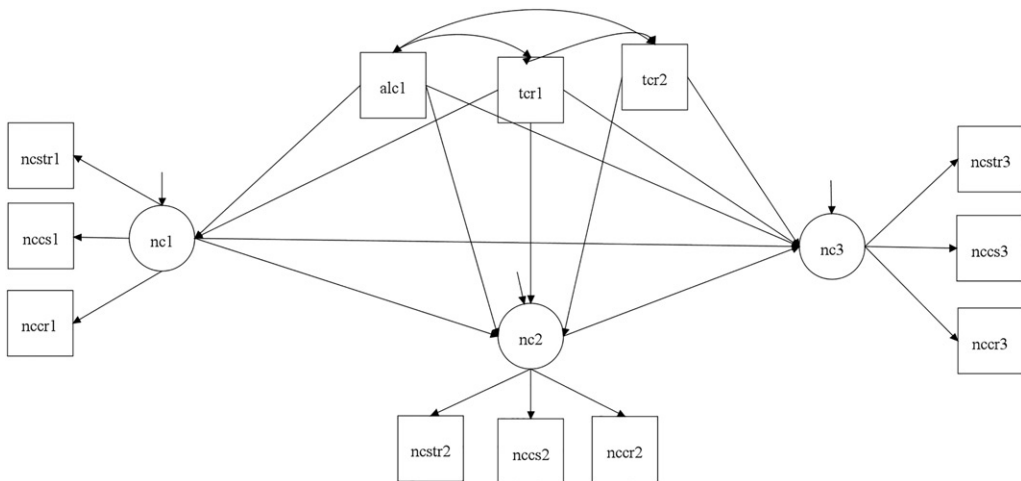


Figure 1. Hypothesized model. Note. ALC = Assessment of Linguistic Comprehension; Cohr = narrative competence – coherence; Cohs = narrative competence – cohesion; Str = narrative competence – structure; TRC = Test of Relational Concepts.

Method

Participant

The participants were 714 Italian children attending the last year of kindergarten in a midsize city in central Italy (age = 5.05 ± 0.23 years; 361 boys and 353 girls), mainly characterized by a medium socioeconomic level (distribution of parents' occupations: 38% workmen, 23% housewives, 3% artisans, 2% retailers, 22% office workers, 1% managers, and 11% self-employed professionals [job categories extracted from ISTAT (Italian National Institute of Statistics)]). The participants were tested twice, at the beginning of the school year (September–October) and at the end of the school year (May–June). From this larger sample, 115 children were randomly extracted and followed through Grade 1 (age in Grade 1 = 5.88 ± 0.39 years; 64 boys and 51 girls). Thus, for this group of children three time-point measures were available. Students were included in the study if they spoke Italian as a first language and if they were not diagnosed with a developmental disorder.

We obtained children's parents informed consent for the participation in the study. The measures were administered in agreement with the school, and with adherence to the requirements of privacy and informed consent required by the Italian law (Law Decree DL-196/2003). The study was approved by the Ethical Committee of the University of Florence (Italy), and referred to the last version of the Declaration of Helsinki for ethical standards for research (World Medical Association, 2013).

Data were collected in public schools. In Italy, children attend kindergarten from 3 to 5 years old and enroll in primary school when they are 6 years old. Storytelling is a typical activity in Italian kindergartens and it is also included in the National indications for the curriculum of Kindergarten released by the Italian Ministry of Education.

Research design

We used a prospective cohort research design to explore narrative competence development (assessed in three time points) as a function of children's comprehension of relational concepts and morphosyntactic knowledge (assessed in two time points). The order of presentation of tasks within the first two time points was randomized. The study consisted of three steps:

1. Children's oral narrative competence (cohesion, coherence, and structure), comprehension of relational concepts and morphosyntactic knowledge were tested at the beginning of the last year of kindergarten (October);
2. Children's oral narrative competence (cohesion, coherence, and structure), comprehension of relational concepts and morphosyntactic knowledge were tested at the end of the last year of kindergarten (April);
3. Children's oral narrative competence (cohesion, coherence, and structure) was assessed at the beginning of Grade 1 (October).

Measures

Narrative competence. Children were asked to "try to tell a story," without providing them with any other prompt (e.g., pictures, wordless book, and the like). In this study, we were interested in spontaneous storytelling, and did not want to force children toward any predetermined direction. The task was individually administered by school teachers in a quiet room within the school building. School teachers received a 3-hr training lead by the first author of the paper on how to administer the narrative competence task (e.g., on how to familiarize the child with audio-taping, or how not to influence the child's performance). The time taken by each child to tell the story ranged from few minutes to a maximum of 15 min. Each narrative production was audio-

registered and transcribed. All children produced a narrative. Following, we describe the components that were measured.

Structure. We analyzed children's narratives based on the story grammar elements: title, conventionalized narrative opening, characters and setting, problem, central event, resolution, and conventionalized narrative closing. The measure was derived from prior studies (Pinto et al., 2015; Spinillo & Pinto, 1994). Two independent judges coded the material. Interrater agreement was 92% (Cohen's $K = .81$). The combinations of presence or absence of these eight elements were ordered in five levels of structural complexity (range of the scores 1–5):

First level (no narrative, score = 1): simple description or list of events, objects, or facts.

Second level (sketch narrative, score = 2): opening, setting, character(s), conclusion or opening, sketch of the problem, and resolution.

Third level (incomplete narrative, score = 3): opening, character(s), problem, and resolution.

Fourth level (essential narrative, score = 4): opening, character(s), problem, central event, and resolution; only setting is missing among the fundamental story elements.

Fifth level (complete narrative, score = 5): title (optional), opening, character(s), setting, problem, central event, resolution, and narrative closing.

Cohesion. To assess the cohesion in the children's stories, we counted the frequency of use of causal (e.g., *so, then, thus, consequently, because of it*) and temporal connectives (e.g., *then, after, afterward, subsequently*). The measure was derived from prior studies (Authors; Diehl, Bennetto, & Young, 2006). Two independent judges coded the material. Interrater agreement was 94% (Cohen's $K = .88$). Then, we created three categories through a three-way split: low cohesion (ratio connectives/words at the 66th percentile, score = 1), medium cohesion (ratio connectives/words between the 66th percentile and the 33rd percentile, score = 2), and high cohesion (ratio connectives/words at the 33rd percentile, score = 2; range of the scores 1–3).

Coherence. To analyze coherence in the narratives, the number of incoherencies were calculated (e.g., a sentence was introduced by an adversative even though it did not contradict the previous sentence). An example of incoherence was "the monsters wanted to make peace, but the monsters wanted to attack." The measure was derived from prior studies (Pinto et al., 2015; Cain, 2003). Two independent judges coded the material. Inter-rater agreement was 91% (Cohen's $K = .80$). Then, we created three categories through a three-way split: low coherence (ratio incongruences/propositions at the 66th percentile, score = 1), medium coherence (ratio incongruences/propositions between the 66th percentile and the 33rd percentile, score = 2), and high coherence (ratio incongruences/propositions at the 33rd percentile, score = 3; range of the scores 1–3).

TRC. The TRC (Edmonston & Litchfield Thane, 1988) is a standardized test that assesses 3- to 7-year-old children's comprehension of relational terms. The TRC includes five types of concepts: temporal (first/last), quantitative (most/least), dimensional (tall/short), spatial (back/front), and other (same/different). Children are presented with a series of tables with three pictures each, then they were asked to point to the picture that matched the sentence pronounced by the examiner. The TRC provides an overall scaled score (T score; $M = 50$, $SD = 10$). Students' scores can range from 0 to 63. The alpha coefficient of this instrument was .81.

Assessment of Linguistic Comprehension. The Assessment of Linguistic Comprehension (ALC; Rustioni & Metz Lancaster, 1994) is a standardized test assesses the comprehension of target Italian morphosyntactic structures: active, negative, passive, relative, temporal, and adversative sentences. For each trial, the examiner orally presents a sentence and the child must choose the correct picture of four possibilities. Sentences contained salient morphosyntactic cues, such as gender and number agreement, conjunction, negation, and different types of phrasal structures (i.e., relative, passive, temporal). The test provided levels, based on the age of each child, the raw score obtained, and the level of difficulty of each item. The levels range from as follows: insufficient, very low, medium low, medium, medium high, good, and very good. Level scores were used for analyses. For example, children per provided with the sentence "The girl walks with her

schoolbag,” and with four pictures showing: (a) the correct image, (b) the girl getting her schoolbag from a hook, (c) the girl sitting and reading a book with the schoolbag on her side, and (d) the girl walking with a friend, who is carrying a schoolbag. The alpha coefficient of this instrument was .86.

Data analysis

The method chosen to handle missing responses was pairwise deletion. In the first and second time point, data were collected for 675 participants. Thirty-nine children were excluded from the data analysis because they had missed one or more tests (e.g., absence from school). Each variable's extreme outliers were identified and removed by observing the relative box-plots if derived from data or sampling errors. A total of 15 outliers was identified and removed, reducing the sample to 650 participants. The removal of outliers did not change the direction of statistical analyses. Data analysis for the first and second time point were conducted on the sample of 650 participants. In the third time point, the sample was randomly reduced to 115 participants, and followed through Grade 1. No missing data or outliers were reported in this step. Data analysis for the relationships between the third time point and the previous two time points were conducted on the sample of 115 participants.

We examined the skewness and kurtosis of each variable's probability distribution to verify the distribution of variables (narrative competence at the three time points, TRC, and ALC). All variables were normally distributed, except for ALC assessed at the beginning of the last year of kindergarten, which was normalized through an increasing monotonic transformation (Fox, 2008). ALC assessed at the end of the last year of kindergarten was excluded from the analyses because children's performances reached a ceiling effect.

Research questions were explored through a path analysis model with partial disaggregation conducted with the statistical software MPlus version 5 (Muthen & Muthen, 2002). Partial disaggregation was adopted to create parcels for the narrative competence components (i.e., structure, coherence, and cohesion) and verify the existence of a latent factor at each time point (Coffman & MacCallum, 2005). All analyses were conducted using full information maximum likelihood estimation with robust standard errors. The degree of model fit was assessed using the chi-square goodness-of-fit statistic, the root mean square error of approximation (RMSEA), and the comparative fit index (CFI). Hu and Bentler (1999) suggested presenting at least two indexes of fit, besides the chi-square analysis, and characterize a model with an RMSEA of .05 or less and with a CFI of .95 or more as an adequate fit. Indeed, chi square greatly depends on the sample size, making it not necessarily a reliable statistic to test the goodness of fit of a model.

Results

We report the descriptive statistics of all the variables measured in this study in Table 1. Children's comprehension of relational concepts in both time points was higher than the means

Table 1. Descriptive statistics of children's performance in TRC, ALC, and narrative competence (structure, cohesion, and coherence) at the beginning of the last year of kindergarten, e at the end of the last year of kindergarten, and children's narrative competence (structure, cohesion, and coherence) in Grade 1.

	Time Point 1				Time Point 2				Time Point 3			
	Min	Max	<i>M</i>	<i>SD</i>	Min	Max	<i>M</i>	<i>SD</i>	Min	Max	<i>M</i>	<i>SD</i>
TRC	26	68	49.69	8.36	33	67	54.77	6.98				
ALC	3	5	4.59	0.63	0	5	4.70	0.81				
NC_Structure	1	5	2.01	1.25	0	5	2.85	1.43	0	5	3.07	1.35
NC_Cohesion	1	3	1.42	0.81	0	3	1.60	0.90	0	3	2.04	0.78
NC_Coherence	1	3	1.61	0.90	0	3	1.89	0.87	0	3	1.92	0.79

Note. ALC = Assessment of Linguistic Comprehension; NC = narrative competence; TRC = Test of Relational Concepts.

Table 2. Correlations between variables included in the study ($n = 650$ for Time 1 and Time 2; $n = 115$ for Time 3).

	TRC_1	ALC_1	Str1	Cohs1	Cohr1	TRC_2	Str2	Cohs2	Cohr2	Str3	Cohs3	Cohr3
TRC_1	1											
ALC_1	.47**	1										
Str1	.13**	.09*	1									
Cohs1	.07	.09*	.40**	1								
Cohr1	.07	.07	.55**	.48**	1							
TRC_2	.51**	.34**	.09*	.11**	.04	1						
Str2	.16**	.12**	.36**	.31**	.32**	.14**	1					
Cohs2	.15**	.16**	.24**	.44**	.22**	.23**	.58**	1				
Cohr2	.12**	.10**	.33**	.28**	.46**	.08*	.72**	.48**	1			
Str3	.31**	.42**	.29**	.29**	.26**	.16	.39**	.31**	.24*	1		
Cohs3	.27**	.33**	.28**	.23*	.29**	.21*	.30**	.21*	.29**	.64**	1	
Cohr3	.24*	.21*	.17	.19*	.15	.13	.34**	.24*	.21*	.79**	.55**	1

Note. ALC = Assessment of Linguistic Comprehension; Cohr = narrative competence – coherence; Cohs = narrative competence – cohesion; Str = narrative competence – structure; TRC = Test of Relational Concepts.

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

reported in the TRC manual (32.58 for children between 5 and 5.5 years old; 40.92 for children between 5.6 and 5.11 years old). According to the ALC manual's indications, children's comprehension of target Italian morphosyntactic structures was, on average, medium high, almost good. Concerning narrative competence development over the three time points, on average children's story structures went from sketch narrative at Time 1 to incomplete narrative at Time 3. Cohesion and coherence were low on average but showed a growth over time.

Correlation scores between variables included in this study are presented in Table 2. Almost all variables correlated with each other. The three components of narrative competence correlated with each other in all three time points.

Path analysis exploring the impact of children's comprehension of relational terms and morphosyntactic knowledge on narrative competence

The path analysis model hypothesized in the research questions fit the data adequately, $\chi^2(42) = 156.57$, $p < .001$, CFI = .97, RMSEA = .06 [90% CI: 0.05, 0.08]. The model explained a significant portion of variance of the three latent variables, narrative competence at the beginning of kindergarten ($R^2 = .03$), narrative competence at the end of kindergarten ($R^2 = .38$), and narrative competence in primary school ($R^2 = .37$). Table 3 reports the estimates for all the paths and covariances tested in this path analysis model. All nonsignificant paths and variables were removed from the model (see Figure 2).

Analyses confirm the existence of a narrative competence construct at each time point, as the structure, cohesion and coherence components significantly saturated narrative competence at the beginning and end of the last year of kindergarten, and in Grade 1. Results also confirm the existence of an autoregressive effect of narrative competence: children's performances in Grade 1 are influenced by their performance at the end of the last year of kindergarten, which in turn are influenced by their narrative competence performance at the beginning of the school year. Children's comprehension of relational terms at the end kindergarten contributes to their narrative competence at the end of kindergarten. On the contrary, children's morphosyntactic knowledge at the beginning of the last year of kindergarten contributes to narrative competence in Grade 1.

To better interpret the results, it is useful to explore the correlations between children's comprehension of relational terms and morphosyntactic knowledge, and narrative competence components (see Table 2). At the end of the last year of kindergarten, children's comprehension of relational terms correlates significantly with all three components of narrative competence, with a higher effect size for cohesion ($r = .23$), followed by structure ($r = .23$) and coherence ($r = .08$).

Table 3. Standardized estimates of path analysis.

Path	Estimate	SE	<i>p</i>
NC1 BY			
Structure1	1.00	0.00	999.00
Cohesion1	0.96	0.06	<.001
Coherence1	1.11	0.07	<.001
NC2 BY			
Structure2	1.00	0.00	999.00
Cohesion2	0.77	0.03	<.001
Coherence2	0.96	0.03	<.001
NC3 BY			
Structure3	1.00	0.00	999.00
Cohesion3	0.70	0.09	<.001
Coherence3	0.88	0.09	<.001
NC2 ON			
NC1	0.71	0.05	<.001
NC3 ON			
NC1	-0.08	0.19	.67
NC2	0.51	0.14	<.001
NC1 ON			
TRC1	0.01	0.01	.13
ALC1	0.01	0.01	.33
NC2 ON			
TRC1	-0.002	0.01	.75
ALC1	0.01	0.01	.40
TRC2	0.02	0.01	<.001
NC3 ON			
TRC1	0.03	0.02	.12
ALC1	0.07	0.03	.02
TRC2	-0.01	0.02	.32

Note. ALC = Assessment of Linguistic Comprehension; NC = narrative competence; TRC = Test of Relational Concepts.

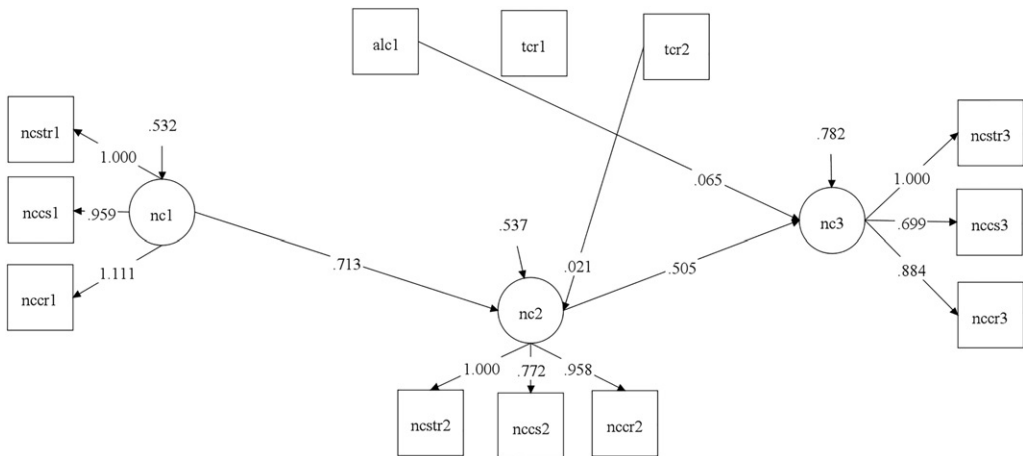


Figure 2. Graphic representation of the path analysis model. Paths from time 1 to time 2 are estimated for *n* = 650, whereas paths from time 1 or time 2 to time 3 are estimated for *n* = 115. Note. NC = Narrative competence; Str = Narrative competence – structure; Cohs = Narrative competence – cohesion; Cohr = Narrative competence – coherence; TRC = Test of relational concepts; ALC = Assessment of linguistic comprehension.

Children’s morphosyntactic knowledge assessed at the beginning of the last year of kindergarten correlates significantly with all three components of narrative competence in Grade 1, with a higher effect size for structure (*r* = .42), followed by cohesion (*r* = .33) and coherence (*r* = .21). Overall, the average effect size of correlations between morphosyntactic knowledge and narrative competence is higher than the one between comprehension of relational terms and narrative competence.

Discussion

This prospective cohort study investigated the contribution of children's early comprehension of relational terms and morphosyntactic knowledge in kindergarten to the development of narrative competence in kindergarten and Grade 1. Firstly, results of this study confirm the existence of an autoregressive effect for narrative competence. The analysis of the significant paths shows that narrative competence scores are associated across the three time-points of the study (beginning and end of the last year of kindergarten, and Grade 1), in accordance with previous studies that supported the importance of investigating developmental trends (e.g., Hooper, Roberts, Nelson, Zeisel, & Kasambira Fannin, 2010). As it can be inferred from correlations scores, autoregressive effects are particularly strong at the level of the single components within the last year of kindergarten, as each of them is specifically associated with its early antecedent (early structure correlates with later structure, early coherence correlates with later coherence, and early cohesion correlates with later cohesion). Moreover, structure at the beginning of the last year of kindergarten is associated with coherence at the end of the school year, confirming the existence of a link between these two macrostructural components of narrative competence (Halliday & Hasan, 1976; Hudson & Shapiro, 1991). Children's initial narrative competence at the beginning of the last year of kindergarten predicted narrative competence at the end of the school year, but not narrative competence in Grade 1. In line with previous studies (see, for instance, Pinto et al., 2015), we believe that this result confirms that entrance in primary school marks a transition in children's narrative competence development. The "cognitive consequences of literacy" (Olson, 1986) derive from not only the acquisition of reading and writing skills, but also the fact that literacy directs children's attention to the linguistic form of an utterance, thus developing children's metalinguistic awareness. In other words, schooling shifts children's attention to the communicative functions of speech, to its representational or cognitive ones. Results from the study contributed to analyze the impact of children's comprehension of relational terms and morphosyntactic knowledge on narrative competence, a rather neglected area of research within studies investigating the relationships between language and narrative competence. According to our data, children's morphosyntactic knowledge in kindergarten represents a basis for later narrative competence development. The particularly strong association with structure of children's narratives in Grade 1 suggests that morphosyntactic knowledge represent the scaffold to construct a sentence and might offer a scaffold for the story that the child wants to tell. Children's ability to manipulate words to create meaning and connect words to each other might explain their ability to create a macrostructure in a story, in which different components are inter-related to each other. Moreover, children's ability to reason on sequences of events with before and after (McColgan & McCormack, 2008), which typically develops at 5 years old, might explain the link between morphosyntactic knowledge and cohesion. Structure is probably the most important narrative competence component in young children's narrative competence (Pinto, Tarchi, & Accorti Gamannossi, 2018); thus, being able to identify early precursors of it is crucial to foster children's progress.

Children's early comprehension of relational terms at the end of the last year of kindergarten brings a significant but small contribution to narrative competence at the end of the last year of kindergarten. This link is mostly explained by the association between comprehension of relational terms and cohesion scores in children's narratives. When children are telling a cohesive story, they need to use language to express their knowledge on the physical and social context, as well as the relationships between contextual elements. However, children can use an appropriate linguistic form only when they can understand the reference in the reality. In other words, children knowledge of the concept *above* helps them to cohesively represent in a story the relationship of two objects that are above each other. This result confirms that the ability to comprehend relational terms is important to comprehend stories and describe situations or events to others (Boehm, 2004). However, Boehm also noted that by 5 years old, children have an almost

complete mastery of terms referring to relational terms, which could explain the limited impact of this variable when assessed at the end of kindergarten on children's narrative competence development.

Limitations and direction for future research

A few limitations affect the results of this study. Firstly, prior studies have extensively demonstrated that children's performance depend on how they are prompted to tell a story (Spinillo & Pinto, 1994) or in which conditions they have to tell it (Pinto et al., 2016). It is difficult to delineate a clear and coherent framework of language predictors of narrative competence, as the literature on the topic is rather fragmented. Some scholars have explored written narrative competence (Olinghouse & Leaird, 2009), and some others oral narrative comprehension (Kim, 2016) and oral narrative production (Pinto et al., 2015). Thus, future researchers should explore whether the specific contribution of children's early comprehension of relational terms and morphosyntactic knowledge in kindergarten to the development of narrative competence explored are limited to the narratives prompted in this study or extend across tasks and conditions. Moreover, considering the impact of formal literacy on narrative competence, we wonder whether different school system would affect differently the relationship between cognitive-linguistic variables and narrative competence. For instance, whereas in most European countries (e.g., Italy, France, Spain) the formal learning of reading and writing skills begins in primary school, some countries introduce it earlier (e.g., England, Malta, Turkey), which in turn could reduce effect sizes of the relationships found in this study. Finally, we found a ceiling effect for morphosyntactic knowledge by the end of the school year, whereas according to the literature this ability continues to develop (Carlisle, 2000). Future researchers should use different measures standardized for school-age children to explore the link between morphosyntactic knowledge and narrative competence in later ages.

Conclusion

The findings of this study contributed to our understanding of narrative competence development in several directions. It emphasized the role of two cognitive-linguistic skills neglected by previous studies, comprehension of relational terms and morphosyntactic awareness, on narrative competence development. It did so by controlling for the autoregressive effect of narrative competence itself, and by identifying a specific temporal window in which these variables exert their greatest contribution to narrative competence development. The contribution of comprehension of relational terms and morphosyntactic awareness is asynchronic, with the former supporting narrative competence at the end of kindergarten, and the latter having a long-term influence on narrative competence in primary school.

Entrance in primary school might have a specific effect on children's development of skills and competences, such as narrative competence, an effect defined as cognitive consequences of literacy (Olson, 1986). Past studies suggest that schooled narratives are different than home narratives (Schick & Melzi, 2010). For example, home narratives are scaffolded by parents through conversations about past experiences and book-sharing interactions (Schick & Melzi, 2010), whereas schooled narratives are individual productions and are minimally dependent on the resources and support of the physical and situational contexts in which they are produced (Fang, 2001). Studies suggest also that narrative skills can be improved at early ages (Pesco & Gagné, 2017), and early interventions are warranted given the documented difficulties that students with learning disabilities experience with oral narratives (Nathanson, Crank, Saywitz, & Ruegg, 2007). Results from this study suggest that an early intervention on children's comprehension of relational terms and morphosyntactic awareness might support children's oral narrative competence in their transition from spontaneous storytelling (e.g., "Yesterday Freddy's parents found a cat in

the street and brought it home.”) to schooled narratives (“One day, Amy and Jack, Freddy’s parents, were walking on the streets. Then, they saw a cat and decided to take it home.”) (Fang, 2001). Slowing down the pace of the task, modeling target morphosyntactic forms, recasting or expanding children’s utterances, using questions to elicit target morphosyntactic forms, and giving direct instructions are all examples of successful techniques to improve children’s morphosyntactic knowledge (Proctor-Williams, 2009). Children’s comprehension of relational terms may be improved by fostering children’s content familiarity (Johnston & Welsh, 2000) and mental representation of the relationship being described (Carni & French, 1984).

These findings are of great relevance if we consider the importance of cultivating children’s language skills before introducing them to formal reading instruction (Saracho, 2017a). In line with the literature on the topic (Saracho, 2017b), we emphasize the importance of early language skills for children’s academic achievement.

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