ARTICLE

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Oral discourse in the preschool years and later literacy skills

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ABSTRACT
This study investigated relationships between preschoolers' oral discourse and their later skill at reading and writing. Thirty-two children participated in narrative and expository oral language tasks at age 5 years and reading comprehension and writing assessments at age 8 years. Children's ability to mark the significance of narrated events through the use of evaluation at age 5 predicted reading comprehension skills at age 8. Children's ability to represent informational content in expository talk at age 5 also predicted reading comprehension at age 8. Control of discourse macrostructures in both narrative and expository talk at age 5 was associated with written narrative skill at age 8. These findings point to a complex and differentiated role for oral language in supporting early literacy.

KEYWORDS
Language development; literacy; longitudinal study; narrative

INTRODUCTION

Out of a general concern for understanding the way that oral language development may support the acquisition of literacy, researchers have looked for oral language precursors of written language skills (Reese, 1995; Scarborough, 1990; Wells, 1985; 1986). Although there is abundant evidence linking lexical and syntactic development in the preschool years to later literacy (Mason, Stewart, Peterman & Dunning, 1992; Snow, 1983; Walker, Greenwood, Hart & Carta, 1994), research evidence for a relationship between discourse development and literacy is more limited. While current conceptions of literacy link children's written language competence to their apprenticeship in producing oral stories, reports and other extended discourse forms, researchers have demonstrated only moderate or non-significant relationships between more global measures of these oral discourse abilities and later literacy (Mason *et al*., 1992; Roth, Speece & Cooper, 2002; Snow, Tabors, Nicholson & Kurland, 1995; Speece, Roth, Cooper & De la Paz, 1999; Walker *et al*., 1994).

Work by Snow and others suggests that not all oral discourse abilities are immediately relevant for literacy; for example, children's conversational abilities show little relationship to either literacy or to other discourse competencies in the elementary school years (Snow, 1983). Skill at constructing arguments or using figurative language, although crucial for social success in many communities, may be only marginally relevant to the kinds of literacy tasks that most children encounter in the early years of schooling (Heath, 1983; Hemphill & Snow, 1996). In addition, relationships between oral language abilities and literacy may vary, both for different literacy skills and for stages of their acquisition (Mason *et al*., 1992; Snow, Barnes, Chandler, Goodman & Hemphill, 1991; Snow & Dickinson, 1991). For example, at the very earliest stages of reading development, when decoding skills are crucial for acquiring fluency, vocabulary knowledge and phonemic awareness may be the most important language skills for the reader; however, as reading abilities mature, a different set of text-level language skills may become more influential in overall reading success (Perfetti, 1988; Roth, Speece, Cooper & De la Paz, 1996). Because literacy skills such as written narration and reading comprehension are only modestly intercorrelated (Juel, Griffith & Gough, 1986), it is plausible that a somewhat separate set of oral language competencies may underlie success at each of these domains of literacy. Thus a more differentiated account of oral language competence may be an important prerequisite to investigating such links.

Discourse competencies important for later literacy

We theorize that there are at least three specific areas of discourse ability that may be critical for literacy in the elementary school years: (1) the ability to control text-level macrostructures, for example, conventional high point structure in oral narrative (Labov, 1972) and superordinate/subordinate ordering in expository text; (2) the ability to represent adequately the information content of the discourse; and (3) the ability to mark at a clause-by-clause level the significance of information presented, using strategies that narrative theorists have termed evaluative (Labov & Waletzky, 1967; Peterson & McCabe, 1983).

Understanding text-level macrostructures is critical for recognizing the diverse patterning of information in different kinds of texts, for example, the story grammar organization of a classic narrative and the 'funnelling' from general to specific information that is evident in the organization of many types of expository texts. Macrostructure knowledge can develop through experience producing these forms in oral discourse, often through the support of adult partners who prompt the child for structural elements that may be absent from the child's telling, e.g., 'how does the story end?' (Minami, 1996; Peterson & McCabe, 1994). As children encounter narrative and expository macrostructures in written texts, insights about these discourse forms can support the ability to recognize critical units of information and to relate these units to each other within the form of the particular discourse type. Genre-specific macrostructures guide the organization of what comprehension researchers call the 'situation model', a reader's internal account that integrates important semantic elements of a text into an overall understanding (Kintsch, 1998; Zwaan, 1996). In addition, control of text-level macrostructures is one of the important skills that children call on as they become authors of their own written texts, learning for example to produce simple, factual reports or narratives that make use of classical story structure (Kamberelis & Bovino, 1999).

Learning how to represent information content in extended discourse such as narrative is a process that also begins in face-to-face conversation, supported by adult prompts for greater clarity, specificity and referential adequacy (Levy, 2003; Peterson & McCabe, 1994; Reese, Haden & Fivush, 1993). As children's oral stories and reports become fuller and less dependent on shared knowledge with their conversational partners, reports and stories take on some of the characteristics of 'decontextualized' written texts: a relatively complete message, adequately explicit referents and an assumed audience that is not privy to important contextual information (Donaldson, 1978; Snow & Dickinson, 1991; Wells, 1985). Producing oral reports and stories with these characteristics can serve as preparation for producing longer and more explicit written texts, the kinds that are required in many academic settings. In learning how to produce fuller and more elaborated oral discourse, children may also learn to attend to the elaboration of information in written texts, a critical skill for reading comprehension.

Even the youngest narrators mark their stories with evaluative elements that signal the significance of the information reported (Miller & Sperry, 1988). These elements include forms, for example intensifiers and delimiters, which lexically qualify the information reported. In addition, narrators make use of more interactive or 'performed' kinds of evaluation, for example repetition and exaggerated stress. Performed evaluation marks the importance of particular text segments but requires the listener's collaboration in determining the specific meaning that is signalled. Finally, young narrators learn to report story participants' cognitive, emotional and physical states, information that elaborates on the motivation behind story happenings and on many of the consequences of these happenings. In learning to use these different types of evaluation in oral narratives, children may be acquiring a sensitivity to similar uses of evaluation in written discourse. Sensitivity to lexical qualifiers can support the ability to attend selectively to more or less significant information presented in both expository and narrative written text. Close attention to stories' representation of

character plans, intentions and reactions can underlie the ability to make both very local and more global story inferences, important in the comprehension of narrative text.

Through early practice using evaluative strategies in oral storytelling, children may also be acquiring skill at using such techniques in their own narrative and other forms of writing. These evaluative techniques are important for displaying the author's own perspective on the characters and events described in a narrative and for qualifying and elaborating upon information provided in a description or report.

Plan for this study

Given claims about the important role for oral discourse in supporting children's reading and writing development, we sought to assess whether the level of competence attained in oral discourse skill in the preschool period predicts later success at literacy. As part of a larger longitudinal study of language development in a group of children from age 5 to 8 years, we therefore examined early oral discourse for evidence of the ability to control text-level macrostructures, produce informative text, and evaluate the significance of the information reported. We related these oral discourse competencies at age 5 to measures of written language comprehension and production at age 8. We chose to assess discourse abilities at age 5 because it marks the endpoint of oral language development before formal literacy instruction begins (Ely, 2001). We assessed literacy abilities at age 8 because this is the age when most children begin to be able to produce and comprehend extended written texts. Our assessments of literacy achievement at 8 focused on domains that are the central focus of literary instruction in the first years of school: reading aloud, demonstrating comprehension of short passages and writing fictional narratives (Kamberelis & Bovino, 1999).

Two hypotheses about the relationships between discourse competence and later literacy guided our analyses. First, we hypothesized that oral discourse skill at age 5 – in particular, skill at producing text-level macrostructures, providing information and marking its significance – would predict reading and writing skill at age 8, even controlling for other measures of language skill. Second, drawing upon previous work by literacy researchers (Heath, 1983; Hemphill, Feldman, Camp, Griffin, Miranda & Wolf, 1994; Hemphill & Snow, 1996; Snow & Dickinson, 1991), we hypothesized that specific dimensions of oral discourse skill would show differentiated patterns of association with later achievement in reading and writing.

METHOD

Participants

We explored oral discourse/literacy relationships in a sample of children whose school and home environments provided at least adequate support for literacy development, thus avoiding the likelihood that factors other than discourse competence would

overwhelmingly account for children's literacy attainment. We also focused on a group of children whose early morphosyntactic development was normal. The 32 focal children for this project were participants in a longitudinal study of language development from ages 5 to 8 years, conducted in the greater Boston area (Snow, Pan, Imbens-Bailey & Herman, 1996). Half of the children were male and half were female; 54% were middle class and 46% were working class. All the children were White. Each of the children had scored in the normal range on morphosyntactic, lexical and conversational measures at 20 months (Pan, Snow & Willett, 1993). When discourse assessments were collected at age 5, the children's ages ranged from 5;2 to 5;7. When the children's literacy skills were assessed three years later, their ages ranged from 8;2 to 8;9.

Procedure

All assessments at ages 5 and 8 took place in the children's homes, with a parent present. To assess oral discourse abilities, we used semi-structured tasks that required children to produce extended discourse with little adult support. From a broader group of discourse tasks, we selected two that highlight the particular discourse abilities we hypothesize are important for later literacy, including one narrative and one non-narrative task: play narration and picture description. Our decision to assess the targeted abilities in two genres reflects a view that acquisition of narrative and non-narrative forms may proceed relatively independently in the preschool years, with possibly different associations with later literacy.

Telling a play narrative involves constructing and maintaining a self-contained narrative world, distinct from the surrounding conversational talk and action. A successful play narrative makes use of conventional story structure and elaborates on the content of simple themes (Wolf, Rygh & Altshuler, 1984). Play narratives are also a form in which frequent narrative evaluation occurs (Wolf, 1993). Participation in pretend play has been linked to later literacy because it offers opportunities to develop the kinds of explicit and decontextualized communication strategies that are characteristic of written language (Pellegrini, 1993; Vedeler, 1997).

Describing a picture, on the other hand, involves putting into words informative content that is provided visually. Competent picture descriptions are organized around a basic expository discourse structure, typically including a thematizing statement followed by thematically related details. Skill at producing decontextualized picture descriptions, descriptions that are maximally explicit, has been linked theoretically to the development of literacy (De Temple, Wu & Snow, 1991; Ricard & Snow, 1990).

Discourse production at 5

For the play narration task, the child was given a set of play animals. An interviewer introduced a story prompt involving verbal conflict among the animals and then asked the child to tell the rest of the story. For the picture description task, the child was shown a picture of a complex scene that the interviewer could not see, and was asked to describe the scene on audiotape so that another child could draw it later.

Both tasks were videotaped and then transcribed in syntactically defined clauses, using the conventions of the Child Language Data Exchange System (MacWhinney, 2000). After the videotapes were transcribed, a second transcriber checked the accuracy of the transcripts against the original video records.

Play narration

Narrative clauses

Clauses that described happenings in the story world of the toy characters were separated out from here-and-now conversational talk and tallied.

1. Child: Is it my turn now?
   Interviewer: You go now.
   Child: The lion cub said to the elephant, 'You look like a big fat purple grape.'

Textual evaluation

Each narrative clause was examined for the inclusion of evaluative elements that lexically modified or qualified the information reported. Textual evaluation included adjectives, intensifiers, and delimiters.

2. They had a *great*, *big* meeting.
   She walked a *little bit* farther.

Performed evaluation

Each narrative clause was also assessed for the use of evaluative elements that indirectly conveyed the narrator's attitude toward the information reported, through repetition, stress, onomatopoeia, or stylized sentence structure.

3. He was *mad, mad, mad*.
   They fell *splash* in the water.

Character states

Each use of internal state words – words that portray story characters' physical, cognitive and emotional states – was identified.

4. The *thirsty* dragon landed in the pond.
   He *thought* the lion was gone.
   The elephant was *mad*.

Plot structure and elaboration

The play narratives were assessed for their use of traditional 'high point' structure (Labov, 1972). Children received full or partial credit for a fully realized narrative high point and for a resolution closing. The narrative plots generated through play talk and

enactment were also scored for their degree of elaboration, on a scale from 1 to 6. The least elaborated plots included only one element, verbal or physical conflict between the toy animals. The most elaborated plots introduced multiple sub-plots, for example a search for a magic object, and included resolutions for each subplot.

Picture description

Descriptive clauses

Clauses that described the picture were separated out from here-and-now conversational talk or task talk and were tallied.

5. Child: And there's some uh pots and stuff hanging on the hook.
   Child: And a um …
   Child: I already said that.

Descriptive information

Using descriptions produced by competent older children, thirteen key pieces of information potentially generated in response to the picture were identified. Children were credited for each of these that they explicitly included in their descriptions. For example, in this picture description excerpt, the child was credited with producing three pieces of information: mention of a person at the stove, mention of the stove, and mention of cooking pots.

6. Child: A grandmother is cooking.
   Child: There's a stove with pots on it.

Deixis

Within picture description, uses of deictic forms of reference such as 'that thing' or 'this one here' were identified. These terms rely on the listener's shared access to the picture for adequate identification with the intended referents.

7. *That's* black.
   This has fire.

Expository discourse structure

The picture descriptions were scored for expository genre features that were displayed in competent older children's performance on this task. These include an initial global statement of central theme (e.g., 'It's a picture of people cooking'); major details presented first ('There's a family sitting around the kitchen table'); and secondary details presented last or omitted ('There are little green and red coloured squares on the floor'). The descriptions were also scored for the absence of narrative characteristics, i.e., no protagonist and only a minority of clauses describing events. Children's descriptions were credited with 1 point for each of these picture description genre features, resulting in expository discourse scores from 0 to 6.

Language assessment at 5

As a global measure of linguistic competence, the Index of Productive Syntax (IPSyn), a measure of morphosyntactic complexity in conversation (Scarborough, 1990), was obtained from 100-utterance samples of conversational language with a parent, collected at the same time as the 5-year-old discourse assessments. The range of IPSyn scores at age 5 was 70 to 101 ($M = 92.09$).

Literacy assessment at 8

Reading comprehension

The Gray Oral Reading Test (GORT-4, Widerholt & Bryant, 1992), a test of oral reading and comprehension of short narrative and expository passages, was administered when the children were 8 years old. The Gray Oral yields grade equivalent scores that reflect both the child's reading fluency on passages of increasing difficulty and the child's ability to answer basic comprehension questions about the passages read.

Written narrative

A narrative composition task was used to assess writing competence at age 8. Children were asked to write a story about a sequence of three-colour photographs showing a family of toy bears on an outing. The pictures depict a narrative problem and a possible narrative high point when a kite gets caught in a tree and one of the bears falls out of the tree after trying to free the kite. This set of photographs has been used previously with preschool children to assess oral narrative skills (Snow *et al.*, 1995) but was adapted for use as a writing prompt.

Because of our interest in predicting literacy skills at a relatively global level, we chose to use holistic scoring of the writing samples by literacy experts rather than primary trait assessment or analytic scoring (for discussion of these alternatives, see Greenberg, 1994; Mullis, 1984). Holistic assessment has been shown to be particularly sensitive to the dimensions of writing content and organization (Huot, 1990), aspects of writing that may reflect the influence of discourse skill.

Two elementary language arts specialists, using standard holistic scoring procedures for assessing overall quality, rated the written narratives produced by children at 8. The raters were both elementary literacy experts who teach writing pedagogy to teachers and serve as language arts supervisors for school districts. The literacy experts were first asked to identify anchor papers representing different performance levels from a set of papers written by another group of 8 year-olds, not the study children, in response to the same picture sequence. The raters were asked to discuss differences in these anchor papers, attempting to reach consensus with each other about definitions of different performance levels. Once the expert raters had developed a shared set of criteria for different levels of performance on this task, they independently scored all the papers from the other group of children, afterwards noting and discussing cases where their assessments varied. Finally, the raters were given the written narratives from children participating in this study and were asked to

Table 1 Discourse assessments at age 5 and literacy assessments at age 8

	Mean	*SD*	*Range*
Discourse assessments at 5			
IPSyn	92.09	7.00	70–101
Play narration			
Narrative clauses	55.94	58.68	1–281
Textual evaluation	10.81	16.65	0–80
Performed evaluation	1.53	2.23	0–9
Character states	5.47	8.18	0–40
Plot structure	1.10	1.68	0–4
Plot elaboration	3.14	1.43	1–6
Picture description			
Descriptive clauses	12.29	9.62	2–48
Information	7.25	2.79	1–13
Discourse structure	3.50	1.14	0–5
Deixis	2.22	2.04	0–8
Literacy assessments at 8			
Gray Oral grade equivalent	5.24	1.96	2–9.5
Written narrative holistic	2.18	0.85	1–4

sort them into the four levels of writing competence established through the earlier analysis. Raters sorted the papers independently; scores were averaged in the three cases where the two raters gave papers different scores. The raters were unable to score one of the papers because of its mixed use of two languages.

Reliability of coding

A second rater coded all the oral language, and literacy data and inter-rater reliability using Cohen's kappa was assessed. Inter-rater agreement (corrected for chance) ranged from 0.78 (for play narration plot structure and elaboration) to 0.86 (for holistic rating of written narrative competence).

RESULTS

Descriptive statistics for the oral discourse and literacy assessments are presented in Table 1.

Discourse competence at age 5

Children showed different degrees of discourse skill in the 5-year-old assessments. Some children, for example, produced play narratives that were highly evaluative and picture descriptions that were quite detailed, while other children generated narratives with little or no evaluation and picture descriptions that were vague and ambiguous. The more successful play narratives resembled this excerpt from the story told by Nate.

8. Nate: And he shot lots of flames on this tree [child holds a tree in front of the dragon]. And burned it down with the fire and it began to fire. And more and more. And all the animals gathered in a big pile on the edge [moves all the animals to the edge of the jungle mat]. Then the elephant came over and drinked up the water and spit it on the fire. And the fire went out.

Nate's story included textual evaluation in the form of lexical qualifiers ('lots of flames') and performed evaluation, accomplished through stylized repetition ('more and more'). Nate verbally reported story happenings, manipulating the toys to further illustrate central events. He generated complex event sequences (the animals take shelter together from the dragon's attack; the elephant cleverly challenges the dragon) that elaborated on the simple conflict theme introduced in the story prompt. Finally, he made use of conventional story structure, building up to a narrative high point, in which the dragon is defeated.

The less successful narrators relied on enactment, rather than verbal narration to relate events, and were unable to elaborate on the simple themes of conflict provided in the interviewer's scripted introduction to the task. The least skilled narrators, like Matt, produced narration only in response to direct prompts from the interviewer.

9. Matt: A big dragon. [child holds dragon and knocks over trees and animals]
   Interviewer: What's happening?
   Matt: He's wrecking the whole place.

The picture descriptions at age 5 showed similar variability in amounts of elaboration and in use of conventional discourse structure. The most skilled speakers began their descriptions, as Paula did, with a framing, thematizing statement ('it's a restaurant'). The successful descriptions used expository 'funnelling' techniques in which thematically central information is presented first, for example, for this picture, information about human actors and their activities related to the overall cooking theme. Successful expository organization results in less thematically central information being ignored or presented later in the discourse, for example peripheral information about characteristics of objects depicted in the picture. Paula's picture description is average for the sample in its representation of descriptive information, but is above average in its use of discourse structure and avoidance of deixis.

10. Paula: Um it's a restaurant.
    And there's somebody cooking.

There's somebody eating.
And there's somebody talking on the phone.
And um and the person who's eating is sitting on stool. And um that's about all.

The less skilful speakers related picture descriptions which were poorly organized and which conveyed little information about the main objects and activities depicted in the picture, like Elaine's description:

11. Elaine: The telephone.
What's that?
There's something to drink.
There's something.

Literacy skills at age 8

As a group, the children displayed impressive reading skills at age 8, with performances on the Gray Oral Reading Test averaging at a 5th-grade level and ranging from a low of about the 2nd grade to a high of almost the 10th. Children who scored at a 6th-grade level, for example, answered comprehension questions about a complex sports narrative that required close reading of information contained in subordinate clauses and interpretation of sophisticated evaluative adjectives and adverbs ('tense', 'severely'). Children who scored at the lower end of the range read a 2nd-grade passage concerning play in the snow, and answered literal recall questions that required identifying story setting and simple story sequence.

Overall, children were also relatively competent writers. The fictional stories they composed ranged from 3 to 14 sentences in length. Holistic ratings of the quality of the written texts ranged from 1 to 4, with a mean of about 2, suggesting most participants were able to write a fictional narrative with a basic story structure and some elaboration. The Appendix shows a written narrative rated 1 and a written narrative rated 3, illustrating the variability in writing skills within this sample of children.

Six of the written stories received a holistic score of 1, the lowest possible rating. Most of the written stories at this level began with an introduction of the story characters ('There were four bears') and several also used conventionalized story introduction strategies ('One day …', 'Once …'). Written stories rated 1 reported two or three narrative events, typically the core events portrayed in the prompt pictures: the bears flying a kite and the kite getting stuck in a tree. None of the written stories with this rating contained character dialogue, nor did the stories with the lowest rating contain both a narrative high point and a resolution closing. Narrative evaluation was characteristically absent from the lowest rated stories. Stories with a rating of 1 were short, ranging from three to five sentences in length.

Seventeen of the written stories received a holistic score of 2 or 2.5. These written stories reported the same core narrative events as the stories with the lowest rating, but provided more elaboration, either of the bears' attempt to get the kite down from the tree ('They sended the boy to climeb the tree') or of the consequences of this attempt to solve the central story problem ('But he fell down and hurt himself. But at least he got the kite.'). Consistent with this greater focus on story characters' intentions

and psychological or physical reactions, stories rated 2 included modest amounts of narrative evaluation, typically one or two elements ('They were all worried.'). Only one of the stories with this rating contained any character dialogue, and character delineation (description of the bears' attributes or personal characteristics) was minimally reported. Stories with this rating ranged from three to nine sentences in length.

Six written stories received a holistic score of 3 or 3.5. The stories with this rating provided more elaborated introductions than stories rated 1 or 2, including personal characteristics of the different story characters ('Two of the bears are small and three are big. One little bear is in a wagon wit lots of other things in it and the other is kicking a ball.'). Stories rated 3 or 3.5 embedded relevant descriptive information into reports of the basic sequence of narrative events ('the kite flew wright out of the little Bears hand and it got stuck in a nearby tree'; 'when he was just a baot to get the kite the brach fell down'). Descriptive information in these higher rated stories served to elaborate on the significance of the central story events. Narrative evaluation, although present in these stories, was not abundant, typically clustered at the narrative high point and focused – as in the stories rated 2 – on the characters' physical or psychological reaction to the bear's fall. All the stories rated 3 or 3.5, however, included a clear resolution of the story's problem. Nearly all the stories rated 3 reported character speech ('Are you all right said all of the bears at once'). Stories with this rating ranged from six to eleven sentences in length.

Two written stories received a holistic score of 4. Both stories with this rating began with more formal story introductions, giving names and other attributes to the story characters ('Benny. Andrew, Patrick, and the to youngest named Danny and Kevin were bears. They always play a lot together.'). These stories elaborated considerably on the basic sequence of events leading up to the kite becoming stuck in the tree ('After a while they began to get tired and careless. The one who was flying the kite let go by acsedent, and it floated up and got stuck in a nearby tree. After he was scolded at by the oldest he climbed up in the tree to get the kite.'). Like the stories rated 3 or 3.5, the stories given a rating of 4 used canonical narrative structure, including both a narrative high point and resolution. Particularly characteristic of these highest rated stories were reports of more sophisticated character intentions ('Andrew tried to help because he wished it dint come to the tree') and psychological reactions ('It was easier at first, but it got scaryer by the minute!'). Stories with the highest rating were ten and fourteen sentences long.

Simple correlations

Children's scores on the two literacy tasks at age 8, reading comprehension and written narrative, were not significantly correlated ($r = 0.23$). Because performance on the reading and writing tasks appeared to be distinct, in subsequent analyses we investigated oral discourse predictors of these two kinds of literacy performances separately. Estimated correlations between the age 5 discourse variables and these two age 8 literacy measures are presented in Table 2.

As Table 2 illustrates, a different set of discourse abilities at age 5 was associated with each 8-year-old literacy outcome. Children's use of two types of lexicalized

Table 2 Correlations between discourse abilities at age 5 and literacy skills at age 8

	Gray Oral	*Written narrative*
Play narration		
Narrative clauses	0.39*	0.17
Textual evaluation	0.49**	0.22
Performed evaluation	0.02	–0.06
Character states	0.57***	0.14
Plot structure	–0.04	0.46**
Plot elaboration	0.23	0.41*
Picture description		
Descriptive clauses	0.10	–0.09
Descriptive information	0.48**	0.19
Expository discourse structure	0.05	0.36*
Deixis	0.09	0.08

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

evaluation devices in play narratives (textual evaluation and character states) and their reporting of information in picture descriptions at age 5 were associated with reading comprehension performance at age 8, with correlation coefficients ranging from 0.39 to 0.57. In contrast, this same set of evaluative discourse skills at 5 was only weakly associated with later performance on the written narrative task, with correlation coefficients ranging from –0.06 to 0.22. Conversely, children's skill at imposing a plot structure on their play narrative and using conventional expository structure in their picture description at age 5 were both positively associated with 8-year-old performance on the written narrative task, with correlation coefficients of 0.46 ($p < 0.01$) and 0.36 ($p < 0.05$), respectively; these macrostructure skills, however, showed little relationship to 8-year-old performance on the reading comprehension task. In a similar pattern, plot elaboration in play narration at age 5 was significantly associated with later written narrative skill ($r = 0.41$, $p < 0.05$) but showed a nonsignificant association with reading comprehension.

These patterns of relationships suggest that reading comprehension may be supported by an early ability to elaborate on the content and evaluative significance of the information reported in oral discourse. In contrast, written narrative proficiency appears to draw upon an earlier ability to structure and organize discourse, using conventional macrostructures.

Intercorrelations between age 5 oral language variables are presented in Table 3. Morphosyntactic ability, as reflected by participant IPSyn scores, was significantly

Table 3 Intercorrelations among discourse variables at age 5

IpSyn	*Narrative clauses*	*Textual evaluation*	*Performed evaluation*	*Character states*	*Plot structure*	*Plot elaboration*	*Descriptive clauses*	*Descriptive information*	*Expository discourse structure*	*Deixis*
1.00										
0.35*	1.00									
0.22	0.54***	1.00								
0.38*	0.55***	0.42*	1.00							
0.28	0.48**	0.82***	0.26~	1.00						
0.05	0.09	0.24	0.04	0.04	1.00					
0.31	0.43*	0.45*	0.24	0.43*	0.39*	1.00				
0.17	0.30	0.21	−0.07	0.27	0.08	0.42*	1.00			
0.18	0.52**	0.54**	0.23	0.46**	0.15	0.43*	0.34	1.00		
0.11	0.16	0.12	0.12	0.06	0.15	0.11	−0.37*	0.48**	1.00	
−0.02	0.05	−0.02	0.12	0.09	−0.16	0.32	0.28	0.11	−0.16	1.00

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

associated with only two measures of discourse proficiency: the length of a child's play narrative in clauses ($r = 0.35$, $p < 0.05$) and the amount of performed evaluation present in the narrative ($r = 0.38$, $p < 0.05$).

Narrative length, as measured by the number of clauses in the play narratives, was strongly associated with the use of evaluation and elaboration in play narratives, as well as with the provision of descriptive information in the picture description task. Correlations between these variables ranged from a low of 0.43 to a high of 0.55, suggesting that narrative length is good index of the complexity of a discourse production, a finding supported by previous research (Allen, Kertoy, Sherblom & Pettit, 1994; Peterson & McCabe, 1983).

Length of narrative in clauses, however, was only marginally associated with the use of canonical narrative structure ($r = 0.09$), and number of descriptive clauses was actually negatively related to the use of expository discourse structure ($r = -0.37$, $p < 0.05$). Longer oral discourses at age 5 were therefore not necessarily more well structured. Interestingly, the variables indexing the structural quality of the narrative and expository discourse performances were each significantly associated with the variables marking the quality of the information presented within that particular discourse genre. The play narrative plot structure variable, for example, was moderately associated with the play narrative plot elaboration variable ($r = 0.39$, $p < 0.05$), and the picture description discourse structure variable was similarly associated with the descriptive information variable ($r = 0.48$, $p < 0.01$). These findings suggest that control of genre-appropriate macrostructures may be associated with children's ability to adequately represent information within a discourse genre.

Multiple regression analyses

In order to predict written narrative skill and reading comprehension skill at age 8, a series of multiple regression models was constructed, first for written narrative and then for reading comprehension. Because play narrative plot structure and plot elaboration were moderately intercorrelated and demonstrated parallel relationships with the literacy outcomes, we created a narrative structure composite variable using principal components analysis (Afifi & Clark, 1990). Our composite measure, plot structure and elaboration, indexed the ability to construct a highly structured and elaborated play narrative.

While the picture description structure and information variables also demonstrated moderate correlations with one another, these two features of picture description at age 5 showed opposing relationships with the literacy measures at age 8, and were thus retained in their separate raw forms. The ability to construct a highly structured description was associated with later written narrative proficiency while the ability to construct an informative description was associated with later reading comprehension skill.

We decided to maintain the integrity of each evaluation variable despite their high degree of intercorrelations because we felt it was important to consider the role of different types of evaluation in predicting literacy skill. The representation of character states and the use of textual evaluation such as qualifiers and delimiters were thus considered in their raw form as predictors of reading comprehension skill. Performed

evaluation, for example repetition for emphasis, emphatic stress and sound effects, showed no relationship with the literacy measures in our initial correlations (presented in Table 2) and thus was not included in the regression models.

Given the strong correlations between length of narrative and our narrative evaluation measures, we included narrative length as a control variable in the models that examined evaluation as a predictor of literacy. Because the length of picture description in clauses was moderately although not significantly associated with the amount of descriptive information reported, we also used number of descriptive clauses as a control variable in models assessing the predictive power of descriptive information. We did not use discourse length as a control variable in models exploring the predictive power of narrative or expository text structure because of the lack of a positive relationship between discourse length and text structure (see Table 3). Finally, we controlled for expressive language ability, using IPSyn scores, in each of the models predicting literacy skill.

Results of our multiple regression analyses are presented in Tables 4–6. Overall, results suggest that distinct oral discourse competencies at age 5 strongly predict later achievement in writing and reading extended text. Table 4 presents the taxonomy of regression models estimated to examine the relationship between discourse skill at 5 and written narrative proficiency at 8. The composite variable, plot structure and evaluation, which indexed the ability to generate highly structured and elaborate play narratives, and the expository discourse structure variable served as predictors of written narrative skill. Expressive language ability, assessed through participant IPSyn scores at age 5, served as a control variable. The full model, Model 4, indicates that the ability to control text-level macrostructures in narrative and expository discourse and the ability to construct elaborated narratives at age 5, together with children's expressive language ability, account for 36% of the variation in written narrative proficiency at age 8 ($R^2 = 0.36$, $p < 0.01$).

An increment to R^2 test confirmed the unique contribution of variables indexing control of text-level macrostructure to observed effects ($F = 3.62$, $p < 0.01$). Thus variation in the ability to construct structured and elaborated oral narratives and structured picture descriptions at age 5 results in considerable variation in 8-year-old written narrative performance, even when expressive language skills are identical. For example, two children having average IPSyn scores (e.g., 92.09), and discourse structure scores that were either one standard deviation above or below average, would be predicted to receive scores on the written narrative task that varied almost one and a half standard deviations from one another (e.g., a holistic score of 2.84 versus a score of 1.58).

Tables 5 and 6 present taxonomies estimated to examine the relationship between measures of oral discourse skill and reading comprehension. Table 5 presents findings from an examination of the effect of evaluation use in oral narrative at age 5 on later reading comprehension performance. In the models in Table 5, the use of textual evaluation and the representation of character states in play narratives were considered as predictors of later reading comprehension skill. Both expressive language ability, assessed by participant IPSyn scores at age 5, and narrative productivity, indexed by length of the play narratives in clauses at age 8, were employed as control variables. The full model, model 6, shows that the ability to mark

Table 4 Taxonomy of regression models for structure variables predicting written narrative skill

IPSyn			*Plot structure and elaboration*			*Expository discourse structure*			R^2	*dFE*	*F*	*p*
B	*SE(B)*	*t*	*B*	*SE(B)*	*t*	*B*	*SE(B)*	*t*				
0.02	0.02	0.75~							0.02	29	0.56	0.46
			0.40	0.12	3.23**				0.29	26	10.45	0.01
						0.27	0.13	2.09*	0.17	27	5.57	0.03
–0.009	0.03	–0.36~	0.38	0.13	3.02**	0.22	0.13	1.70~	0.36	24	4.55	0.01

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 5 Taxonomy of regression models for evaluation variables predicting reading comprehension

IPSyn			*Narrative clauses*			*Textual evaluation*			*Character states*			R^2	*df*	*F*	*p*
B	*SE(B)*	*t*	*B*	*SE(B)*	*t*	*B*	*SE(B)*	*t*	*B*	*SE(B)*	*t*				
0.04	0.05	0.77~										0.02	30	0.59	0.45
			0.01	0.01	2.35*							0.15	30	5.50	0.03
						0.06	0.02	3.01**				0.24	30	9.47	0.01
									0.14	0.04	3.77***	0.32	30	14.10	0.001
0.0002	0.05	0.003~	0.01	0.01	2.16*							0.15	29	2.66	0.09
0.02	4.11	0.80~	–0.02	0.01	–1.70~	0.05	0.04	1.20~	0.19	0.07	2.49*	0.39	27	4.27	0.01

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table 6 Taxonomy of regression models for elaboration variables predicting reading comprehension

Model	*IPSyn*			*Descriptive clauses*			*Descriptive information*			R^2	*dFE*	*F*	*p*
	B	*SE(B)*	*t*	*B*	*SE(B)*	*t*	*B*	*SE(B)*	*t*				
1	0.04	0.05	0.77~							0.02	30	0.59	0.45
2				0.02	0.04	0.52				0.01	29	0.28	0.60
3							0.33	0.11	2.93**	0.22	30	8.56	0.01
4	0.04	0.05	0.78	0.02	0.04	0.38				0.03	28	0.44	0.65
5	0.02	0.05	0.36	–0.02	0.04	–0.41	0.34	0.13	2.61**	0.23	27	2.63	0.07

** $p < 0.01$

lexically the significance of information presented in narrative discourse at age 5, together with expressive language skill and narrative productivity, account for 39% of the variation in reading comprehension skill at age 8.

The collective impact of the narrative evaluation variables above and beyond the effects of expressive language ability and narrative length was established through an increment to R^2 test ($F = 5.12$, $p < 0.01$). Variation in the ability to use qualifiers and delimiters and to report character internal states in oral narrative is therefore associated with considerable variation in later reading comprehension skill, even if expressive language skills and narrative productivity levels are the same. Two children who had average IPSyn scores (e.g., 92.09) and who produced play narratives that were average in length (e.g., 55.94) at age 5, yet employed textual and character state evaluatives at rates that were either one standard deviation above or below average, would be predicted to receive scores on the 8-year-old reading comprehension task that varied almost two standard deviations from one another (e.g., an 8.15 grade equivalent score versus a 4.80 grade equivalent score).

Table 6 presents regression models designed to assess the relationship between the informativeness of children's picture descriptions at age 5 and their later reading comprehension performance. Expressive language ability, assessed through IPSyn scores, was employed as a control variable, along with picture description length at age 5, given its moderate correlation with descriptive information. Our full model, model 5, indicates that the ability to represent information content in descriptive discourse at age 5, together with expressive language ability and length of description in clauses, account for 23% of the variation in reading comprehension skill at age 8.

The unique contribution of the ability to generate informative picture descriptions above and beyond the effects of expressive language ability and picture description length was established through an increment to R^2 test, comparing the full model, model 5, to the baseline model, model 4, which contained only IPSyn and descriptive clauses. Results suggest that variation in the ability to construct informative picture descriptions at age 5 results in considerable variation in later reading comprehension skill, even controlling for expressive language ability and length of picture description ($F = 3.40$, $p < 0.04$). Two children who had average IPSyn scores (e.g., 92.09) and picture description length at age 5 but who generated picture descriptions whose informativeness was rated as being either one standard deviation above or below average, would be predicted to receive reading comprehension scores approximately one standard deviation apart (e.g., a 5.68 grade equivalent score versus a 3.90 grade equivalent score).

DISCUSSION

Unlike the more generalized relationships between early narrative experience and later literacy that have been documented in other research (Pellegrini, 1993; Wells, 1986), we found differentiated relationships between particular oral discourse skills and separate domains of literacy. To the growing body of research which suggests that oral discourse competence supports early literacy (Cain & Oakhill, 1996; Feagans & Applebaum, 1986; Mason *et al.*, 1992; Reese, 1995; Tabors, Snow & Dickinson, 2001)

we add more specific findings that control of text-level macrostructures, use of narrative evaluation and provision of elaborated information may support the development of reading and writing abilities.

Although we found only weak associations between control of narrative and expository macrostructures, consistent with the view that macrostructures may develop separately for different discourse types (Uccelli, Hemphill, Pan & Snow, 1999), early skill at orally producing both kinds of text structure appeared to be important for later written narrative production. Control over the information funnelling strategies that are characteristic of expository texts (in which thematically central information is presented first and less central information is presented later) may be an important foundation for early narrative writing, along with the ability to generate a relatively elaborated plot in narrative talk. Our failure to document a strong relationship between evaluation in oral narrative and the production of more competent written narratives may reflect the fact that the 8-year-olds assessed were still functioning at a very basic level in their narrative writing. Exclusive of those children scoring at the highest performance level who did make some use of narrative evaluation (e.g., 'it got scaryer by the minute!'), differences in writing quality reflected the degree to which children could elaborate on simple themes (for example, the bears' plan to fly the kite, attempts to get the kite down out of the tree, the little bear's fall from the tree) and impose a conventional story structure on their narratives. If we assessed writing competence several years later, we might expect children who were skilled evaluators in oral discourse to perform better than their peers, but at this stage in the acquisition of writing competence, few children had the composing skills to employ much evaluation. Because of an expectation that 8-year-olds were likely to be more competent narrative than expository writers (see Kamberelis & Bovino (1999) for empirical support for this assumption), we did not attempt to relate preschool discourse competence to expository writing skill.

For reading comprehension, both the informativeness of oral discourse, indexed by children's ability to represent information in picture description maximally, and evaluative skill appeared important. We found strong associations between the use of lexicalized evaluation strategies and later reading comprehension, but we did not find that performed styles of evaluation predicted later reading skill. Performed evaluation, where significance is conveyed through stylized and emphatic use of language, is very characteristic of face-to-face oral storytelling in many communities but is infrequent in the kinds of written texts produced for children. Thus, within the broader array of evaluative strategies that children are acquiring in the preschool period (Bamberg & Damrad-Frye, 1991; Peterson & McCabe, 1983), lexicalized strategies may be most relevant for early literacy success and may be acquired at least in part through exposure to written text (Zevenbergen, Whitehurst & Zevenbergen, 2003). Oral control over specifically textual signals of the importance of particular units of information may underlie the ability to recognize and interpret similar signals, for example, lexical qualifiers or verbs expressing intentionality, when children encounter these forms in texts that they read independently (Maybin, 1999).

Informativeness in the context of the oral tasks we used at age 5 may index children's understanding of the responsibility of the speaker to put into words what is implicit in the speech situation, for example, to narrate rather than enact in pretend

play or to label objects in the picture description activity, even when the listener can see the pictured objects independently. This understanding, that verbal informativeness is communicatively and socially important, may be a metacommunicative insight which supports sensitivity to the purposes of elaboration in both narrative and expository written text. Understanding of the communicative and social purposes of elaboration may arise through home and school practices that encourage children to expand upon information they report verbally (Levy, 2003; Ucelli *et al*., 1999). Close attention to elaborated detail in text, a factor supporting success at traditional reading comprehension tasks like the one we chose, may be a product of this metacommunicative insight.

The lack of strong relationships between 5-year-old morphosyntactic skill and both the 5-year-old discourse assessments and the 8-year-old literacy assessments suggests that general language ability was not a common factor in the associations we documented. Children with superior morphosyntactic skills, as reflected in IPSyn scores of their conversational language with a parent at 5, performed no better on the play narrative and picture description tasks than children with average or below average IPSyn scores. Similarly, morphosyntactic skills at 5 were a poor predictor of 8-year-old literacy skill, a pattern that has also been demonstrated in other longitudinal studies (Feagans & Applebaum, 1986; Mason *et al*., 1992; Roth *et al*., 2002). Thus the discourse abilities that predict reading comprehension and writing abilities in the early school years may develop somewhat separately from other components of oral language.

The present study is limited by its focus on children whose early language development was normal, whose literacy skills appear to have been well supported in the early school years (as evidenced by very high mean scores on the reading assessment), and who were relatively homogeneous in ethnicity. Within a larger and more diverse sample, the relationships demonstrated here may in fact prove to be more complex, complicated by the possible effects of educational disadvantage and by greater unevenness in the development of oral language skill. Nonetheless, this study contributes empirical support to the belief that discourse abilities developed in the preschool period may be an important support for school success.

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APPENDIX

Written narratives at age 8 with scores of 1 (low) and 3 (high)

Example of a narrative rated 1

The bears are filying a kit.
The kit got stok in a tree.
The bears got the kit dono

Example of a narrative rated 3

One day a bear family was walking throo the woods.
One was fly a kite.
Then all of a sudden the kite got cot in a tree the child bear said, 'Don't wory I'll get it.'
So he clmbed the tree
Mom bear said 'Be carful!'
But then he sliped and fell.
Brother siad 'I'll get the docter.'
So he ran and got the docter.
The docter siad 'Stay in bed and don't climd tree for a Wille.'

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