Journal of Speech and Hearing Disorders, Volume 51, 008–023, February 1986

NARRATIVE DISCOURSE: SPONTANEOUSLY GENERATED STORIES OF LEARNING-DISABLED AND NORMALLY ACHIEVING STUDENTS

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Spontaneously generated oral stories were obtained from 93 learning-disabled (LD) and normally achieving (NA) students, 14 to 16 each at 8:0–9:11, 10:0–11:11, and 12:0–13:11 age levels. The stories were analyzed using an adapted version of Stein and Glenn's (1979) story grammar. The results showed significant group and age differences. The stories told by the LD subjects contained fewer propositions and complete episodes and contained significantly fewer Minor Setting statements than those of their NA peers. Within an episode, the LD subjects were less likely to include Response, Attempt, and Plan statements than the NA counterparts. Group differences were also found in the area of interepisode relations. The major age-related findings were an increased occurrence of complete episodes and a greater frequency of embedded episodes as a function of increasing age. Findings are discussed with regard to the development of oral narration abilities. Explanations are offered to account for the storytelling deficits exhibited by the LD subjects.

Learning-disabled children have been reported to demonstrate problems in discourse forms that either supersede linguistic deficits or occur in the absence of structural language problems. Conversation is one form of discourse in which a variety of deficiencies have been uncovered including problems with adaptations of speech style (Bryan & Pflaum, 1978; Donahue, 1981; Noel, 1980; Spekman, 1981) and conversational participation and control (Bryan, Donahue, & Pearl, 1981; Bryan, Donahue, Pearl, & Herzog, 1981; Bryan, Donahue, Pearl, & Sturm, 1981; Donahue, 1981, 1984). It has also been noted that learning-disabled children manifest deficits in another form of discourse, the narrative. Blalock (1982), Johnson and Myklebust (1967), McNamee and Harris-Schmidt (1985), Westby (1982, 1984), and Wiig and Semel (1976a, 1980) have suggested that when asked to relate personal experiences and stories, learning-disabled children and adults demonstrated problems of formulation and organization. The purpose of this study was to examine the oral narratives of learning-disabled students in three different age ranges in comparison to normally achieving, same-age peers.

The term *narration* can refer to storytelling (either of fairy or folk tales or of familiar or original stories), retelling of movie sequences or the like, and relating of personal experiences. Narrative and conversational forms share many similarities; however, the requirements of a narrative differ from conversation in several important ways. First, narratives involve the expression of extended or elaborated units of text. Further, narratives are expected to include introductory and closing statements (i.e., story markers) and an orderly presentation of events that leads to a logical resolution. Narratives also carry the expectation that the speaker maintain an oral monologue and that the listener(s) assume a relatively passive role. Although it is possible for the listener to interrupt an oral narrative to request clarification, such action would appear to violate the expectation of mature, well-developed narratives. Thus, it is up to the speaker to present the information in an organized, coherent, and interesting manner and to be responsible for the continuity and completeness of information.

Several models for analyzing narratives have been developed. Applebee (1978) and Botvin and Sutton-Smith (1977) are among those who have presented stagewise progressions of story development. In these progressions, the early stages of narrative development are characterized by the emergence of story themes (macrostructures) and cohesive devices that specify the relationship and organization among story elements (microstructures). By 5 or 6 years of age, children begin to demonstrate the capacity for producing structurally complete narratives (Applebee, 1978; Botvin & Sutton-Smith, 1977). Later stages involve the development of the episode structure within stories, culminating at 11–12 years of age with the emergence of complex narratives that contain embedded and multiply embedded episodes (Botvin & Sutton-Smith, 1977).

Empirical information regarding the narrative development of learning-disabled children is scant. McNamee and Harris-Schmidt (1985) have reported that stories told by learning-disabled children between 5 and 9 years of age received lower rankings on the Applebee (1978) scale than did the stories of normally achieving peers. The subjects' stories were assigned to one of six stages according to the developmental sophistication of the narratives. The stages progressed from simple descriptions of events to highly organized stories containing a central theme and a well-developed plot structure. Based on this story analysis procedure, McNamee and Harris-Schmidt (1985) concluded that the learning-disabled subjects exhibited less mature story forms than the control group. Westby (1985) also suggested that the narratives of learning-disabled children are deficient. She hypothesized that

0022-4677/86/5101-0008$01.00/0

their difficulties may be due to inefficient processing, impaired organizational abilities, or insufficient schema knowledge. Blalock (1982) has suggested that organizational difficulties of learning-disabled persons may persist into adulthood.

In contrast to a developmental stage approach, a variety of story grammars have been proposed that identify the elements common to stories and specify a formal set of rules underlying the construction of any story (Labov, 1972; Mandler & Johnson, 1977; Rummelhart, 1975; Stein & Glenn, 1979; Thorndyke, 1977). Although some variation exists among the different story grammars, they all contain similar components and tend to agree upon the order in which the components occur.

Stein and Glenn's (1979) story grammar, for example, consists of a setting category and an episode system that can include one or more episodes. This system is composed of the following seven discrete story grammar categories, each of which identifies the type of information contained therein.

1. *Setting* statements introduce the main character(s) and describe the story context.
2. *Initiating Events* are occurrences that cause the protagonist to act.
3. *Internal Responses* refer to the goals, thoughts, and feelings of the protagonist.
4. *Plans* indicate the intended action of the protagonist.
5. *Attempts* indicate the protagonist's overt action(s) to obtain the goal(s).
6. *Direct Consequences* indicate the success or failure of the protagonist in attaining the goal(s).
7. *Reactions* indicate the protagonist's feelings about attaining or not attaining the goal(s).

Categories 2 through 7 are thought to constitute the episode system.

In Stein and Glenn's (1979) grammar, episodes are connected to each other by four independent types of relations. The *Then* relation connects two episodes whose events occur successively in time. The *Cause* relation implies a direct causal relationship between the events in two episodes. The *And* relation links two episodes with events occurring simultaneously. The final type of interepisode relation is *Embedded* and occurs when one episode is nested within another.

The development of story grammar schemata in normally achieving children has been studied almost exclusively through the use of "gist recall" tasks. Typically, the subjects listen to a story and are then asked (either immediately or following a delay) to retell the same story to the experimenter. Recall is measured by the proportion of propositions of each story grammar category type accurately recalled. Overall, it has been reported that children by 5 or 6 years of age already demonstrate knowledge of narrative structure, but that the amount of information recalled from the stories increases with age (Brown & Smiley, 1977; Christie & Schumacher, 1975; Mandler & Johnson, 1977; Stein & Glenn, 1979). Further, all parts of a story (i.e., all story grammar category types) are not recalled equally well. Mandler and Johnson (1977) and Stein and Glenn (1979), for example, reported that Major Setting statements, Initiating Events, and Direct Consequences were the story categories most likely to be recalled. Despite differences in category saliency, however, the order of story events is preserved with a high rate of accuracy (Mandler & Johnson, 1977). Finally, investigators have reported that information not present in, but related to, the original story is frequently added during recall (Mandler & Johnson, 1977; Stein & Glenn, 1979).

Story grammar approaches have also been used to examine the story gist recall abilities of language-impaired and learning-disabled children and adults. In general, the results have shown that samples selected from these populations preserve the order of events in a story with the same degree of accuracy and demonstrate the same pattern of story organization in recall as their normally achieving counterparts but tend to recall significantly less information from stories (Graybeal, 1981; Hansen, 1978; Weaver & Dickinson, 1979, 1982; Worden, Malmgren, & Gabourie, 1982). Weaver and Dickinson (1979, 1982) applied both a story grammar and a more psycholinguistic approach to study recall and used the term "impoverished" to describe the gist recall protocols of dyslexic students in an attempt to capture the lack of detail found in their recalled stories. In comparison to a group of normally achieving peers, the stories recalled by the dyslexic subjects contained (a) more incorrect information, (b) fewer instances of linguistic markers that specify important temporal and causal relationships, and (c) fewer instances of word and phrase modifiers.

Thus, it appears that learning-disabled students have knowledge of narrative structure and can apply this knowledge in their recall of stories. However, the demonstration of a story schema in a gist recall task cannot be used to suggest that learning-disabled children would show the same level or type of organization in their spontaneously generated stories. Also, developmental changes have not been explored in the story formulation and organizational abilities of children with learning disabilities. Finally, previous story grammar studies have utilized only the proposition as the unit of story analysis and have not examined stories at the level of the episode. Because the episode can be considered the basic building block of a narrative, it would seem logical also to analyze the structure of episodes as produced by children in a spontaneous storytelling task.

Therefore, the current investigation was designed to compare the spontaneously generated stories of learning-disabled and normally achieving children over three age ranges using a story grammar approach that included both proposition and episode analyses. The particular group of learning-disabled students selected for study were those whose learning deficits were not primarily in the areas of syntax, semantics, or phonology. In this way it could be determined whether learning-disabled students with sufficient syntax and vocabulary skills to generate well-formed and meaningful sentences would exhibit differences in their overall production and organization of stories in comparison to their normally achieving peers.

TABLE 1. *t* tests for chronological age (in months) and WISC-R Vocabulary (in scaled scores) between groups.

	Chronological age (in months)						*WISC-R Vocabulary*					
	LD		*NA*		*df*	*t*	*LD*		*NA*		*df*	*t*
Age range	*M*	*SD*	*M*	*SD*			*M*	*SD*	*M*	*SD*		
8:0–9:11	107.4	6.9	106.2	6.4	28	0.48	11.6	2.8	13.6	2.6	28	2.04
10:0–11:11	131.7	6.5	129.4	6.9	30	0.94	11.4	2.6	12.6	2.5	30	1.34
12:0–13:11	156.0	7.5	150.1	5.2	29	2.57*	10.3	2.5	11.9	3.6	29	1.52

*$p < .05$.

METHOD

Subjects

A total of 48 learning-disabled (LD) and 48 normally achieving (NA) students were selected as subjects with 16 LD and 16 NA each at the 8:0–9:11, 10:0–11:11, and 12:0–13:11 age levels. Three subjects were eliminated: 2 in the youngest LD group due to their refusal to perform the experimental task and 1 in the oldest NA group due to defective taping equipment. Thus, a total of 93 students (10 girls, 83 boys) participated in the study. The mean chronological ages (in months) and standard deviations for each group are shown in Table 1. According to *t* tests (Table 1), no significant age differences were found between the LD and NA subjects in the two younger groups; however, a significant difference was found between the groups at the oldest age level [$t(28) = 2.57$, $p = .016$], with the LD students being older. All subjects were of middle and above socioeconomic status and were native standard English speakers.

Further, based on a review of student files, all subjects were considered to have at least normal intelligence (IQ = 85 or above) as determined by tests administered no more than 2 years prior to the experiment. The results of the Wechsler Intelligence Scale for Children-Revised (WISC-R) (Wechsler, 1974) were available for all LD students; scores from the Otis-Lennon Mental Ability Test (Otis & Lennon, 1967), a group test, were available for all NA students (Table 2).

The LD students were diagnosed as such by psychologists and special education professionals and attended a private school for learning-disabled students. Based on test data available in student files and teacher reports, the LD students all exhibited problems in reading, written expression, and/or math and had WISC-R Verbal IQs of 90 or above. In addition, the LD students were identified as exhibiting normal structural language abilities in the areas of phonology, syntax, and semantics. This was determined in part by an evaluation by a certified speech-language pathologist, completed no more than 2 years prior to the experiment. The evaluation included the following formal and informal measures of structural language: Peabody Picture Vocabulary Test (PPVT) (Dunn, 1965); Durrell Analysis of Reading Difficulty—Listening Comprehension (Durrell, 1955); DeRenzi Token Test (DeRenzi & Vignolo, 1962); Binet Memory for Sentences (Terman & Merrill, 1973); Boston Naming Test (Kaplan, Goodglass, & Weintraub, 1978); Test of Language Development (TOLD), Grammatic Closure (Newcomer & Hammill, 1977); Experimental Version of the Fullerton Test of Adolescent Language (Thorum, 1980); Wiig-Semel Test of Linguistic Concepts (Wiig & Semel, 1976b); and an informal assessment of the student's spontaneous expressive language. All students scored within normal limits on each age-appropriate measure.

Also, as part of this research, the Peabody Picture Vocabulary Test-Revised (PPVT-R) (Dunn & Dunn, 1981) and selected subtests of the Clinical Evaluation of Language Functions (CELF) (Semel & Wiig, 1981) were administered to all LD subjects by the experimenters. The CELF subtests purportedly measure receptive and expressive aspects of structural language (i.e., comprehension of vocabulary and syntax; syntax production; comprehension and memory of spoken paragraphs; comprehension of linguistic concepts, relations, and ambiguities). Each subject obtained a scaled score of 85 or above on the PPVT-R, and no subject scored below grade level on any CELF subtest. None of the LD subjects were receiving remediation for oral language expression or comprehension skills in the areas of syntax, semantics, or phonology. Based on all of the above data, it was determined that the LD subjects possessed sufficient syntax and vocabulary skills to generate complete, syntactically correct, and meaningful sentences.

The NA subjects were selected from area public and private schools. Based on a review of academic achievement test data and teacher report, all NA students were performing academically at or above grade level, and not one was reported in need of or currently receiving remedial services of any kind.

A final subject selection criterion for all subjects was performance on the Vocabulary subtest of the WISC-R (Wechsler, 1974). Administered by the experimenters as part of this research, all LD and NA subjects were required to obtain a scaled score in the average or above range (scaled score = 7 or above). Means and standard deviations for subjects in each group are displayed in Table 1. The *t* tests performed revealed no significant differences between the group means of the LD and NA subjects in any of the age groups on WISC-R Vocabulary.

TABLE 2. Chronological age (CA) and IQ score for each subject.

	Group							
	Learning disabled					*Normally achieving*		
	Subject	*CA*	*IQ*[a]			*Subject*	*CA*	*IQ*[b]
Age range			*V*[c]	*P*[d]	*FS*[e]			
8:0–9:11	1	8:0	High Average	Average	Average	49	8:2	108
	2	8:4	Very Superior	Very Superior	Very Superior	50	8:2	100
	3	8:5	125	122	126	51	8:4	114
	4	8:5	High Average	Average	High Average	52	8:5	127
	5	8:6	High Average	Superior	Superior	53	8:6	124
	6	8:9	Very Superior	Very Superior	Very Superior	54	8:6	102
	7	8:10	Very Superior	High Average	Very Superior	55	8:7	115
	8	8:11	Very Superior	Very Superior	Very Superior	56	8:9	122
	9[f]	9:0	Superior	Superior	Very Superior	57	8:9	130
	10	9:1	119	114	118	58	9:3	144
	11	9:3	Average	High Average	Average	59	9:3	134
	12	9:6	115	107	112	60	9:3	144
	13	9:7	115	102	110	61	9:4	131
	14	9:7	119	111	117	62	9:5	128
	15[f]	9:10	112	105	109	63	9:6	126
	16	9:11	Superior	Superior	Superior	64	9:11	112
10:0–11:11	17	10:1	114	82	99	65	10:1	113
	18	10:1	123	139	133	66	10:2	139
	19	10:3	Superior	High Average	Superior	67	10:2	100
	20	10:3	High Average	Average	High Average	68	10:3	136
	21	10:8	Very Superior	Average	Superior	69	10:4	117
	22	10:10	127	111	122	70	10:6	115
	23	10:11	High Average	High Average	High Average	71	10:6	118
	24	11:2	113	106	110	72	10:7	105
	25	11:3	Superior	Very Superior	Superior	73	10:9	126
	26	11:3	Superior	Superior	Superior	74	10:10	109
	27	11:5	High Average	High Average	High Average	75	11:0	114
	28	11:5	High Average	Average	High Average	76	11:1	123
	29	11:5	120	107	115	77	11:1	92
	30	11:5	Average	High Average	High Average	78	11:7	121
	31	11:7	105	102	103	79	11:9	120
	32	11:7	108	105	107	80	11:11	116
12:0–13:11	33	12:1	Average	High Average	High Average	81	12:0	110
	34	12:2	Superior	Very Superior	Very Superior	82	12:1	145
	35	12:5	111	105	109	83	12:1	119
	36	12:5	High Average	Average	High Average	84	12:2	105
	37	12:6	123	124	125	85	12:2	109
	38	12:8	High Average	High Average	High Average	86	12:3	134
	39	12:9	Very Superior	Superior	Very Superior	87	12:4	110
	40	12:9	Average	Average	Average	88	12:4	116
	41	13:1	106	115	112	89	12:5	100
	42	13:2	High Average	Average	High Average	90	12:8	109
	43	13:8	135	108	123	91	12:9	108
	44	13:8	Superior	High Average	Superior	92	12:10	150
	45	13:8	100	93	96	93	13:1	112
	46	13:9	High Average	Superior	Superior	94	13:2	98
	47	13:9	High Average	Superior	Superior	95	13:5	93
	48	13:9	103	86	94	96[f]	13:9	121

[a]IQ scores taken from student files. IQ test was the WISC-R administered by a certified psychologist no more than 2 years prior to the study. In instances when exact IQ scores were not reported, the intelligence classification was given. [b]IQ scores taken from student files. IQ test was the Otis-Lennon Mental Ability Test, a group aptitude test administered no more than 2 years prior to the study. [c]Verbal IQ from WISC-R. [d]Performance IQ from WISC-R. [e]Full Scale IQ from WISC-R. [f]Subjects eliminated from study.

Procedure

Each child was seen individually in a quiet room. The child was seated at a table opposite the experimenter. Following a prepared script (see Appendix A), the experimenter introduced the task and then asked the child to "make up a story about something that is make-believe or something that is not real." No time limit was imposed. A predetermined set of probes or prompts was used when a child did not respond or when a child produced a story that did not contain a resolution. These included a repe-

tition of instructions, a reminder to the child to tell a *whole* story, and a request to tell the experimenter *more* about what happened (see Appendix A). A maximum of three prompts was given to each child. Instances of prompts were recorded by the experimenter. All stories were audiotaped and subsequently transcribed verbatim.

Coding

Following story transcription, each story was segmented into propositions. Using Fillmore's (1968) definition, a proposition was defined as a predicator or relational word and one or more arguments that have a specific relation to the predicator. In general, a proposition approximates a simple clause, and in most cases, utterances were segmented into propositions at clausal boundaries. For example, the utterance, *When the boy got home/he ate dinner*, is composed of two propositions as indicated by /. Within this study, propositions were used as a measure of story length and as the basic unit of meaning within a story.

Each segmented story was then subjected to a story grammar analysis using a modified version of Stein and Glenn's (1979) story schema. Based on the type of information contained within a proposition and the function of that proposition within the story, each proposition was coded into one of the following seven discrete categories: (a) *Setting*—provides information regarding character description and the context of the story, (b) *Initiating Event*—occurrence that influences a character to act, (c) the character's *Response* to the occurrence, (d) a *Plan* made, (e) an overt *Attempt* of the character to attain the goals, (f) the *Direct Consequence* of the overt action, and (g) the character's *Reaction* to the outcome. Setting statements were further broken down into *Major Setting* statements—those that introduce the main character—and *Minor Setting* statements—those that describe the social, physical, or temporal context.

Modifications of Stein and Glenn's categories mainly involved the addition or redefinition of categories to accommodate instances of dialogue that occurred in many of the children's stories. For example, Stein and Glenn's category of Internal Responses was expanded to include external responses (i.e., overt verbalizations of a character's thoughts, beliefs, and attitudes). Other modifications consisted of more clearly defining the specific information entailed in a given story category in an attempt to eliminate overlap. Each category is specifically defined and illustrated in Table 3.

Following a story grammar analysis, each story was divided into episodes. An episode is a sequence of events that may include any or all of the seven story categories occurring in the order discussed above. In the ideal situation, an episode has a beginning, middle, and end, and the episode boundary is clear-cut. When components of an episode are omitted, an episode boundary is less obvious. For this study, in such instances, an episode boundary was marked whenever a new sequence of events was initiated. Thus, episodes were found to begin and end with any of the story category types. For example, if a story contained the following sequence—Initiating Event, Plan, Attempt, Direct Consequence, Attempt—an episode boundary was marked at the end of the Direct Consequence statement. The episode is considered the basic building block of a story, and each story may be composed of one or more episodes.

Each episode was further classified as being complete or incomplete. Using Stein and Glenn's (1979) criteria, an episode was considered complete if it contained (a) a purpose in the form of either an Initiating Event or an internal/external Response, (b) an overt goal-directed behavior in the form of an Attempt, and (c) a Direct Consequence indicating success or failure at attaining a goal. Instances in which the Attempt also implied a consequence and resolution (e.g., *He killed the man*) were also considered complete, despite the absence of an explicit Direct Consequence. An episode was identified as incomplete when one or more of the essential components was not present.

Another area of interest was the manner in which successive episodes were connected to each other. To complete this analysis, the four discrete kinds of interepisodic relations identified and defined by Stein and Glenn (1979) were used. A *Then* relation was coded when the events in two episodes occurred successively in time but were not causally related. A *Cause* relation was coded when there was an explicitly stated direct causal relationship between the events in two succeeding episodes. An *And* relation was coded when the events in two episodes occurred simultaneously. Finally, an *Embedded* relation was coded when the events in an episode began after a previous episode was begun and terminated either before or at the same time as the previous episode.

Finally, the presence of story markers was noted. This category included both beginning markers (i.e., *once upon a time* or some variant) and ending markers (i.e., *the end* or some variant).

Interrater Reliability

Interrater reliability checks were completed for each of the following procedures: (a) transcription, (b) proposition segmentation, (c) story grammar analysis, (d) episode segmentation, (e) complete/incomplete episode identification, and (f) interepisode relation assignment. For each of these six areas, one half of the stories produced by both the LD and NA subjects in each of the three age groups was reviewed by an independent observer who was trained on the specific procedures. An agreement was defined as an instance of congruence between raters prior to discussion. Agreement percentages were calculated separately for each age range of the NA and LD subject groups. This procedure yielded at least an 85% level of interrater agreement in each of the six reliability areas with a range between 85% and 97% and no area unusually disparate from the others.

TABLE 3. Story grammar categories, definitions, and examples.

Category type	*Definition*	*Example*
1. Setting	Habitual or static states of characters and locations.	
A. Major Setting	The first introduction of the main characters, activities, and locations. Locations are considered Major Setting statements only when they are specified in the same proposition as the character.	Once upon a time there was this duck. There was a girl from England.
B. Minor Setting	Subsequent changes in characters, times, activities, and locations. Minor Setting statements include descriptions of people and objects.	He always wanted to be a superhero. The weefolks' eyes are small, usually scarlet or blue.
2. Initiating Events	The immediate cause for a response on the part of the protagonist.	
A. Natural Occurrence	A change in the physical environment. It is not caused by an animate being and thus cannot be directly caused by characters' actions.	The lightening hit the tree, which smashed through the car window. Today is Ilana's birthday.
B. Action	An action performed by a character that stimulates a response in a character.	He found a four-leaf clover. Jack fell asleep at school.
C. Internal Event	Perception of an internal or external event or changes in internal states such as pain, hunger, sickness, and so forth. This includes all senses.	Suddenly I saw movement in the bushes behind me. I just heard a report.
D. Verbalization	An initiating event expressed in dialogue form.	He said, "He didn't want to hurt him." The genie said, "I'll do anything you say."
3. Response	The psychological state of the character after the initiating event or a verbal response to a situation.	
A. Affective Response	Includes all emotional responses such as happiness, excitement, sadness, and so forth.	The genie was getting a little bit mad. He said, "I am afraid no longer."
B. Goal	The character's desires or intentions.	So Mr. Frump said, "I want you to give me three wishes." He wanted to be rich.
C. Cognition	Statements that refer to a character's thoughts.	But I knew cats couldn't climb trees. The farmer said, "I don't think so."
4. Plan	Statements that specify a character's strategy for obtaining the goal.	I will write an ad in the newspaper. So I said, "I will set a trap for him."
5. Attempt	The character's overt action(s) to obtain the goal.	Joshua went to fight the monster. I dove into the water.
6. Direct Consequence	The character's success or failure at attaining the goal(s); any changes in the sequence of events resulting from the character's actions.	
A. Natural Occurrence	A change in the physical environment that affects the achievement of the character's goal.	All the smoke and lava fell on their heads. He got very sick.
B. Action	Actions of the character that impinge upon the attainment of the goal.	So the robot went back into space to Mars. They put him in jail.
C. End State	An event that is not immediately changeable or one that connotes finality.	From then on, the world was owned by Mars. Then the creature had taken over the world.
7. Reaction	The way the character feels or reports feeling about the outcome; the character's thoughts regarding success or failure.	
A. Affect	The character's emotional state.	Cryton that day was very happy. He said, "We had a good time."
B. Cognition	The character's thoughts.	He thought he would never have any friends again. "I know not to try that again."
C. Action	Actions that result from an emotional response.	She hugged her mother. The dog wagged its tail.

RESULTS

Several aspects of the spontaneously generated stories were of interest including story length, the number of episodes, episode integrity and structure, story category usage, interepisodic relations, the use of story markers, and the need for prompts. The statistical analyses involved the use of 2 (Group) × 3 (Age) analyses of variance with unequal *N*s. The .05 level of significance was selected a priori as the error rate for each hypothesis because each category was considered discrete and independent (Kirk, 1968). Thus, the analyses involved planned orthogonal sets of comparisons with each comparison addressing a separate hypothesis. Post-hoc analyses were conducted using the Neuman-Keuls test.

Story Length

The total number of propositions within each story served as a measure of story length. The results revealed a significant main effect for group [$F(1, 87) = 8.56$, $p = .004$]. The learning-disabled students produced significantly fewer propositions per story than the normally achieving subjects, indicating that the stories generated by the learning-disabled children were shorter and contained fewer units of meaning than those produced by their normally achieving peers. No significant age effect or interaction effect was found (see Appendix B).

Episodes

Each story is composed of one or more episodes, and analyses were conducted on the number of episodes as well as on episode integrity and structure. With respect to the number of episodes within stories, no significant differences were found either between the learning-disabled and normally achieving groups or among the three age groups (see Appendix B). However, differences were found in the areas of episode integrity and episode structure.

Episode integrity was operationalized as the proportion of total episodes that was complete (i.e., number of complete episodes/total number of episodes). Statistical results (see Table 4) revealed a significant main effect for group [$F(1, 87) = 17.09$, $p = .000$], with the learning-disabled subjects producing a significantly smaller proportion ($M = 46\%$, $SD = 32\%$) of complete episodes than their normally achieving counterparts ($M = 70\%$, $SD = 26\%$). A significant main effect for age [$F(2, 87) = 4.00$, $p = .022$] was also found; the oldest subjects produced a significantly higher proportion of complete episodes ($M = 69\%$, $SD = 24\%$) than either of the two younger age groups ($M = 50\%$, $SD = 32\%$ for 8:0–9:11; and $M = 56\%$, $SD = 35\%$ for 10:0–11:11). A significant interaction effect was not found [$F(2, 87) = 0.29$, $p = .745$].

TABLE 4. 2 × 3 ANOVA of proportion of total complete episodes.

Source of variation	*SS*	*df*	*MS*	*F*
Group (A)	1.40	1	1.40	17.09**
Age (B)	0.66	2	0.33	4.00*
A × B	0.05	2	0.02	0.30
Remainder	7.18	87	0.08	
Total	9.15	92	0.1	

*$p < .05$. **$p = .000$.

Incomplete episodes were then examined to determine the nature of the missing information. As stated previously, a complete episode consisted of an Initiating Event or Response, an Attempt, and a Direct Consequence. The proportion of incomplete episodes that contained each of these essential components was entered into separate 2 × 3 analyses of variance. The only significant group difference was for Attempts [$F(1, 87) = 3.82$, $p = .05$], with the learning-disabled subjects demonstrating a lower proportion of incomplete episodes that contained Attempts in comparison to the normally achieving control subjects (i.e., $M = 40\%$, $SD = 39\%$ for LD; $M = 58\%$, $SD = 44\%$ for NA). There were no age effects for any of the three variables and no significant interaction effects (see Appendix B). However, a further difference was found when the likelihood of essential component inclusion was examined. Ranging from most likely to least likely to be included were Initiating Events or Responses, Direct Consequences, and Attempts for the learning-disabled subjects and Attempts, Initiating Events or Responses, and Direct Consequences for the normally achieving subjects.

The analyses of *episode structure* entailed calculating the proportion of episodes (both complete and incomplete) that contained one or more propositions in each story grammar category. The results (see Table 5) showed significant group differences for Responses [$F(1, 87) = 11.669$, $p = .001$], Attempts [$F(1, 87) = 8.021$, $p = .006$], and Plans [$F(1, 87) = 5.332$, $p = .023$], with the learning-disabled subjects exhibiting proportionately fewer episodes that contained each of these story components in comparison to normally achieving peers (i.e., Responses: $M = 29\%$, $SD = 27\%$ for LD vs. $M = 50\%$, $SD = 30\%$ for NA; Attempts: $M = 66\%$, $SD = 32\%$ for LD vs. $M = 83\%$, $SD = 25\%$ for NA; Plans: $M = 9\%$, $SD = 17\%$ for LD vs. $M = 20\%$, $SD = 26\%$ for NA). Thus, regardless of age, the learning-disabled subjects tended to omit the middle parts of a story, portions of which generally contain the cognitive planning, actions, and attitudes of the protagonist. No other group differences were found (see Table 5). There was one significant main effect for age, with the oldest subjects producing a significantly higher proportion of episodes with Setting statements than either of the two younger groups [$M = 60\%$, $SD = 30\%$ for 8:0–9:11; $M = 51\%$, $SD = 32\%$ for 10:0–11:11; $M = 74\%$, $SD = 27\%$ for 12:0–13:11; $F(2, 87) = 5.03$, $p = .009$]. There were no significant interaction effects.

TABLE 5. Group means, standard deviations, and *F* values for analyses of episode structure.

	Group					
	LD		NA			
Category type	*M*	*SD*	*M*	*SD*	*F*	*df*
Setting	0.61	0.33	0.62	0.29	0.078	1, 87
Initiating Event	0.80	0.24	0.77	0.28	0.279	1, 87
Response	0.29	0.27	0.50	0.30	11.669***	1, 87
Plan	0.09	0.17	0.20	0.26	5.332*	1, 87
Attempt	0.66	0.32	0.83	0.25	8.021**	1, 87
Direct Consequence	0.73	0.26	0.79	0.20	1.389	1, 87
Reaction	0.09	0.16	0.13	0.19	1.299	1, 87

*$p < .05$. **$p < .01$. ***$p = .001$.

Story Category Usage

Another set of analyses involved the comparison of the frequency of use of the seven different story components (i.e., Setting, Initiating Events, Responses, Plans, Attempts, Direct Consequences, and Reactions). The proportion of total propositions within a story that was classified into each discrete story category was used as the dependent measure in separate 2 (Group) × 3 (Age) analyses of variance, and the results are presented in Table 6. Significant group differences were found for Minor Setting statements [$F(1, 87) = 4.66$, $p = .034$]; the learning-disabled subjects used proportionately fewer propositions with Minor Setting information than the normally achieving control subjects ($M = 15\%$, $SD = 12\%$ for LD vs. $M = 21\%$, $SD = 14\%$ for NA). The results also revealed a significant group difference for Initiating Events [$F(1, 87) = 7.58$, $p = .007$], indicating that the learning-disabled subjects produced proportionately more propositions containing Initiating Event information ($M = 20\%$, $SD = 11\%$ for LD vs. $M = 15\%$, $SD = 8\%$ for NA). No other group differences were found nor were there age or interaction effects. These findings demonstrate that the learning-disabled children spent less time giving story context information than the control subjects and a proportionately greater portion of time relating those events that cause the protagonist to act.

Interepisodic Relations

Another area of interest related to the manner in which the children linked together the episodes in their stories. To obtain this information, the proportion of total relations that were of each of the four different relation types was calculated. The analyses of variance (Table 7) showed a significant group difference for *Cause* [$F(1, 87) = 5.56$, $p = .020$], with the learning-disabled subjects using proportionately fewer causal relations than their normally achieving peers ($M = 6\%$, $SD = 17\%$ for LD vs. $M = 16\%$, $SD = 26\%$ for NA). Also, a significant main effect for age was found for *Embedded* [$F(2, 87) = 3.40$, $p = .038$]; the oldest subjects used a proportionately greater number of embedding linkages ($M = 17\%$, $SD = 28\%$) than either of the younger age groups ($M = 5\%$, $SD = 12\%$ for 8:0–9:11 and $M = 7\%$, $SD = 15\%$ for 10:0–11:11), regardless of LD/NA status. Finally, there was a significant interaction effect for *And* [$F(2, 87) = 3.50$, $p = .034$], with the oldest NA subjects using proportionately more concurrent episodes than the LD subjects in any age group. Of interest, the learning-disabled subjects maintained a consistently low usage of *And* relations across all ages studied (3%–12%). In contrast, a considerable increase was seen in *And* relations among the control subjects, with the two younger age groups using 4% and 11% and the oldest normally achieving subjects using 25%. No group, age, or interaction effects were found for the *Then* relation. Taken together, these data suggest that the LD subjects were less likely to connect episodes with the more complex temporal relations involving direct causality and simultaneity of events.

Story Markers and Prompts

The final focus of this analysis involved the subjects' use of story markers and the examiner's need to use prompts to encourage the children's production of a complete story. The analysis of story markers produced no significant main effects or interaction effect (see Appendix B). For prompts, there was a significant main effect for age [$F(2, 87) = 3.14$, $p = .048$], with fewer mean number of prompts given with increasing age (8:00–9:11 = 0.6, 10:0–11:11 = 0.28, 12:0–13:11 = 0.19). (See Table 8.)

DISCUSSION

Developmental and Group Differences

The first part of this section will focus on those aspects of a story that relate to story category usage, episode integrity, and episode structure. The second part will

TABLE 6. Group means, standard deviations, and 2 × 3 ANOVA of proportional use of category types.

		LD		*NA*				
Category type	*Source of variation*	*M*	*SD*	*M*	*SD*	*SS*	*df*	*F*
Setting	Group (A)	0.19	0.24	0.24	0.14	0.07	1	3.74
	Age (B)					0.10	2	2.84
	A × B					0.06	2	1.70
	Remainder					1.53	87	
	Total					1.75	92	
Major Setting	Group (A)	0.03	0.06	0.02	0.02	0.00	1	1.15
	Age (B)					0.00	2	0.66
	A × B					0.00	2	0.49
	Remainder					0.18	87	
	Total					0.18	92	
Minor Setting	Group (A)	0.15	0.12	0.21	0.14	0.08	1	4.66*
	Age (B)					0.06	2	1.75
	A × B					0.06	2	1.63
	Remainder					1.47	87	
	Total					1.66	92	
Initiating Events	Group (A)	0.20	0.11	0.15	0.08	0.07	1	7.58**
	Age (B)					0.06	2	2.97
	A × B					0.01	2	0.32
	Remainder					0.81	87	
	Total					0.94	92	
Responses	Group (A)	0.09	0.09	0.12	0.11	0.03	1	3.36
	Age (B)					0.00	2	0.12
	A × B					0.02	2	0.99
	Remainder					0.87	87	
	Total					0.93	92	
Plans	Group (A)	0.02	0.05	0.04	0.06	0.01	1	1.85
	Age (B)					0.01	2	2.17
	A × B					0.02	2	3.66
	Remainder					0.22	87	
	Total					0.25	92	
Attempts	Group (A)	0.26	0.16	0.27	0.12	0.00	1	0.03
	Age (B)					0.04	2	0.86
	A × B					0.03	2	0.74
	Remainder					1.82	87	
	Total					1.89	92	
Direct Consequences	Group (A)	0.22	0.14	0.21	0.36	0.00	1	0.01
	Age (B)					0.10	2	0.63
	A × B					0.12	2	0.06
	Remainder					6.76	87	
	Total					6.98	92	
Reactions	Group (A)	0.01	0.03	0.02	0.03	0.00	1	0.41
	Age (B)					0.00	2	0.48
	A × B					0.00	2	1.41
	Remainder					0.08	87	
	Total					0.08	92	

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

focus on the aspect of story structure that has to do with the manner in which episodes are connected (i.e., the interepisode relations).

Story category usage. The traditional approach to story grammar analysis has involved an examination of the proportion of total propositions in a story that are of a particular category type. In most recall studies, the proportion or percentage of accurately recalled propositions of each category type has been used as a measure of relative saliency of category information. Because this study did not include recall, accuracy per se was not a relevant variable. However, the basic approach was adapted in the current study for use with spontaneously generated stories by examining the proportion of all propositions that was of a particular category type. The results showed that the learning-disabled subjects demonstrated relatively intact knowledge of story structure in that they used all category types in approximately the same order of saliency as their normally achieving peers. Further, the relative order of saliency found here was similar to that found in gist recall studies with Attempts, Direct Consequences, Initiating Events, and Setting statements being the four most frequently used category types. The learning-disabled children and adults studied by Graybeal (1981), Weaver and Dickinson (1979, 1982), and Worden et al. (1982) also demonstrated the same relative ranking in their story recall as their control subject counterparts. The major differences revealed by

TABLE 7. 2 × 3 ANOVA of proportional use of each interepisode relation.

Interepisode relation	*Source of variance*	*SS*	*df*	*MS*	*F*
And	Group (A)	0.11	1	0.11	2.42
	Age (B)	0.08	2	0.04	0.81
	A × B	0.33	2	0.17	3.50*
	Remainder	4.11	87	0.05	
	Total	4.63	92	0.05	
Then	Group (A)	0.31	1	0.31	2.27
	Age (B)	0.31	2	0.16	1.14
	A × B	0.59	2	0.30	2.16
	Remainder	11.91	87	0.14	
	Total	13.11	92	0.14	
Cause	Group (A)	0.26	1	0.26	5.57*
	Age (B)	0.12	2	0.06	1.32
	A × B	0.07	2	0.04	0.77
	Remainder	4.09	87	0.05	
	Total	4.54	92	0.05	
Embedded	Group (A)	0.02	1	0.02	0.52
	Age (B)	0.27	2	0.14	3.40*
	A × B	0.03	2	0.02	0.42
	Remainder	3.46	87	0.04	
	Total	3.78	92	0.04	

*$p < .05$.

the present analyses were that the learning-disabled subjects produced proportionately fewer propositions with Minor Setting information and proportionately more propositions containing Initiating Event information than their normally achieving peers.

Episode analysis. A more meaningful basis for comparing spontaneously generated stories of learning-disabled and normally achieving students was found by the present authors to be at the level of the episode. The episode can be viewed as the basic building block of stories and is composed of propositions. Thus, the episode represents a higher hierarchical unit of story structure than does the individual proposition. Like the individual story category types, the episode has been shown to have some degree of psychological validity (Haberblandt, Berian, & Sandson, 1980). Episodes may contain propositions representing any or all of the seven story grammar categories. However, according to Stein and Glenn (1979), to be considered a complete episode, a behavioral sequence must as a minimum contain some mention of the purpose of the behavior (i.e., an Initiating Event or Response that precipitates the protagonist's actions), the goal-directed behavior (i.e., an Attempt), and the outcome of the behavior (i.e., a Direct Consequence, which indicates attainment or nonattainment of the goal).

Episode integrity. Both developmental and group differences were found when the variable of episode integrity (i.e., the completeness of episodes) was analyzed. Subjects of all ages and of both groups generated episodes with the three essential components of Initiating Event or Response, Attempt, and Direct Consequence. This finding is consistent with Applebee's (1978) report that the formulation of a complete narrative emerges between 5 and 6 years of age. However, the learning-disabled students were found to produce a significantly lower proportion of complete episodes than the normally achieving students. Further, the oldest students (12:0–13:11) produced a significantly higher proportion of complete episodes than either of the younger subject groups. This latter finding is compatible with the decrease in prompts that was also seen as a function of increasing age. The oldest subjects required significantly fewer reminders or prompts to construct a whole story than the subjects in the two younger groups. It is important to note, though, that even at the oldest age level, our subjects did not always produce complete episodes. In fact, approximately one third of their episodes were considered incomplete.

Further analyses of the incomplete episodes revealed that of the three essential components, only Attempts differentiated the learning-disabled and normally achieving students. The learning-disabled students were significantly less likely to include statements specifying goal-directed behaviors. Of interest, of the three category types required, Attempt statements were found most frequently in the incomplete episodes of normally achieving students (M = 58%) and least frequently in those of learning-disabled students (M = 40%).

Episode structure. When the learning-disabled and normally achieving subjects were compared on the pro-

TABLE 8. 2 × 3 ANOVA of total number of prompts.

Source of variance	*SS*	*df*	*MS*	*F*
Group (A)	1.08	1	1.08	2.32
Age (B)	2.92	2	1.46	3.14*
A × B	0.94	2	0.47	1.01
Remainder	40.49	87	0.47	
Total	45.29	92	0.49	

*$p < .05$.

portion of total episodes that contained information of a particular category type, further interesting results were found. Within their episodes, the learning-disabled subjects were significantly less likely to include Minor Setting statements, Attempts, Responses, and Plans than their normally achieving counterparts. An overall characterization of the stories told by the learning-disabled subjects is that they introduced at least one protagonist, specified the event that precipitated the rest of the episode, and indicated the outcome that resulted. They tended to omit the entire middle section of the episode. With the exception of Minor Setting statements, Westby (1985) found the same story construction patterns with third-, fourth-, and fifth-grade reading-disabled children who were asked to make up a story to a poster card. Of interest, this pattern is also identical to that exhibited by normally achieving first graders in Mandler and Johnson's (1977) gist recall study.

In Botvin and Sutton-Smith's (1977) terms, the stories told by our learning-disabled subjects were more likely to be composed of primary plot units rather than secondary plot units. Primary plot units proceed from the initiating event (State A) to the direct consequence (State B). Secondary plot units contain responses, plans, and attempts and function as transition sequences between States A and B. Developmentally, primary plot units emerge earlier and are considered a less mature plot form than secondary plot units, which emerge between 5 and 6 years of age. Thus, the stories of the learning-disabled students overall resembled those of considerably younger normally achieving children in some ways.

In part, the tendency to omit information about a character's response, plan, and attempts may reflect impaired role-taking skills (i.e., the ability of a speaker to take the perspective of the audience and to make appropriate inferences regarding shared knowledge and partner needs). Role taking is one component of what Bruce (1980) calls the "knowledge of psychological cause-effect relationships" that is inherent in story narratives. According to Bruce, psychological cause-effect relationships are the result of motivational or intentional behaviors of characters within a story and are, therefore, planned behaviors. They reflect knowledge of the motivational relationships among people and objects in the world. In this view, the ability to convey planning information or intentional behavior is requisite for oral narration because stories recount the plans that characters formulate to reach their goals. Thus, cognizance of the character's plans necessitates role taking on the part of the storyteller.

As one component of psychological cause-effect relationships, role taking requires that the storyteller have an awareness that people plan and explicitly relate the internal states, motivations, and goals of a character. The reduced tendency of the learning-disabled subjects to include Response statements and Plan information may indicate (a) a deficit in the awareness of these relationships, (b) an impaired recognition of the need to share this knowledge with others, and/or (c) an impaired ability to explicitly convey these relationships linguistically to a listener. The fact that most of the learning-disabled students in the present study produced at least some complete episodes suggests that they have both the awareness and ability needed but do not actualize this knowledge on a consistent basis. Such inconsistency may be indicative of a skill in the developmental stages. This interpretation is in line with the idea that the storytelling behavior of learning-disabled students resembles that of developmentally younger children (Botvin & Sutton-Smith, 1977; Mandler & Johnson, 1977).

These same role-taking deficits may account for the comparatively lower proportion of Attempt statements found in episodes of the learning-disabled subjects. The exclusion of information about a character's actions results in a story that progresses directly from the Initiating Event to the Direct Consequence. In this situation, the listener is left to infer the action events that logically connect the beginning of an episode to its resolution. This leap may indicate an incorrect assumption on the part of the narrator that such information is shared and need not be stated.

When psychological cause-effect relationships are not stated in a story, there is an increased burden placed on the listener to make inferences regarding the characters' thoughts, feelings, attitudes, goals, motivations, and behaviors. Thus, the communication responsibility is shifted to the listener, who may have to take a more active role to fill in information that may be required to construct a complete, logically organized episode to understand why a character behaved in particular ways. Based on the current findings, it appears that the stories of the learning-disabled students did not fulfill the requirements of a narrative. The listeners to the learning-disabled students' stories were not provided with complete information and, therefore, may have had to assume increased responsibility to piece out missing story information to form a meaningful whole.

The role-taking deficits found in the story narration abilities of learning-disabled students are highly similar to those reported in studies of conversation (Bryan & Pflaum, 1978; Donahue, 1981; Noel, 1980; Spekman, 1981). This evidence of role-taking deficits across different discourse forms is not surprising in light of the similarities between conversation and storytelling. Both communication activities require a sense of purpose, the exchange of information in a clear and organized fashion, the ability to make needed repairs, and the ability to assume a shared perspective. This perspective-taking ability includes the clear establishment of referents and the proper use of other forms of cohesion, an appropriate determination of relevant audience attributes, and the provision of appropriate levels of redundancy. The development of all of these skills requires an integration of cognitive, linguistic, and social competencies (Flavell, 1981; Van Kleeck, 1984).

Finally, it is important to note that, except for Attempt statements, the information categories that the learning-disabled subjects were less likely to use (i.e., Minor Setting, Responses, and Plans) are not essential parts of a complete episode as defined by Stein and Glenn (1979).

Rather, they are the details that aid in character development and in the formulation of well-developed plots. The net effect of reduced use of these details is a perceived lack of richness in the stories told by the learning-disabled subjects. The "impoverished" nature of the story recall abilities of Weaver and Dickinson's (1979, 1982) dyslexic students is mirrored by the self-generated story production abilities of our learning-disabled subjects. This impression is compounded by the fact that the learning-disabled subjects were less likely to include Minor Setting information in their episodes and provided less of this background information even in episodes in which such information was included. Thus, the learning-disabled subjects set a more barren stage for their episodes than their normally achieving peers in terms of character background, character attributes, and story context. Bruce (1980) noted that both internal plans and responses of a character are dependent upon the character's attributes, which are examples of Minor Setting information. Therefore, the fact that the learning-disabled subjects in this study showed a reduced use of Minor Setting statements is consistent with, and may be related to, their relatively restricted use of Responses and Plans compared to the normally achieving controls.

Interepisode relations. Some differences and similarities were found between groups and across ages with respect to the type of relations that were used to connect the episodes within a story. First, students in all groups were more likely to utilize the *Then* relation, a connection between two events that occur successively over time. More than 50% of all connections by students in all groups were of this type. The *Then* relation can probably be considered the simplest or most basic connection and typical of many stories that merely present events in their proper temporal sequence. The *And* relation was found to be used proportionately more often by the oldest normally achieving students (M = 25%) than by students in any of the other groups (M = 3%–12%). This relation ties together two events that occur simultaneously. *Cause* relations were used proportionately more often by the normally achieving students (M = 16%) than the learning-disabled students (M = 6%). Thus, it would appear that the *And* and *Cause* relations are more sophisticated story connectors than the *Then* relation. This conclusion has intuitive validity because both the formulation of simultaneous event sequences and the specification of direct causality between episodes require more cognitive planning and cognitive maturity in their expression than the linkage of episodes in a simple additive fashion.

Finally, the oldest subjects utilized a significantly higher proportion of *Embedded* relations than the two younger groups. This finding supports earlier work by Botvin and Sutton-Smith (1977), which indicated that embedded episodes emerge between 11 and 12 years. Embedded episodes appear to represent the most sophisticated type of story structure and episode linkage because they necessitate a substantial amount of planning on the storyteller's part. Further, they require the ability to organize at least two behavioral sequences, coordinate them into a cohesive narrative, and hold each perspective in mind simultaneously. This is a far more complex task than stringing together separate episodes in a linear sequential fashion like beads on a string. Thus, the construction of embedded episodes places greater demands on the child's cognitive system and short-term memory store. However, it is important to note that the current findings indicate that the use of embedded episodes by the oldest subjects was still limited (M = 17%) and certainly did not represent the predominant linkage device.

Comparisons of Results to Gist Recall Studies

In discussing the results of the present study, it is also possible to make comparisons to the results of gist recall experiments that have involved learning-disabled individuals. When differences have been found between learning-disabled and normally achieving subject groups, the primary difference has been in the amount of information recalled, with learning-disabled students aged 7–9 years and learning-disabled adults recalling significantly less information from stories than nondisabled peers (Graybeal, 1981; Worden et al., 1982). However, this finding has not been confirmed consistently. Weaver and Dickinson (1979, 1982) and Worden and Nakamura (1982) found overall recall to be equivalent in normally achieving and learning-disabled subject groups who were 9–16 years of age and college students, respectively. These discrepant findings may be explained in part by methodological differences that exist among these studies. The most obvious differences relate to subject diagnostic label, selection procedures, sample size, and sample age. Graybeal (1981), for example, studied a group of twelve 7–9-year-old language-impaired children who were identified by their performance on a battery of linguistic measures. Weaver and Dickinson's (1979, 1982) subjects were 35 dyslexics, aged 9:0–15:11, who attended a special school for learning-disabled and language-impaired children and had minimum WISC-R scores of 95. Worden et al. (1982) and Worden and Nakamura (1982) studied three groups of learning-disabled college students, for a total of 60 subjects. All of their subjects had IQs of 85 or above on the Wechsler Adult Intelligence Scale (WAIS) (Wechsler, 1955), a discrepant score on at least one subtest of the Peabody Individual Achievement Test (PIAT) (Dunn & Markwardt, 1970), and were enrolled in a program for learning-disabled students at a community college. The experimental tasks in each of these studies were highly similar in that subjects were presented with an oral story and were asked to retell that story as accurately as possible. However, the stimulus stories themselves varied with respect to both length and content. No apparent differences exist in the manner in which recall accuracy was defined and measured.

The findings of the present study suggest that there are quantity of information differences between learning-disabled and normally achieving students at the level of spontaneous story production. When faced with the task of generating a novel story, the learning-disabled subjects

produced stories that were significantly shorter (i.e., contained significantly fewer propositions) than those constructed by normally achieving peers. This finding does not necessarily contradict either set of recall results in that the generation of one's own story involves the formulation of ideas, the organization and structuring of those ideas, and their oral expression—a more complex and cognitively demanding endeavor than recalling a story that has already been presented. Thus, it is reasonable to find production differences exist whether or not recall deficits are present.

A second area of comparison to gist recall studies concerns developmental changes that occur in children's narrative discourse abilities as a function of increasing age. Similar to Stein and Glenn's (1979) recall results with nondisabled first and fifth graders and Mandler and Johnson's (1977) first and fourth graders, the current data indicate few developmental differences in the story construction abilities of children between 8:0 and 13:11. At all three age ranges studied, children demonstrated the capability of formulating complete narratives containing all of the components of a story grammar. In addition, they generated multiepisode stories with no age differences noted in the mean number of episodes per story. This is in line with the suggestion by Botvin and Sutton-Smith (1977) that multiepisode stories appear at approximately 7 years of age.

Observations Regarding Applied Story Grammar Research

Counter to previous reports (Graybeal, 1981; Weaver & Dickinson, 1979, 1982), the present investigators found a story grammar approach to be sensitive to differences between learning-disabled and normally achieving students beyond that of performance accuracy. There are probably several reasons for this outcome. First, spontaneously generated stories were the focus of interest here, rather than story recall. In a recall task, a subject is asked to remember a story structure that has already been provided. A spontaneous production task imposes increased complexity because the subject must construct a story structure of his or her own. Second, the ultimate framework of analysis in this study was the episode and not individual category types. In fact, the analyses that were performed at the level of category types yielded few group differences. Finally, the cognitive, academic, and linguistic profiles of our subject group may have differed from those of the other groups studied.

One of Graybeal's (1981) conclusions was that story grammar analyses may not pick up the kinds of disorganization problems, such as sequencing difficulties, that are thought to be characteristic of language-impaired and learning-disabled children. Her study, for example, revealed no group differences in the order in which story events were recalled. Perhaps a more plausible conclusion is that a recall task is not sensitive to sequential problems. In fact, most descriptions of the organizational difficulties exhibited by language-disabled children are based on tasks in which a child is asked to describe a sequence of events or explain how an object works or a game is played, as opposed to recall tasks.

It may be possible that a story grammar analysis, when applied to a corpus of spontaneously generated stories, would uncover organizational and sequencing deficits. For example, the division of our stories into episodes involved the tracking of event sequences. That is, when a proposition occurred out of the story grammar sequence, an episode boundary was automatically marked. In the example below, the Attempt statement should have preceded the Direct Consequence; by following the Direct Consequence it was marked as the beginning of a new episode, rather than being joined to the events to which it was conceptually related.

Proposition	Category Type
Episode 1	
And one day he came to this museum	Initiating Event
And by accident he fell	Initiating Event
And he got in trouble	Direct Consequence
And he went to jail	Direct Consequence
Episode 2	
And he touched one of the paintings	Attempt

Further, it is possible that organizational deficits would emerge if the episode itself were to be used as the unit of analysis rather than the more traditional individual category type approach. For example, the degree of perceived story organization/disorganization may be related to the relative incidence of consecutive incomplete episodes. Additionally, one could examine the episodes to determine the nature of the missing information. The omission of certain category types may do nothing to disrupt the flow of events within a story, whereas the omission of other category types—such as Attempts or Initiating Events—may result in a greater degree of disruption and, therefore, perceived disorganization.

Two final points warrant brief discussion. First, because a story grammar is a description of the structural organization of stories, there are functional aspects of stories that cannot be revealed with a story grammar analysis (see also Garnham, 1983; Mandler, 1982). Most of these aspects relate to the overall quality of a story. For example, Botvin and Sutton-Smith (1977) noted that developmental improvements in stories that occur between 8 and 13 years (age range studied here) include more in-depth character development, more intricate plots, and more interesting plots. These kinds of qualitative advancements are not tracked by a story grammar analysis. Also, we found many instances of stories that were structurally intact according to story grammar (i.e., stories consisting of one or more complete episodes) but that were clearly lacking in story flow and organization. A typical example of this phenomenon is shown below.

Proposition	Category Type
Episode 1	
One time there was this little dog	Major Setting
All these people didn't want to buy him	Minor Setting
Well, when anybody came by	Minor Setting
and watched him do the little tricks	Minor Setting
They just walked off	Minor Setting
When they did that	Initiating Event
and he saw 'em	Initiating Event
he just walked out of the door of the place	Attempt
and then bit his leg	Attempt
or bit his bottom	Attempt
take a little piece of his pants	Attempt
and then go back in his cage	Direct Consequence
and put it down	Direct Consequence
Episode 2	
And then there was once this little boy	Minor Setting
who really liked dogs . . .	Internal Response

This example is taken from a story composed of five complete episodes. As can be seen, this story is difficult for a listener to follow. The difficulty results from several sources including confused referents, syntactic errors, the lack of cohesion between some propositions, and the inappropriate manner in which the content of episodes is related to other episodes.

The second issue is that story grammar analysis is more suitably applied to the traditional "once upon a time" story structure than to other oral narrative types. In this study, there were several instances of rather sophisticated stories that did not conform to the canonical sequence of events specified by story grammar rules and were thus misleadingly characterized as ill formed. In one case, a child told a complex and cohesive story recounting the end of the world using a news reporter's montage style. The resulting story grammar analysis, however, depicted this story as containing 15 episodes, 9 of which were incomplete. Thus, the relationship between complete episodes and story well-formedness cannot be viewed as isomorphic.

Directions for Future Research

The present study has demonstrated that this group of learning-disabled students showed deficits in several aspects of spontaneous story generation. Given these findings, it appears worthwhile to pursue this line of investigation in an effort to better understand the oral narration problems of this population. The outcome of this project suggests a number of different directions that future inquiries can take. For example, subject selection criteria can be expanded to include a language assessment battery that goes beyond an evaluation of structural linguistic performance in order to explore the relationship between higher level linguistic and cognitive skills and storytelling acumen. In addition, procedures can be designed to incorporate a systematic set of training cues that would be presented to the subject following spontaneous story production. The effect of such cues on the subject's subsequent story production may help to determine the degree of information necessary to evoke complete episodes. Further, a more careful analysis of incomplete episodes may provide insight into which omissions of story information are more and less disruptive from a listener's perspective. Finally, it seems timely to begin to explore the development of different discourse forms in the same samples of subjects. Comparisons across discourse forms would permit an examination of the actual relationship among various narrative and conversational genres.

ACKNOWLEDGMENTS

The authors wish to thank the students and staff of the Jemicy School, Owings Mills, MD, and the Douglas MacArthur Elementary School, Alexandria, VA, for their cooperation and participation in this research project. Appreciation is also expressed to Fran Shipley-Brown and Alison Briggs for their assistance in data collection, transcription, and coding.

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Received February 5, 1985
Accepted October 5, 1985

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APPENDIX A

DIRECTIONS

In talking with kids about your age, I've found that they really like to tell stories and that they tell really good stories. I've heard children tell some very exciting stories about things that are make-believe as well as about things that have actually happened. So, today, I'd like to find out about the kinds of stories that you can make up or tell. I brought my tape recorder today so I can keep a record of your stories and be able to listen to them again later.

The first thing I want you to do is to tell me a story. I want you to make up your own story about something that is make-believe or something that is not real. And I want you to make up the very best story that you can.

Do you understand what you are going to do? (PAUSE) Good. (REPEAT INSTRUCTIONS IF CHILD SAYS HE DOESN'T UNDERSTAND.)

(START TAPE RECORDER.)
Okay, you can start now.

Probes:		
a.	if child gives no response, says "I can't," has perplexed expression, and so forth	REPEAT INSTRUCTIONS.
b.	if child responds with one sentence or story without resolution	SAY, Remember, I want you to tell me a *whole* story.
c.	if child still does not expand story including addition of a resolution	SAY, Tell me *more* about what happened.

WHEN CHILD HAS COMPLETED STORY, SAY, Gee, I really liked that story! You did a good (fine) job!

APPENDIX B

TABLE OF NONSIGNIFICANT FINDINGS

Story Length (total number of propositions)		
Age 8:0–9:11	$M = 38.87$	$SD = 31.17$
10:0–11:11	$M = 51.59$	$SD = 43.74$
12:0–13:11	$M = 48.29$	$SD = 37.23$
$F(2, 87) = 1.14$, $p = .323$		
Interaction (Group × Age): $F(2, 87) = 0.31$, $p = .735$		
Episodes (number per story)		
LD group	$M = 4.15$	$SD = 2.96$
NA group	$M = 5.36$	$SD = 3.80$
$F(1, 87) = 2.81$, $p = .098$		
Age 8:0–9:11	$M = 4.80$	$SD = 3.79$
10:0–11:11	$M = 5.16$	$SD = 3.85$
12:0–13:11	$M = 4.32$	$SD = 2.60$
$F(2, 87) = 1.14$, $p = .323$		
Incomplete Episodes		
Initiating Events or Responses		
Age 8:0–9:11	$M = 64\%$	$SD = 41\%$
10:0–11:11	$M = 51\%$	$SD = 46\%$
12:0–13:11	$M = 65\%$	$SD = 47\%$
$F(2, 87) = 1.07$, $p = .348$		
Attempts		
Age 8:0–9:11	$M = 57\%$	$SD = 39\%$
10:0–11:11	$M = 46\%$	$SD = 42\%$
12:0–13:11	$M = 44\%$	$SD = 46\%$
$F(2, 87) = 0.803$, $p = .451$		
Direct Consequences		
Age 8:0–9:11	$M = 36\%$	$SD = 38\%$
10:0–11:11	$M = 35\%$	$SD = 40\%$
12:0–13:11	$M = 34\%$	$SD = 46\%$
$F(2, 87) = 0.043$, $p = .958$		
Interaction Effects		
Initiating Events or Responses: $F(2, 87) = 0.753$, $p = .474$		
Attempts: $F(2, 87) = 0.675$, $p = .512$		
Direct Consequences: $F(2, 87) = 0.141$, $p = .869$		
Story Markers (number/story)		
LD group	$M = 0.57$	$SD = 0.72$
NA group	$M = 0.38$	$SD = 0.49$
$F(1, 87) = 1.94$, $p = .167$		
Age 8:0–9:11	$M = 0.47$	$SD = 0.63$
10:0–11:11	$M = 0.41$	$SD = 0.56$
12:0–13:11	$M = 0.55$	$SD = 0.68$
$F(2, 87) = 0.39$, $p = .677$		
Interaction: $F(2, 87) = 0.25$, $p = .781$		