

Noun Phrase Elaboration in Children's Spoken Stories

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During the school years, children develop a more formal or literate language style. By the time children enter school, they have learned a great deal about the structure of language, but their language development is not yet complete. Changes in syntax during the school years may be less apparent in informal conversational speech than in more challenging communication tasks because the later developing syntactic structures occur infrequently and only within specific discourse contexts (Nippold, 1995; Scott & Stokes, 1995).

This research examines one specific feature that is characteristic of a literate language style, namely, noun phrase elaboration. According to Westby (1991), literate language is less contextualized than conversational language so that critical information is conveyed exclusively by words and sentences (i.e., by the language itself) rather than through paralinguistic (e.g., gestural or intonational) means or contextual cues. This literate language style requires the use of more explicit vocabulary and more complex syntactic structures than is typically found in informal conversational speech (Horowitz &

ABSTRACT: Purpose: One feature of literate language, noun phrase elaboration, was examined in the oral fictional narratives of school-aged children.

Method: Two narratives were elicited from 5-, 8- and 11-year-old children, 1 in response to a picture sequence and 1 in response to a single picture. Noun phrases were categorized into 4 types.

Results: Simple designating noun phrases were produced by all children at age 5, simple descriptive noun phrases by all children at age 8, and noun phrases with postmodification by all children at age 11. All noun phrase types were produced by more children in object than in subject position and in the single picture than in the picture sequence context.

Conclusion: There are important developmental changes in noun phrase elaboration in the elementary school years as children learn to manage narrative contexts. Even within picture tasks, variations in visual depiction can affect the use of elaborated noun phrases (ENPs), with more descriptive language more likely to occur in narratives based on a single picture fantasy context than on a realistic picture sequence context. Performance expectations for types of ENPs within these contexts are provided. These findings will be useful to school clinicians in evaluating and working on narrative language within the elementary school period.

KEY WORDS: narrative, literate language, language assessment, syntax

Samuels, as cited in Westby, 2005). Competency in this literate language style is considered by experts to facilitate children's reading and writing development as familiarity with literate language features allows children to "code switch" to the written language genre (Greenhalgh & Strong, 2001). In light of current educational policies advocating that no child be left behind (No Child Left Behind Act, 2002), it is particularly important for school-based professionals to have a precise understanding of the developmental trajectory of literate language so that children who exhibit challenges in these areas can be supported through systematic interventions.

Four features contribute to a literate language style: conjunctions (other than *and*), mental and linguistic verbs, adverbs, and elaborated noun phrases (ENPs) (Curenton & Justice, 2004; Westby, 2005). These linguistic features clarify the child's meaning and enable the listener to build a mental model of the events, characters, and objects within a narrative (Greenhalgh & Strong, 2001). As noted earlier, this research focuses on one of these literate language features, ENPs. ENPs, along with other low-frequency syntactic features, are particularly sensitive indicators of linguistic growth in the school years (Nippold, 1998; Perera, 1986). ENPs are also sensitive indicators of the quality of children's language-learning environments, as the rate with which children develop ENPs has been linked to the rate with which these are heard within the classroom environment (Huttenlocher, Vasilyeva, Cymerman, & Levine, 2002).

The structures that children initially use in their writing are closely related to those they use in speech (Loban, 1976; O'Donnell, Griffen, & Norris, 1967; Perera, 1986). In a study by Michaels and Collins (1984), children who used literate language in their spoken narratives evidenced similar features in their written narratives. The strong link between oral and written language forms persists until at least age 9 or 10 (Kroll, 1981), at which point children start to differentiate written and oral forms. Evaluating the language forms used within oral narratives provides an opportunity to assess a child's use of a literate language style that is likely to influence written as well as oral language proficiency.

A narrative is a discourse-level communication in which an individual shares a real or fictional event through spoken or written language. Narrative discourse is linguistically demanding for the speaker, requiring knowledge of vocabulary and grammar as well as overall organization. Narrative ability is an important predictor of academic success (Feagens & Short, 1984; Gillam & Johnston, 1992; Snow, 1991) and can also be used to distinguish children with language impairment from their typically developing peers (Greenhalgh & Strong, 2001; Liles, Duffy, Merritt, & Purcell, 1995). Narratives can be analyzed at both a macrostructure level and a microstructure level. *Macrostructure* analyses consider the overall organization and components within the story (Liles et al., 1995; Ukrainetz, Justice, Kaderavek, Eisenberg, & Gillam, 2005); *microstructure* analyses focus on lexical and grammatical structures within the narrative (Justice et al., 2006; Liles et al., 1995; Scott & Windsor, 2000). Of the two, microstructure variables seem to be the better predictor of language impairment (Liles et al., 1995).

Most studies of narrative microstructure have focused on general language performance measures (GLPMs) that represent an entire sample through a quantitative measure and are sensitive to increases in development (Scott & Windsor, 2000). Examples of GLPMs include length and complexity measures such as mean length of T-units, mean number of words per subordinate clause, percentage

of complex sentences, mean number of subordinate clauses per T-unit, and proportion of grammatical T-units (Gillam & Johnston, 1992; Liles et al., 1995; Scott & Windsor, 2000). These measures are important for identifying language difficulty and tracking change in language skills, but do not readily translate into intervention targets. What is needed in addition to GLPMs is information about specific syntactic features.

Difficulties with syntax persist into the school years for children with language impairment (Stothard, Snowling, Bishop, Chipchase, & Kaplan, 1998) and negatively affect academic success (Catts, Fey, Zhang, & Tomblin, 1999; Scarborough, 2001). Grammatical deficits limit a child's ability to express meaning, encode a variety of messages, and participate effectively in discourse (Donahue, 1987; Leonard & Fey, 1991; Mentis, 1994). Syntax is, therefore, an important focus for language assessment and intervention for school-age children with language impairment. The current report focuses on one aspect of syntax, noun phrase elaboration, produced within oral narratives.

Noun Phrase Elaboration

ENPs contribute to the explicitness of character and object descriptions within a narrative. The following examples from Menyuk (1969) show how mastery of noun premodification enables a speaker to express information more concisely:

- (a) I see a house. It's made of wood. (3;11[years; months])
(b) I see a wooden house (5;11)
- (a) I see a house and another and another (4;11)
(b) I see three houses (6;0)

The sentences in (1a) could also be expressed as a relative clause, as illustrated below:

- I see a house that is made of wood.

ENPs are a particularly sensitive indicator of literate language development (Nippold, 1998; Perera, 1986) for several reasons. First, they are an important structure for providing both precision and descriptiveness in discourse. Second, there are indications that this structure may continue to develop in school-age children. Third, noun phrase elaboration differentiates language ability groups (Greenhalgh & Strong, 2001; Loban, 1976). Loban, for instance, reported noun postmodification to be used twice as often by children with high language ability than children with poor language ability. Children with language impairment have also been reported to produce less noun phrase elaboration than children with normal language skills (Greenhalgh & Strong, 2001).

Studies of noun phrase elaboration by school-aged children have largely focused on changes in frequency of use, calculated as the number of usages per T-unit. Greenhalgh and Strong (2001) reported a small but significant increase from age 7 to 9 in overall usage of ENPs (defined as all instances of noun premodification involving more than two modifiers as well as any instances of noun postmodification) within story retellings, with a decrease in usage at age 10. Earlier studies (Loban, 1976; O'Donnell et al., 1967) that looked separately at noun pre- and postmodification reported larger increases in frequency of use for both conversational and narrative samples. Loban observed a large and steady increase from first grade to twelfth grade in usage of one type of postmodification, relative clauses, during interview samples, with a doubling in usage between first and sixth grade. O'Donnell et al. reported a two-thirds increase

between the ages of 6 and 13 in the use of both noun premodification (i.e., adjectives and noun modifiers) and noun postmodification (i.e., relative clauses and noun-modifying prepositional phrases) in oral narratives about an animated cartoon.

Although demonstrating a developmental increase in frequency of usage, these studies do not provide information about the number of children who actually produced noun phrase elaboration at each age or grade. In a study by Menyuk (1969) of children ages 3 to 7 years, 87% of the children produced relative clauses in their conversational speech. Usage data was not, however, separated by age. Paul (1981) reported relative clauses to be produced in conversational speech by at least 50% of children when mean length of utterances (MLU) was 4.0 to 4.5, slightly before age 4. In contrast, Dassinger and Toupin (1994) observed a much lower rate for producing relative clauses in spoken narratives about a wordless picture book. In their study, only 17% of 3-year-olds and 25% of 5-year-olds produced relative clauses. Even at age 9, only 50% of the children produced any relative clauses in spoken narratives (Dassinger & Toupin, 1994).

We found no study of school-age children that investigated the number of children producing noun premodification. The only available data come from studies of preschool children. All of the 3-year-old children in Menyuk's (1969) study produced 3-element noun phrases with both noun modifiers (e.g., *I have a baby monkey*) and adjectives (e.g., *I want the red book*) in conversational speech. Other researchers (Braine, 1976; Miller, 1981) have found that some 3-year-old children (less than half) also produce noun phrases with three or more elements that may include more than one adjective (e.g., *my new velvet skirt*) or an adverb (e.g., *this very bumpy train*) in conversation. However, in their narratives, preschoolers primarily produce noun phrases with only a single modifier. In a study by Curenton and Justice (2004), for instance, noun phrases containing two or more modifiers were rarely produced by 5-year-olds in narratives about a wordless picture book.

Although usage of subject noun phrase elaboration increases during the school years, even 12-year-old children tend to use only the simplest noun phrases as subjects (Loban, 1976). In a review of published transcripts, Perera (1986) found no productions of complex subject noun phrases (i.e., noun phrases with multiple adjectives or postmodifying prepositional phrases) in spoken language before age 12, and only 40% of the 9-year-old children in a 1962 study by Strickland (as cited in Perera, 1984) produced subject relatives in conversational speech.

There is, therefore, limited data on school-aged children's use of ENPs in either conversational speech or spoken narratives, and much of these data come from older studies. Information is needed about both noun premodification and noun postmodification overall and about usage in subject position particularly.

Narrative Elicitation

Both single pictures and picture sequences have been used for eliciting narratives (Hedberg & Westby, 1993; Hughes, McGillivray, & Schmidek, 1997). Pearce (2003) found that a problem-based picture sequence yielded longer stories with higher episode complexity than did a single problem-based picture. This supports the view, suggested by Hedberg and Westby, that the more highly structured stimuli of a picture sequence is more supportive of narrative organization than is the less structured stimulus of a single picture.

In Pearce's (2003) study, syntactic complexity, as measured by mean length of c unit, did not differ between the picture sequence and single picture conditions. It could be the case, then, that use of a particular syntactic structure, noun phrase elaboration, also would not differ between the two conditions. Alternatively, there might be a difference in the use of noun phrase elaboration related to differences in the nature of the visual stimuli. Therefore, the current study included both a picture sequence and a single picture stimulus. Shapiro and Hudson (1991), in an investigation of picture sequence elicitation, found that a picture depicting a problem yielded longer and more complex stories than did pictures that just showed action. In the current study, both contexts depicted a problem.

AIM OF THE PRESENT WORK

The current investigation focused on the use of noun phrase elaboration within oral narratives produced by children at three ages in the elementary grades. The aim was to provide a description of the development of one type of structure within a narrative context that could serve as a guide for clinical judgments concerning the identification of children with language deficits and for decisions about targets for intervention. Because of the gradual nature of language development during the school years, clear differences may not be seen between contiguous age groups (Nippold, 1998). Therefore, narratives were analyzed from three age groups separated by several years rather than looking at noun phrase elaboration continuously for 1-year age intervals. Age 5 was selected as the lowest age because by that age, most children are capable of producing an oral narrative (Applebee, 1978; McCabe & Peterson, 1991). Eleven was chosen as the highest age because by that age, academic emphasis is switching from narrative to expository discourse, and there is some indication that narrative performance plateaus beyond this point (Justice et al., 2006; Ukrainetz et al., 2005).

Greenhalgh and Strong (2001) defined ENPs as noun phrases that had more than two modifiers preceding the noun (e.g., *the big green monster*) or that had qualifiers such as prepositional phrases or relative clauses following the noun (e.g., *the boy with the green eyes*). In the current study, we separated these ENPs into two categories of complex noun phrases based on the position of the modifiers before or after the head noun. In addition, we divided the simpler noun phrases into those with only one or with two pre-noun elements. Because we were interested in determining the age at which children could be expected to produce both simple and complex noun phrases, we looked at presence rather than the usage frequency of each noun phrase type (see Dassinger & Toupin, 1994, Menyuk, 1969, and Paul, 1981, for other studies that have looked at the presence of syntactic features).

Because context affects the choice of linguistic structures, we compared usage of ENPs for narratives that differed in type of contextualization. Specifically, we included two types of eliciting contexts—one of a realistic event depicted in a picture sequence and the other of a fantasy event depicted in a single picture. We expected more noun phrase elaboration in response to the single picture context because this picture depicted a fantasy scenario involving multiple characters and objects compared to the picture sequence, which involved only a single character accomplishing one action per picture. The following research questions and predictions were investigated for four types of noun phrase elaborations occurring in

narratives elicited in two narrative contexts for children at 5, 8, and 11 years of age:

- At which ages will most of the children produce simple and complex noun phrase elaboration? Based on studies of pre-school as well as school-age children (Braine, 1976; Limber, 1973; Menyuk, 1969; Miller, 1981; Paul, 1981), our expectation was that this would occur for both types of simple noun phrases at age 5, for complex premodification with more than two modifiers at age 8, and for postmodification at age 11.
- Is there a difference in the percentage of children at each age producing ENPs in object and subject positions? Our expectation was that at all ages, more children would produce ENPs in object position, and that there would be few instances of complex noun phrase elaboration in subject position at any age, with only simple elaboration produced by the majority of children at age 11.
- Is there a difference in the percentage of children at each age producing ENPs in the picture sequence and single picture contexts? As indicated above, our expectation was that at all ages, more children would produce noun phrase elaboration in response to the single picture context.

METHOD

Participants

Forty children from each of three age groups were randomly selected by age from a larger archival database that included 83 children at age 5, 192 children at age 8, and 134 children at age 11. Using 120 students (40 per group) to detect a moderate (.40) effect size difference for the between-subjects factor (age) with a Type I error rate of 5% provided a Type II error rate of less than 8%. Random selection yielded a sample with distribution properties that were similar to that of the larger normative sample in important ways. Because 5 of the children did not produce narratives in one or both contexts, the final total was 115 participants, 52 girls and 63 boys. Children classified for special education who were attending regular education classrooms were not excluded from the study. Information about specific disability classification was not available. Table 1 provides the demographic characteristics of the participants. Socio-economic status was not available for each child, but low-income children comprised 15% of the total sample, as estimated by the number of children qualifying for free/reduced lunch programs.

Procedure

Elicitation. The narratives were collected during the norming phase of the Test of Narrative Language (TNL; Gillam & Pearson, 2004). All children were seen individually at their school for one 20- to 30-min session. Examiners were the study authors and trained research assistants. A prenorming version of the test manual (Gillam & Pearson, 2004) provided instructions and explicit guidelines on allowable prompts during the narratives. To begin the task, the children were instructed that stories have “a beginning, things that happen, and an ending” and to tell the best story possible. The only allowable prompts were scripted queries, given when children paused for long periods of time or when children appeared to be finished (e.g.,

Table 1. Distribution of participants by gender, ethnicity, geographic location, and educational classification.

	Age			Total N = 115
	5yr (n = 36)	8yr (n = 40)	11yr (n = 39)	
Gender				
Male	16	21	23	60 (52%)
Female	20	19	16	55 (48%)
Ethnicity				
White	28	34	32	94 (82%)
Black	2	3	3	8 (7%)
Latino	6	2	4	12 (11%)
Other	0	1	0	1 (<1%)
Location				
Northeast	5	7	7	29 (16%)
Midwest	3	6	7	16 (14%)
South	6	7	4	17 (15%)
Southwest	13	10	10	33 (29%)
West	9	10	11	30 (26%)
Classification				
Regular ed.	35	35	38	108 (94%)
Special ed. ^a	1	5	1	7 (6%)

^aStudents in regular education classrooms classified as special education.

“Is there anything else you would like to add?”). The narratives were tape recorded in their entirety and were subsequently transcribed in university laboratories.

Examiners collected stories in three contexts in the following order: (a) story retelling of a nonpictured story, (b) story generation in response to a sequence of five pictures, and (c) story generation in response to a single picture. For the two generated stories, children first listened to a story told by the examiner about a picture or set of pictures and then made up their own story about a different picture or set of pictures. Because the data were collected as part of a norming study for a standardized test, the three narrative contexts were always administered in the same order.

Materials. For the current investigation, only the two generated stories were transcribed and analyzed for each child. In the first context (sequence), children were shown a series of five pictures about a boy who was experiencing a series of problems that prevented him from getting to school on time. In the second context (single), children were shown a single picture that depicted two children watching an alien family walk off a spaceship that had landed in a park.

Transcription. The narratives were transcribed by trained research personnel at university laboratories according to Systematic Analysis of Language Transcripts (SALT; Miller & Chapman, 2004) conventions. Utterances were segmented into T-units as defined by Hunt (1965) and also described in Hedberg and Westby (1993) and Hughes et al. (1997). Based on these authors, T-units were defined as consisting of one independent clause and any dependent constituents, including clauses and phrases. Clauses connected by a coordinating conjunction (i.e., *and*, *(and) then*, *(and) so*, *but*, and *or*) were divided into separate T-units when the subject was repeated. Conjoined clauses without a subject were, therefore, not separated into a separate T-unit. Embedded clauses, including clauses with a subordinating conjunction, were also, therefore, not segmented into a separate T-unit.

A consensus procedure was used for transcription. Following initial transcription, a second examiner independently listened to each audiotape while simultaneously examining the transcript in its entirety for errors. Discrepancies were discussed and agreement between examiners was obtained on all transcripts.

Analysis. Only narratives that were at least two independent clauses in length were included based on Labov's (1972) definition of a minimal narrative. The analysis included only T-units; non-clausal utterances were excluded from the analysis. Only on-topic T-units were included in the analysis (i.e., only language centered on the pictured events in contrast to external comments to the examiner). Noun phrases were classified into four types.

- Simple designating noun phrases (PRE1) composed of one pre-noun element in addition to the head noun. These noun phrases included a determiner element before the noun specifying the referent, but without any descriptive elements. Determiners included articles (*the boy*), demonstratives (*this morning*), possessive pronouns (*his shoe*), and quantifiers (*some tape*).
- Simple descriptive noun phrases (PRE2) composed of one descriptive element before the noun in addition to the determiner. Descriptive elements included adjectives (*a little boy*) and noun modifiers (*the kitchen counter*).
- Complex descriptive noun phrases (PRE3) composed of two or more descriptive elements before the noun, including adjectives, noun modifiers, and/or adverbs (*the weird yellow object*).
- Complex noun phrases with noun postmodification (POST) such as prepositional phrases (*a face like aliens*) or clauses (*a girl named Amanda; a dog that had fur*).

A decision rule was needed for coding certain noun phrases as compound nouns or as having a separate noun modifier. One-Look Dictionary Search (1996), an online dictionary scanning multiple dictionaries, was used to identify compound nouns. Noun–noun combinations listed as compounds in at least two dictionaries were considered as compound nouns; all other noun–noun combinations were transcribed as [modifier+noun]. (See the Appendix for the list of compound nouns as well as common noun–noun combinations that were not identified as compounds). Further, some noun combinations were transcribed as “giant words” and were not transcribed as noun phrases: *a little bit, all of a sudden, all the way (home), in a hurry, in a rush, and once upon a time*.

The codes for noun phrase type were entered by hand into the transcripts as utterance-level codes. Each of these codes was further qualified according to position within the utterance as subject or object. Participants were assigned scores of 0 or 1 based on the presence or absence of each type of noun phrase. Scores of 1 were assigned if there was one or more occurrence of the particular type of noun

phrase. Scores were assigned for each type of noun phrase within each context and for each position. The use of a binominal scoring system compensated for length because even short narratives could provide a single token of a noun phrase type. The output of the SALT program was used to assign scores for each variable.

Only participants who produced a narrative with two T-units in both contexts were included in the analyses. Four 5-year-old children and one 11-year-old child were eliminated from the original pool of 120 participants because their narratives were too short. Percentages are reported due to variation in subject numbers between groups.

Interrater agreement. Ten transcripts (25%) from each age group were randomly selected and independently rescored by a trained research assistant for the presence or absence of each noun phrase type in each transcript. Agreement between the original raters and the trained rater for these 30 transcripts was 100% for all four noun phrase types.

RESULTS

Noun phrase elaboration was assessed as a function of age (5yr, 8yr, 11yr), syntactic position (object, subject), and narrative context (single, sequence). Noun phrases were categorized into one of four types (PRE1, PRE2, PRE3, POST). Chi-square contingency analyses were used for this proportional binomial data with the statistical program Statview (SAS, 1998). A Bonferroni correction for an alpha level of .05 on each 3-type set of comparisons resulted in a conservative significance level of .0167 for all comparisons. Effect sizes were calculated as Cramer's *V* for 2 degrees of freedom and phi coefficient for 1 degree of freedom. Based on Meline and Schmitt (1997), effect sizes below .26 are interpreted as minor, .25–.40 as small, .41–.60 as medium, and over .60 as large. Preliminary analyses employing chi-square contingency tests for gender, ethnicity, and location showed no significant pattern of distribution for any of the noun phrase types. As a result, data were collapsed over these variables for all subsequent comparisons. Table 2 shows the number of T-units and Table 3 shows the mean length of T-unit for each of the contexts and for both contexts combined.

Noun Phrase Type as a Function of Age

Table 4 shows the percentage of children at each age who produced each of the noun phrase types at least once. PRE1 was produced by 100% of the children for all ages and consequently did not require further analysis. As hypothesized, the percentage of children manifesting PRE2, PRE3, and POST increased with age (see Figure 1). Three chi-square comparisons of age versus presence for PRE2, PRE3, and POST were significant ($p < .0167$): $\chi^2(2) = 12.817$,

Table 2. Number of T-units by context.

Narrative context	5yr			8yr			11yr		
	M	SD	Range	M	SD	Range	M	SD	Range
Sequence	16.6	5.3	7–31	23.5	6.0	12–46	25.6	6.8	14–50
Single	10.4	6.1	3–27	15.8	8.0	2–43	21.5	13.4	5–72
Combined	27.0	9.9	10–58	49.2	1.8	14–71	47.0	16.8	22–109

Table 3. Mean length of T-unit by context.

Narrative context	5yr			8yr			11yr		
	M	SD	Range	M	SD	Range	M	SD	Range
Sequence	7.10	1.37	4.57–9.75	8.67	1.42	4.92–11.45	9.19	1.43	5.92–12.09
Single	7.17	1.59	4.00–13.40	8.44	1.50	5.64–12.36	9.15	1.48	4.80–12.38
Combined	7.13	1.24	4.40–9.33	8.52	1.28	5.14–11.47	9.14	1.22	5.43–11.13

$p = .0016$; $\chi^2(2) = 23.457$, $p < .0001$; $\chi^2(2) = 16.845$, $p < .0001$. Effect sizes were small to medium at 0.33, 0.45, and 0.38, respectively. The following follow-up pairwise comparisons were significant ($p < .0167$): 5yr–8yr and 5yr–11yr for PRE2, 5yr–11yr for PRE3, and 5yr–11yr and 8yr–11yr for POST.

Noun Phrase Type as a Function of Syntactic Position

Table 5 shows the percentage of children at each age manifesting each noun phrase type at least once in object and subject positions. The greatest increase was in PRE3 in object position, which changed from 8% for 5-year-old children to 67% for 11-year-old children. The percentage of children manifesting object-position ENPs significantly increased for PRE2, PRE3, and POST from ages 5yr to 11yr, with differences ranging from 32% to 59%. These increases were significant ($p < .0167$): PRE2, $\chi^2(2) = 17.184$, $p = .0002$; PRE3, $\chi^2(2) = 27.360$, $p < .0001$; POST, $\chi^2(2) = 10.357$, $p = .0040$. Effect sizes were small to medium, at 0.39, 0.49, and 0.30, respectively. Follow-up pairwise comparisons on age for object position were significant ($p < .0167$) for PRE2 on 5yr–8yr and 5yr–11yr, for PRE3 on all three age pairs, and for POST on 5yr–11yr and 8yr–11yr.

Different results were observed for subject-position noun phrases. POST was the only subject noun phrase type for which there was a significant increase across age groups: POST, $\chi^2(2) = 8.805$, $p = .0122$ (viz., 14% to 44% of children; see Table 5), with an effect size of 0.28. Follow-up pairwise comparisons for POST were significant ($\alpha = .0167$) for 5yr–8yr and 5yr–11yr. With respect to PRE2 and PRE3, there was little or no increase in the percentage of children across age groups and no significant differences:

Table 4. Number and percentage of children producing each noun phrase (NP) type in both contexts combined.

	5yr		8yr		11yr		N = 115	
	n	%	n	%	n	%	n	%
PRE1	36	100	40	100	39	100	115	100
PRE2	29	81	39	98	39	100	107	93
PRE3	9	25	17	43	31	79	58	50
POST	21	58	31	78	38	97	90	78

Note. PRE1 = simple designating noun phrases of the form (DET+N); PRE2 = simple descriptive noun phrases of the form (DET+MOD+N); PRE3 = complex premodification with two or more pre-noun modifiers; POST = complex postmodification.

PRE2, $\chi^2(2) = 0.998$, $p = .6072$; PRE3, $\chi^2(2) = 3.720$, $p = .1556$. Effect sizes were 0.09 for PRE2 and 0.18 for PRE3.

Object noun phrases were expected to be produced by more children than subject noun phrases. This was borne out descriptively (see Figure 2). Mean rates for children producing object noun modification were 27%–32% higher than for subject modification for the three noun phrase types (see Table 5). Object PRE2 was present for more than half of the children at all ages: 61% at age 5 and more than 90% for the two older ages; subject PRE2 was produced by no more than half of the children at all three ages. Object PRE3 occurred in more than half of the samples by age 11; subject PRE3 occurred in less than 20% of the samples at the same age. Object POST was produced by 50% of the children at 5yr compared to 14% of the children for subject POST. In contrast, object POST was manifested by 82% of the 11-year-olds compared to 44% who manifested this noun phrase type in subject position.

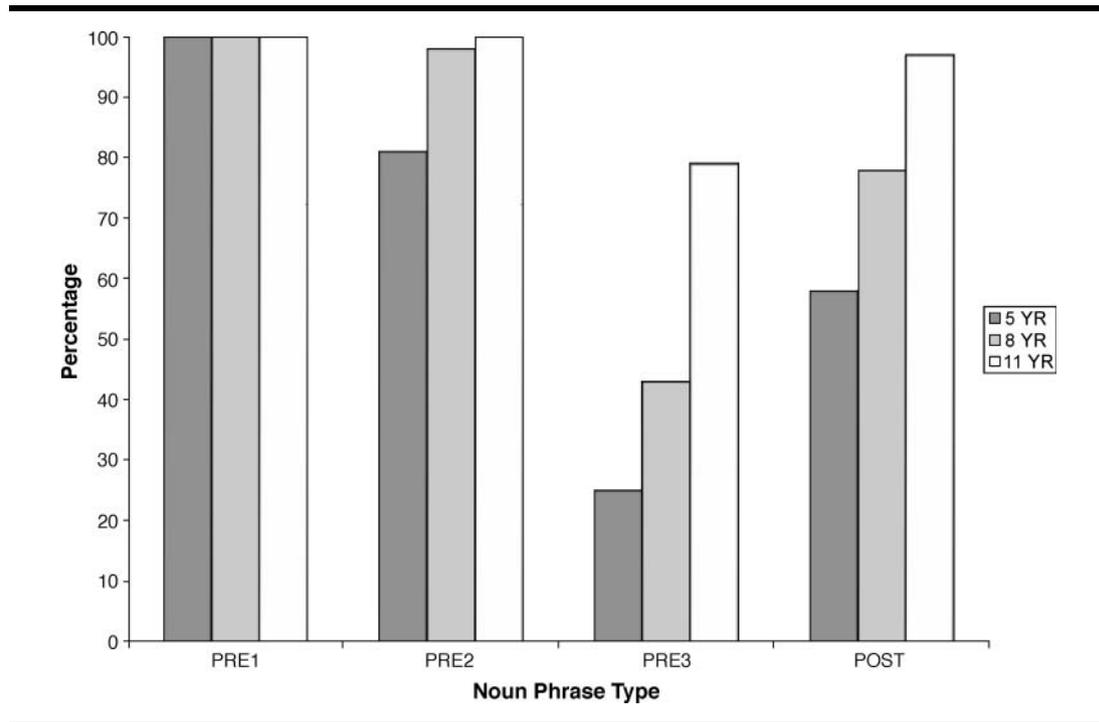
The effect of syntactic position alone was examined first with an overall chi square for noun phrase type combined and age combined. This was significant: $\chi^2(1) = 6.315$, $p = .0120$. Follow-up chi-square analyses evaluating the relationship in the number of children manifesting object and subject noun phrases for each type of noun phrase elaboration revealed a significant effect ($p < .0167$) for PRE2 only: PRE2, $\chi^2(1) = 6.705$, $p = .0096$; PRE3, $\chi^2(1) = 0.530$, $p = .4667$; POST, $\chi^2(1) = 0.035$, $p = .8509$. Effect sizes were 0.24, 0.21, and 0.02, respectively. Evaluations of the number of children manifesting elaborated object or subject noun phrases within each age group did not yield any significant effects: 5yr, $\chi^2(2) = 3.273$, $p = .0804$; 8yr, $\chi^2(2) = 1.726$, $p = .1889$; 11yr, $\chi^2(2) = 0.456$, $p = .4994$. Effect sizes were 0.30, 0.21, and 0.11, respectively.

Given the magnitude of the apparent difference in the number of children who produced PRE3 and POST in object versus subject positions, it was surprising that the difference was not significant for each noun phrase type. A closer inspection of the data showed that, although a majority of the children presented this pattern, approximately one quarter of the children produced PRE3 and POST only in subject position and thus performed opposite to the prediction.

Noun Phrase Type as a Function of Narrative Context

Table 6 shows the percentage of children producing each of the noun phrase types at least once in response to the two narrative contexts, sequence and single. For both conditions, PRE1 was at 100% for all three ages and so was not analyzed further. For the single context, PRE2 was manifested by children at all ages and thus showed only a small, nonsignificant increase from age 5yr to 11yr: PRE2, $\chi^2(2) = 4.108$, $p = .1282$. PRE3 and POST were manifested by fewer children than PRE2 at all ages but showed larger

Figure 1. Percentage of children producing each NP type by age.



increases from age 5 to 11. For the single context, two comparisons were significant ($\alpha = .0167$): PRE3, $\chi^2(2) = 16.697, p = .0002$; and POST, $\chi^2(2) = 9.480, p = .0087$. Effect sizes for single were 0.19, 0.36, and 0.38, respectively. Follow-up pairwise age comparisons for both PRE3 and POST were significant ($p < .0167$) for two age pairs: 5yr–11yr and 8yr–11yr.

For the sequence context, there was a large increase in the percentage of children manifesting PRE2 between ages 5 and 8. PRE3 and POST occurred infrequently in the sequence context. However, the percentage of children manifesting these types of ENPs

Table 5. Number and percentage of children producing each NP type by syntactic position.

	5yr		8yr		11yr		N = 115	
	n	%	n	%	n	%	n	%
PRE1								
Object	35	97	40	100	38	97	113	98
Subject	35	97	40	100	39	100	114	99
PRE2								
Object	22	61	36	90	37	95	95	83
Subject	16	44	22	55	21	54	59	51
PRE3								
Object	3	8	14	35	26	67	43	37
Subject	7	19	2	5	5	13	12	10
POST								
Object	18	50	21	53	32	82	71	62
Subject	5	14	16	40	17	44	38	33

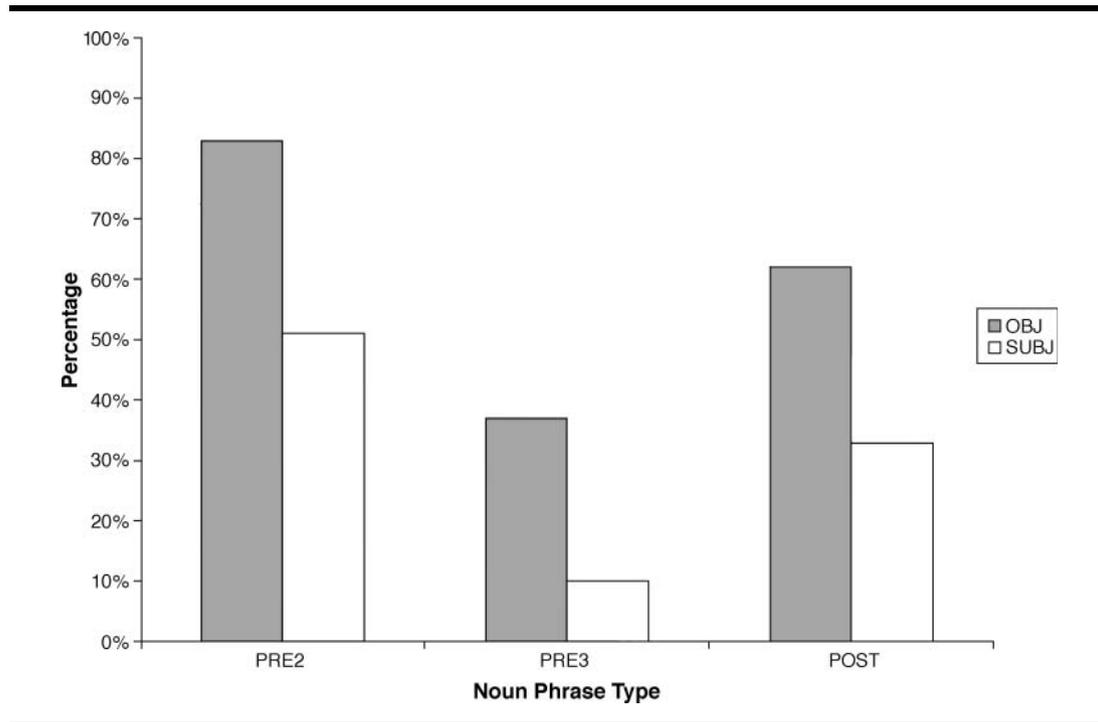
increased significantly with age. For sequence, all three positions were significant ($p < .0167$): PRE2, $\chi^2(2) = 14.976, p = .0006$; PRE3, $\chi^2(2) = 16.216, p = .0003$; and POST, $\chi^2(2) = 8.769, p = .0105$. Effect sizes for sequence were 0.36, 0.38, and 0.28, respectively. The following pairwise age comparisons were significant ($p < .0167$): for PRE2, 5yr–8yr and 5yr–11yr; for PRE3, 5yr–11yr; and for POST, 5yr–8yr and 5yr–11yr.

A comparison of the percentage of children manifesting ENPs in response to the two contexts showed higher rates for single by 12%–26% than for sequence for each of the noun phrase types (see Figure 3). The overall chi square for context was significant: $\chi^2(1) = 12.954, p = .0003$. The effect size was 0.33. Follow-up chi squares comparing the effect of context within each noun phrase type and within each age group did not yield any significant effects at the conservative $\alpha = .0167$. Results for single versus sequence contexts for NP types were PRE2, $\chi^2(1) = 3.896, p = 0.484$; PRE3, $\chi^2(1) = 2.700, p = .1004$; and POST, $\chi^2(1) = 2.069, p = .1503$. Effect sizes for context as a function of ENP type were 0.35, 0.15, and 0.13, respectively. Results for single versus sequence for age groups were: 5yr, $\chi^2(1) = 3.896, p = 0.0484$; 8yr, $\chi^2(1) = 1.962, p = .1613$; and 11yr, $\chi^2(1) = 0.055, p = .8138$. Effect sizes for context as a function of age were 0.32, 0.22, and 0.03, respectively.

DISCUSSION

This study examined the development of noun phrase elaboration in the spoken narratives of 5-, 8-, and 11-year-old children. Four types of noun phrases were considered: simple designating noun phrases involving a determiner plus a head noun (e.g., *the aliens*), simple descriptive noun phrases involving an adjective or noun

Figure 2. Percentage of children producing each NP type in object versus subject position for all age groups combined.



modifier in addition to the determiner and head noun (e.g., *these weird people*), complex premodification involving two or more modifiers in addition to the determiner (e.g., *this little weird house*), and complex postmodification involving qualifying elements after the head noun (e.g., *these aliens with lots of legs; this spaceship that came down*).

In this study, all of the children produced the PRE1, or simple designating noun phrases, in their stories. These noun phrases were produced in both object and subject positions and in both the picture sequence and single picture contexts. This simple type of noun

Table 6. Number and percentage of children producing each NP type by narrative context.

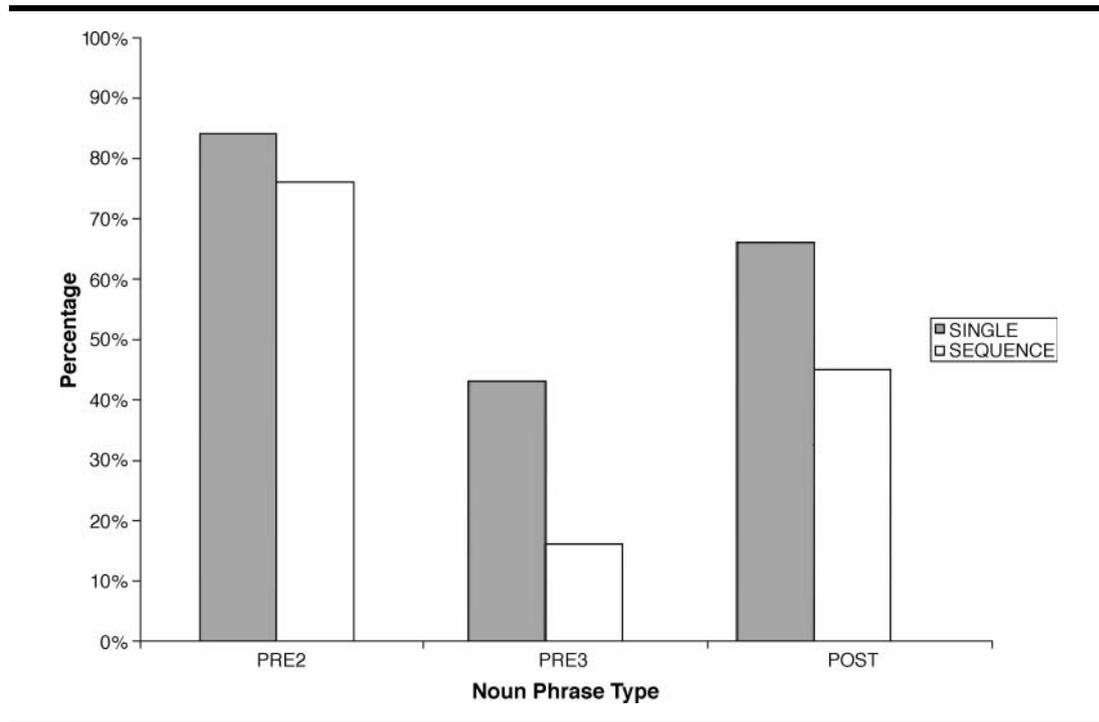
	5yr		8yr		11yr		N = 115	
	n	%	n	%	n	%	n	%
PRE1								
Single	36	100	40	100	39	100	115	100
Sequence	36	100	40	100	39	100	115	100
PRE2								
Single	27	75	33	90	36	92	97	84
Sequence	19	53	33	83	33	85	87	76
PRE3								
Single	9	25	14	35	27	69	49	43
Sequence	0	0	5	13	13	33	18	16
POST								
Single	19	53	24	60	33	85	76	66
Sequence	9	25	21	53	22	56	52	45

phrase has been found in both object and subject positions in conversational speech by age 2;6 (Miller, 1981). The extensive use of simple designating noun phrases in this data set is also consistent with the high rate of occurrence for simple noun phrases (93% of c units) that was reported by Curen-ton and Justice (2004) in the oral narratives of 5-year-old children.

There was an increase in the number of children producing simple descriptive noun phrases, termed PRE2 in the analysis, between 5 and 8 years of age, with virtually all of the older children producing this simple noun phrase type. Although most of the 5-year-olds (81%) produced descriptive noun phrases in one or both of their narratives, this is lower than the 100% presence for 3-year-old children that was reported by Menyuk (1969) in conversational speech.

Children's use of complex premodification (PRE3) increased substantially between 5 and 11 years of age. In contrast to the simple premodification types, multiple modifiers were used by less than half of the younger two age groups and were demonstrated by only 79% of the 11-year-olds. The other complex noun phrase type, postmodification (POST), also showed a developmental increase. The effect size for this increase was small; however, more of the children at all three ages produced postmodification than produced complex premodification. More than half of the 5-year-olds produced at least one noun phrase with postmodification. This finding is consistent with reports that at least 50% of 4-year-olds produced object relative clauses in conversation (Miller, 1981). As was observed for simple descriptive noun phrases, fewer children produced postmodification in the current study than in previous reports for conversational speech. Only 68% of the 5- and 8-year-old children produced noun phrases with postmodification, which is somewhat less than the 87% of children who produced postmodification in Menyuk's (1969) study of conversational speech.

Figure 3. Percentage of children producing each NP type in single versus sequence contexts for all age groups combined.



The lower proportion of children producing descriptive premodification (PRE2) as well as postmodification in narratives than in conversation may have occurred because narrative is a more challenging discourse genre than conversation and one that may tax a child's linguistic system. According to Crystal's (1987) "bucket" theory of language development, there are likely to be trade-offs in complexity between levels of language. As applied to the current study, the challenge of producing a narrative may have affected the child's ability to produce forms of noun phrase elaboration involving more than a single modifier before the noun, particularly by some 5- and 8-year-olds.

The developmental increase in the use of premodification was evident only in object position, with little or no change in subject position. For presence of postmodification, the increase with age was significant in both object and subject positions, but with a lower level of presence in subject position at all three ages. These data reflect the fact that even the 11-year-olds showed a relatively low usage for ENPs in subject position, which is consistent with previous reports of a low level of subject elaboration in conversational speech up to age 12 (Loban, 1976; Perera, 1984).

There are several possible reasons for the larger number of children who produced noun phrase elaboration only in object position. One possibility is that modifying the initial part of a sentence may be more difficult than adding descriptive details near the end of a sentence. Miller (1981) suggested that noun phrase elaboration of all types emerges postverbally before appearing in preverbal noun phrases. The increased difficulty of subject elaboration could relate to linguistic factors such as the degree of embeddedness. It could also reflect a higher processing load for adding elaboration in the middle of a sentence while the sentence is still being formulated as

opposed to adding elaboration after sentence formulation has been completed.

The lower presence of subject elaboration also could relate to genre-specific stylistic differences. In conversational speech, adults as well as children produce less subject than object elaboration (Nippold, 1998). Limber (1973) suggested an animacy difference as the reason for this. He noted that animate subjects are frequently pronominalized, whereas inanimate objects are less prone to pronominalization. Because subjects in conversational speech are more likely to be animate, this could result in less subject elaboration. Biber (1988) reported the opposite pattern for expository texts, which contain a higher frequency of inanimate subjects and a larger proportion of subject elaboration. The narratives produced by the children in this study concerned animate characters. Therefore, use of subject elaboration resembled conversational speech more than expository text.

Syntax use is sensitive to discourse genre, varying across conversation, narrative, and expository forms (Scott, 1988). This study showed that noun phrase use can vary within a genre as well. As predicted, the single picture fantasy context yielded more frequent use of all types of noun phrase elaboration at all ages than did the picture sequence of a possible event, although this effect was small. Of particular note was the extremely low presence for noun phrase elaboration by the 5-year-olds in response to the picture sequence stimulus. Even at age 11, a substantial proportion of the children were not producing complex elaboration in the picture sequence context, although they did produce elaboration in the single picture context. This supports the hypothesis that a single detailed picture of an event with multiple characters is more supportive for noun phrase elaboration than is a series of simpler action pictures involving one character.

Looking just at the postmodification data in the sequence context, the data from the current study are consistent with the results reported by Dassinger and Toupin (1994) for one type of postmodification, relative clauses. The same proportion of children produced relative clauses in their study as produced postmodification in the current study, and this proportion was lower than the proportion of children who produced ENPs in the single picture context. This concordance occurred in spite of the fact that the narratives in Dassinger and Toupin's study were produced in response to a lengthier set of pictures (the wordless picture book, *Frog, Where Are You?* [Mayer, 1979]) and were much longer than those generated in response to the five-picture sequence that was used in the current study.

CLINICAL IMPLICATIONS

In the absence of population data on language sample measures, the data from this study can be used to set preliminary performance expectations based on the percentage of children demonstrating each noun phrase type. For clinical decision making, low cutoffs have typically been used. The tenth percentile is a commonly applied clinical cutoff for identifying children with language impairment (Fey, 1986; Lee, 1974; Records & Tomblin, 1994). The bottom quartile has been used to identify children with weak reading skills for supplemental instruction (Torgeson, 2000; Vadasy, Sanders, & Peyton, 2005).

Higher cutoffs have been suggested for setting expectations for developmental achievements. The median (i.e., the age at which at least 50% of children demonstrate some achievement) has been used to set age expectations for a variety of developmental achievements such as growth milestones (Abbassi, 1998), play (Howes & Matheson, 1992), and grammatical structures (Miller, 1981). Comparison of the median to the 90th percentile has been used to demonstrate the extent of individual differences for production of particular structures (Sander, 1972). Table 7 shows the expected ages for each type of ENP for cutoff points at the 50th, 75th, and 90th percentiles.

Using the most stringent of these cutoffs, the age at which 90% of children produce each ENP type, provides the following expectations: First, it can be concluded that 5-year-old children should be using simple designating noun phrases (PRE1) within oral narratives. Second, children can be expected to use simple descriptive noun phrases (PRE2) within oral narrative production by age 8. Third, complex postmodification (POST) would not be expected until age 11. Finally, complex premodification (PRE3) would not

be expected even at age 11. Our data also suggest that usage of complex premodification (PRE3) should not be expected from 5- or 8-year-olds. Usage of postmodification (POST) or even simple descriptive premodification (PRE2) should not be expected from 5-year-olds because so many children at these ages did not show even a single usage of these noun phrase types. Non-use of these structures would not, therefore, be interpreted as atypical and necessarily indicative of a language impairment.

Even though the 90th percentile may be a reasonable criteria for conclusions about whether a child's language is or is not "within the normal range," this cutoff score may be too stringent for making decisions about when to target particular structures. Using a 90% cutoff may result in a delay in starting to work on particular types of elaboration. Using a lower cutoff such as the age at which most children produce each ENP type might provide a better timetable for starting to work on these structures. This approach would be consistent with Vygotsky's (1978) "zone of proximal development." For example, based on the 75th percentile, we would suggest introducing simple descriptive noun phrases at age 5, postmodification at age 8, and complex premodification at age 11. Using the median performance, the age at which at least half of children produce an ENP type, would lead us to introduce ENPs at even earlier ages.

Subject noun phrase elaboration was used by fewer children than object elaboration at all ages. As shown in Table 7, children would not be expected to produce any subject noun phrase elaboration involving more than a single modifier (PRE1-subject). Although some children did produce other types of subject noun phrase elaboration, these would not be expected even at age 11. We recommend, therefore, that intervention for noun phrase elaboration within narratives focus on object position.

Clinicians might use picture sequences for assessing and working on narrative production because these stimuli provide support for narrative macrostructure. In the current study, however, the children produced less noun phrase elaboration in response to the picture sequence than to the single picture context, although this effect was small. These data were consistent with an earlier study that used a lengthier and more elaborate sequence of pictures. Conclusions about ENP use relative to age expectations should not, therefore, be based solely on stories that were produced in response to picture sequences. Rather, the current study suggests that use of single picture stimuli with several characters depicting some unusual or fanciful event may reveal different information about children's use of noun phrase elaboration.

Table 7. Lowest age at which each elaborated NP type was produced by 90%, 75%, and 50% of the children in both narratives combined.

NP type	90% of children	75% of children	50% of children
PRE1	5 year	5 year	5 year
PRE2	8 year	5 year	5 year
PRE3	—	11 year	11 year
POST	11 year	8 year	5 year
PRE1-Subject	5 year	5 year	5 year
PRE2-Subject	—	—	8 year
PRE3-Subject	—	—	—
POST-Subject	—	—	—

STUDY STRENGTHS AND LIMITATIONS

This study provides an in-depth examination of the development of one important syntactic structure, ENPs, within a frequently occurring discourse context, oral narratives. Two sentential positions and two elicitation contexts were examined for both overall and contrastive usages. Samples at three distinct ages were employed. The developmental results were organized to provide preliminary age expectations for clinical use. The sample size (40 children per age) is not large enough to support the creation of standard scores. That type of a data collection and analysis effort was not economically feasible. However, our samples are considerably larger than those for most other developmental studies of narrative language data, and the percentile cutoffs can be clinically useful.

Despite the strengths of the current study, there are additional limitations. First, because the narratives were part of a norming study for a standardized test, the narrative contexts were always administered in the same order. As a result, fatigue or practice factors could have affected the context comparisons. The extent to which these findings would be replicated with counterbalanced order of tasks is unknown.

Picture sequence and single picture contexts differ in the level of support they provide for narrative structure, with sequence pictures providing more structure to support the narrative sequence (Hedberg & Westby, 1993; Pearce, 2003). Based on the current study, the two contexts also appear to contrast, in the opposite direction, for noun phrase elaboration, with the single picture context promoting more of this elaboration. There were several differences between the picture stimuli that could have influenced noun phrase elaboration. The picture sequence depicted a realistic event; the single picture depicted a fantasy scene. This picture depicted fanciful creatures emerging from an unusual vehicle, all of which may have encouraged more visual descriptions. The picture sequence involved only a single main character, although a secondary character was introduced in the last picture, in contrast to the single picture, which involved several main characters. This feature of the single picture may have promoted use of additional descriptive details when talking about the characters in the story. Therefore, we cannot draw a conclusion about which variable or variables led to the difference in extent of noun phrase elaboration between the two contexts.

To the best of our knowledge, these results reflect a wide distribution of ability levels at the ages that were assessed. This can be a strength and a weakness. The strength is that the results can be generalized to the population of primary grade students. The weakness is that we do not know how representative these results are for subpopulations of children, such as those with specific language impairment, mental retardation, or pervasive developmental disabilities.

In addition, although the sample was racially and ethnically diverse, variations due to African American English (AAE) or Spanish influences were not analyzed. However, there is no reason to believe that nonmainstream dialect use would have affected these results. Although articles may be omitted in both AAE and Spanish-influenced English (Bedore, 2001; Washington & Craig, 2002), there were other types of determiners, such as demonstratives (e.g., *this*, *those*) and pronominal forms (e.g., *his*, *their*), produced in the samples. Other pre-noun modifiers and postmodification would not have been affected by dialect. Rather, these are core features of English that occur across dialects.

CONCLUSION

In the current study, usage of one significant feature of literate language, noun phrase elaboration, showed a clear developmental pattern into the school years. In the oral narratives produced by children at 5, 8, and 11 years, premodified and postmodified noun phrases increased from rarely to frequently present over this 6-year age span. Some differences in presence of noun phrase types were apparent across two narrative contexts, with these differences logically linked to the nature of the eliciting stimuli. Beyond this contextual variation, the results showed that simple designating noun phrases are produced by 5 years of age, simple descriptive noun

phrases are produced by 8 years, and complex postmodification noun phrases are produced by 11 years. Object elaboration was more frequent even at this older age than was subject elaboration. There are few developmental markers for school-age syntax. Noun phrase elaboration, which is easily and reliably coded as the presence of one or more occurrences and with a clear developmental pattern, appears to be a valuable structure for revealing the degree of mastery of the grammar of literate language.

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REFERENCES

- Abbassi, V. (1998). Growth and normal puberty. *Pediatrics*, *102*, 507–511.
- Applebee, A. N. (1978). *The child's concept of story*. Chicago: Chicago University Press.
- Bedore, L. M. (2001). Assessing morphosyntax in Spanish-speaking children. *Seminars in Speech and Language*, *22*(1), 65–78.
- Biber, D. (1988). *Variation across speech and writing*. Cambridge, MA: Cambridge University Press.
- Braine, M. D. S. (1976). Children's first word combinations. *Monographs of the Society for Research in Child Language Development*, *41*(1, Serial No. 164).
- Catts, H. W., Fey, M. E., Zhang, X., & Tomblin, B. (1999). Language basis of reading and reading disabilities: Evidence from a longitudinal investigation. *Scientific Studies of Reading*, *3*, 331–361.
- Crystal, D. (1987). Towards a "bucket" theory of language disability: Taking account of interaction between linguistic levels. *Clinical Linguistics and Phonetics*, *1*, 7–22.
- Curenton, S. M., & Justice, L. M. (2004). African American and Caucasian preschoolers' use of decontextualized language: Literate language features in oral narratives. *Language, Speech, and Hearing Services in Schools*, *35*, 240–253.
- Dassinger, L., & Toupin, C. (1994). The development of relative clause functions in narrative. In R. A. Berman & D. I. Slobin (Eds.), *Relating events in narrative: A crosslinguistic developmental study* (pp. 457–514). Hillsdale, NJ: Erlbaum.
- Donahue, M. (1987). Interactions between linguistic and pragmatic development in learning-disabled children: Three views from the state of the union. In S. Rosenberg (Ed.), *Advances in applied psycholinguistics. Volume 1: Disorders of first language development* (pp. 126–179). New York: Cambridge University Press.
- Feagans, L., & Short, E. J. (1984). Developmental differences in the comprehension and production of narratives by reading-disabled and typically-achieving children. *Child Development*, *55*, 1727–1736.

- Fey, M. E.** (1986). *Language intervention with young children*. Boston: College-Hill.
- Gillam, R. B., & Johnston, J. R.** (1992). Spoken and written language relationships in language/learning-impaired and normally achieving school-age children. *Journal of Speech and Hearing Research, 35*, 1303–1315.
- Gillam, R. B., & Pearson, N.** (2004). *Test of narrative language*. Austin, TX: Pro-Ed.
- Greenhalgh, K. S., & Strong, C. J.** (2001). Literate language features in spoken narratives of children with typical language and children with language impairments. *Language, Speech, and Hearing Services in Schools, 32*, 114–125.
- Hedberg, N. L., & Westby, C. E.** (1993). *Analyzing storytelling skills: Theory to practice*. Tucson, AZ: Communication Skill Builders.
- Howes, C., & Matheson, C. C.** (1992). Sequences in the development of competent play with peers: Social and social pretend play. *Developmental Psychology, 28*, 961–974.
- Hughes, D., McGillivray, L., & Schmidek, M.** (1997). *Guide to narrative language: Procedures for assessment*. Eau Claire, WI: Thinking Publications.
- Hunt, K. W.** (1965). *Grammatical structures written at three grade levels*. Urbana, IL: National Council of Teachers of English.
- Huttenlocher, J., Vasilyeva, M., Cymerman, E., & Levine, S.** (2002). Language input and child syntax. *Cognitive Psychology, 45*, 337–374.
- Justice, L. M., Bowles, R., Kaderavek, J. K., Ukrainetz, T., Eisenberg, S., & Gillam, R.** (2006). The Index of Narrative Micro-Structure (INMIS): A clinical tool for analyzing school-aged children's narrative performance. *American Journal of Speech-Language Pathology, 15*, 1–15.
- Kroll, B.** (1981). Developmental relationships between speaking and writing. In B. Kroll & R. J. Van (Eds.), *Exploring speaking–writing relationships: Connections and contrasts* (pp. 32–54). Urbana, IL: National Council of Teachers of English.
- Labov, W.** (1972). *Language in the inner city*. Philadelphia: University of Pennsylvania Press.
- Lee, L. L.** (1974). *Developmental sentence analysis*. Evanston, IL: Northwestern University Press.
- Leonard, L. B., & Fey, M. E.** (1991). Facilitating grammatical development: The contribution of pragmatics. In T. M. Gallagher (Ed.), *Pragmatics of language: Clinical practice issues* (pp. 333–355). San Diego, CA: Singular.
- Liles, B. Z., Duffy, R. J., Merritt, D. D., & Purcell, S. L.** (1995). Measurement of narrative discourse ability in children with language disorders. *Journal of Speech and Hearing Research, 38*, 415–425.
- Limber, J.** (1973). The genesis of complex sentences. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 169–186). New York: Academic Press.
- Loban, W.** (1976). *Language development: Kindergarten through grade twelve*. Urbana, IL: National Council of Teachers of English.
- Mayer, M.** (1979). *Frog, where are you?* New York: Dial Press.
- McCabe, A., & Peterson, C.** (1991). *Developing narrative structure*. Hillsdale, NJ: Erlbaum.
- Meline, T., & Schmitt, J. F.** (1997). Case studies for evaluating statistical significance in group designs. *American Journal of Speech-Language Pathology, 6*, 33–41.
- Mentis, M.** (1994). Topic management in discourse: Assessment and intervention. *Topics in Language Disorders, 14*, 29–54.
- Menyuk, P.** (1969). *Sentences children use*. Cambridge, MA: MIT Press.
- Michaels, S., & Collins, J.** (1984). Oral discourse styles: Classroom interaction and the acquisition of literacy. In D. Tannen (Ed.), *Coherence in spoken and written discourse* (pp. 219–244). Norwood, NJ: Ablex.
- Miller, J. F.** (1981). *Assessing language production in children: Experimental procedures*. Baltimore: University Park Press.
- Miller, J. S., & Chapman, R. S.** (2004). *Systematic Analysis of Language Transcripts (Version 8.0) [Computer software]*. Madison, WI: University of Wisconsin–Madison.
- Nippold, M. A.** (1995). Language norms in school-age children and adolescents: An introduction. *Language, Speech, and Hearing Services in Schools, 26*, 307–308.
- Nippold, M. A.** (1998). *Later language development: The school-age and adolescent years* (2nd ed.). Austin, TX: Pro-Ed.
- No Child Left Behind Act of 2001, 20 U.S.C. § 6301 *et seq.* (2002).
- O'Donnell, R. C., Griffen, W. J., & Norris, R. D.** (1967). *Syntax of kindergarten and elementary school children: A transformational analysis* (Research report no. 8). Champaign, IL: National Council of Teachers of English.
- One-Look Dictionary Search.** (1996). Retrieved December 14, 2004, from <http://www.onelook.com>.
- Paul, R.** (1981). Analyzing complex sentence development. In J. F. Miller, *Assessing language production in children: Experimental procedures* (pp. 36–40). Baltimore: University Park Press.
- Pearce, W. M.** (2003). Does the choice of stimulus affect the complexity of children's oral narratives? *Advances in Speech-Language Pathology, 5*, 95–103.
- Perera, K.** (1984). *Children's writing and reading: Analyzing classroom language*. Oxford, UK: Blackwell.
- Perera, K.** (1986). Language acquisition and writing. In P. Fletcher & M. Garman (Eds.), *Language acquisition* (2nd ed., pp. 494–518). Cambridge, UK: Cambridge University Press.
- Records, N. L., & Tomblin, J. B.** (1994). Clinical decision making: Describing the decision rules of practicing speech-language pathologists. *Journal of Speech and Hearing Research, 37*, 144–156.
- Sander, E.** (1972). When are speech sounds learned? *Journal of Speech and Hearing Disorders, 37*, 55–63.
- SAS Institute.** (1998). Statview (Version 5.01) [Computer software]. Cary, NC: Author.
- Scarborough, H. S.** (2001). Connecting early language and literacy to later reading (dis)abilities: Theory and practice. In S. Neuman & D. Dickinson (Eds.), *Handbook for research in early literacy* (pp. 97–110). New York: Guilford Press.
- Scott, C. M.** (1988). Spoken and written syntax. In M. A. Nippold (Ed.), *Later language development* (pp. 49–96). Austin, TX: Pro-Ed.
- Scott, C. M., & Stokes, S. L.** (1995). Measures of syntax in school-age children and adolescents. *Language, Speech, and Hearing Services in Schools, 26*, 309–319.
- Scott, C. M., & Windsor, J.** (2000). General language performance measures in spoken and written narrative and expository discourse of school-age children with language-learning disabilities. *Journal of Speech, Language, and Hearing Research, 43*, 324–339.
- Shapiro, R. L., & Hudson, J. A.** (1991). Tell me a make-believe story: Coherence and cohesion in young children's picture-elicited narratives. *Developmental Psychology, 27*, 960–974.
- Snow, C. E.** (1991). The theoretical basis for relationships between language and literacy development. *Journal of Research in Childhood Education, 6*, 5–10.
- Stothard, S. E., Snowling, M., Bishop, D. V. M., Chipchase, B. B., & Kaplan, C. A.** (1998). Language-impaired preschoolers: A follow-up into adolescence. *Journal of Speech, Language, and Hearing Research, 41*, 407–418.

Torgeson, J. K. (2000). Individual differences in response to early intervention in reading: The lingering problem of treatment resisters. *Learning Disabilities Research and Practice, 15*, 55–64.

Ukrainetz, T., Justice, L. M., Kaderavek, J., Eisenberg, S., & Gillam, R. (2005). Artful storytelling: The development of expressive elaboration in fictional narratives. *Journal of Speech, Language, and Hearing Research, 48*, 1363–1377.

Vadasy, P. F., Sanders, E. A., & Peyton, J. A. (2005). Relative effectiveness of reading practice or word-level instruction in supplemental tutoring: How text matters. *Journal of Learning Disabilities, 38*, 364–380.

Vygotsky, L. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, MA: Harvard University Press.

Washington, J. A., & Craig, H. K. (2002). Morphosyntactic forms of African American English used by young children and their caregivers. *Applied Psycholinguistics, 23*, 209–231.

Westby, C. E. (1991). Learning to talk—Talking to learn: Oral-literate language differences. In C. Simon (Ed.), *Communication skills and classroom success* (pp. 181–218). San Diego, CA: College-Hill.

Westby, C. E. (2005). Assessing and remediating text comprehension problems. In H. W. Catts & A. G. Kamhi (Eds.), *Language and reading disabilities* (pp. 157–232). Boston: Allyn & Bacon.

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APPENDIX. COMMON NOUN–NOUN COMBINATIONS

Coded as compounds

Airplane
Aplus
Backpack
Backyard
Baseball
Basketball
Bedroom
Busstop
Campsite
Classroom
Downtown
Drawbridge
Flyingsaucer

Football
Footprint
Footstep
Girlfriend
Headache
Homework
Hotdog
Humanbeing
Lifeform
Livingroom
Lunchtime
Outerspace
Overtime

Playdate
Playground
Puppydog
Reportcard
Shoelace
Shoestring
Shoetie
Shortcut
Sidewalk
Spacecraft
Spaceship
Suitcase
UFO

Coded as [modifier+noun]

Alarm clock
Field trip
Laser beam
Park bench

Picnic table
Repair shop
School bus
Space shuttle

Trash can
Zapper gun
