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# *The Relationship of Storytelling Ability to Reading Comprehension in Children with Learning Disability*

## *Le rapport entre l'aptitude à raconter une histoire et la compréhension de la lecture chez les enfants ayant des troubles d'apprentissage*

*Susan E. Gilmore, PhD*  
University of Oklahoma  
Oklahoma City, Oklahoma

*Joan S. Klecan-Aker, PhD*  
Texas Christian University  
Fort Worth, Texas

*Willis L. Owen, PhD*  
University of Oklahoma  
Oklahoma City, Oklahoma

### ABSTRACT

Recent studies have explored the relation between oral language and literacy development. Understanding and describing this relation may lead to more effective intervention programs for children who are experiencing language-based learning difficulties. The purpose of this investigation was to add to existing literature by examining the relation of one aspect of oral language, oral storytelling ability, to reading comprehension ability in a population of elementary school-age, upper-middle class, Caucasian children with learning disabilities. Oral, fictional narratives were elicited using a story generation task, and assigned a developmental level of complexity based on the number and organization of grammar components contained within the story. Reading comprehension ability was measured using a formal, standardized passage comprehension task. Results of the study revealed that for this group of participants, the developmental level of story (a measure of story complexity) was significantly related to and predicted performance on the passage comprehension task. Implications of this finding for future research and treatment planning are discussed.

### ABRÉGÉ

Des études récentes ont exploré le rapport entre le développement du langage oral et celui de l'alphabétisation. La compréhension et la description de ce rapport peuvent mener à des programmes d'intervention plus efficaces pour les enfants ayant des difficultés d'apprentissage linguistique. Le but de cette étude était de suppléer aux ouvrages existants en examinant le rapport entre un aspect du langage oral, l'aptitude à raconter verbalement des histoires, et la compréhension de la lecture dans une population d'enfants de race blanche, d'âge scolaire primaire, de la classe moyenne supérieure, ayant des troubles d'apprentissage. On a suscité des narrations orales fictives au moyen d'un exercice de production d'histoire et attribué un degré de complexité du développement basé sur le nombre et l'organisation de composantes grammaticales contenues dans l'histoire. On a mesuré la compréhension de la lecture au moyen d'un exercice formel et normalisé de compréhension de passages. Les résultats de l'étude ont révélé que, pour ce groupe de participants, le degré du développement de l'histoire (une mesure de la complexité de l'histoire) était très étroitement lié au rendement à l'exercice de compréhension de passages et permettait d'en prédire les résultats. Les incidences de cette constatation sur la recherche ultérieure et sur la planification du traitement sont étudiées.

**KEY WORDS:** oral storytelling • reading comprehension • language-based learning disability

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Learning to read is unquestionably one of a child's greatest accomplishments. Success in school depends largely on the timely acquisition of this skill. The understanding of the perceptual-linguistic-cognitive skills necessary for successful reading, both in terms of decoding and comprehending, has been the subject of much research. The primary source of reading difficulty appears to be linguistic in nature (Catts, 1996; Kamhi & Catts, 1989; Snyder & Downey, 1997; Velluntino, 1977). Studies have documented the importance of phonological awareness

in decoding print (Blachman, 1984; Snyder & Downey, 1997; Velluntino and Scanlon, 1982; Wagner & Torgesen, 1987). Empirical evidence also has suggested that syntactic knowledge, which allows a child to expect that words will occur in certain places within a sentence, is related to reading (Roth & Spekman, 1989; Wiig & Semel, 1984). Velluntino and Scanlon (1982) reported that performance on a test of morphology in kindergarten predicted reading performance in first grade. Additionally, a wide lexical base increases reading skill, as we comprehend text better when the words

are familiar (Beck, Perfetti, & McKeown, 1982; Maria, 1990). Training phonological, semantic, and syntactic skills has been found to be effective in improving both reading accuracy and reading comprehension in students with specific learning disabilities (Gillon & Dodd, 1995). Menyuk and Chesnick (1997) stated that it is the ability to bring phonologic, semantic, syntactic, and morphologic skills into awareness (metaprocessing) that is most predictive of reading achievement.

In addition to these linguistic abilities, recent studies have investigated the relation of story schema knowledge to reading achievement. A number of researchers have reported that children who are good readers recognize the underlying structure of stories, referred to as story grammar (Golden, 1981; Laughton & Morris, 1989). Knowledge of story grammar is believed to act as a framework to organize information during the reading act and as retrieval cues for the recall of information (Hedberg & Westby, 1993; Kintsch & van Dijk, 1978). Reading comprehension involves not only decoding, but applying knowledge of the relationships between people and objects in the world (scripts). Therefore, a metalinguistic skill that may also play a part in reading is the ability to tell a story. It involves concepts of intentionality and causality and the understanding of planned human actions. Telling a story, like comprehending text, is an on-line skill requiring dynamic application of story schema knowledge.

Researchers have found performance on story retelling and story construction tasks to be related to reading comprehension ability in nonminority and minority students without learning handicaps and minority students with handicaps. Klecan-Aker and Swank (1993) studied 36 white, middle-class, third grade children and found that those children who told stories with more complicated episodes had higher achievement scores as measured by a test of basic cognitive skills. Jax (1988) analyzed the relationship between story retelling and reading comprehension for 56 fluent English proficient (FEP) bilingual fourth graders in general education classrooms using a story structure analysis based on the grammar described by Stein and Glenn (1979). The analysis, applied to both story construction and story retelling tasks, divided stories into complete thought statements which were classified according to categories of story elements, including setting, initiating events, internal response, plan, attempt,

action sequence, consequence, reaction, and judgement. The results of this story structure analysis indicated that storytelling was correlated with reading comprehension, with the story retelling task accounting for more variance than either story construction or grammatical competence. Caraway (1994) examined fourth and sixth grade African-American children who were achieving normally in school and found a relationship between their skill at applying story schema while orally telling a story and school achievement as defined by reading comprehension ability. Camoe Goldstein, Harris, and Klein (1993) investigated the relationship between reading comprehension and oral storytelling abilities in 31 Latino junior high school students with learning handicaps; a standard scoring protocol for a story-retelling task, based on surface grammatical structures, revealed no significant relationship. However, a significant correlation was obtained when the informal story structure analysis developed by Jax (1988) was applied.

Understanding and describing the relationship between a cognitive/linguistic skill, such as the ability to tell a story, and reading comprehension may lead to more effective intervention programs for children who are experiencing language-based learning difficulties. Necessary to this process is the design and application of further research in this area with populations who differ in age, socioeconomic and sociocultural status, and learning characteristics. The purpose of this investigation was to add to the existing literature by examining the relation of storytelling ability to reading comprehension in a nonminority population with learning handicaps. Specifically, this study investigated the relationship between developmental level of fictional, oral narrative production and passage comprehension in a population of elementary school-age, upper middle-class, Caucasian children with language-based learning disabilities. It was hypothesized that due to the use of shared organizational linguistic processes (i.e., story schema), these abilities would be found to be related.

## Method

### *Participants*

Thirty-seven male ( $n=20$ ) and female ( $n=17$ ) Caucasian, elementary school children with learning disabilities from a laboratory school dedicated to addressing the special needs of the student with learning disabilities served as participants. The children were from homes with professional, well-educated parents who had the financial re-

sources to afford private educational services. This group of participants had a gap of one standard deviation (1 SD) between IQ and achievement in the areas of reading, spelling, or math, as measured by school personnel. A simple, standard deviation formula between the scores of an IQ test and an achievement test was used in making this determination. The Weschler Intelligence Test for Children-Revised (Weschler, 1974) was used to measure aptitude (IQ). Full scale IQ scores for all children were within or above the average range. Average to above average intelligence was defined as a full scale IQ no lower than 80. The Kaufman Test of Educational Achievement (Kaufman & Kaufman, 1996) assessed achievement. In addition to significantly lower achievement scores relative to IQ, the participants were determined to have language disorders. This determination was made by a certified speech-language pathologist based on results of formal, standardized language measures, including the Clinical Evaluation of Language Fundamentals-Revised (Semel, Wiig, & Secord, 1987) and the Detroit Test of Learning Aptitude-2 (Hammill, 1985).

The ages of the participants ranged from 5 years, 7 months to 10 years, 0 months with a mean age of 7 years, 7 months and a standard deviation of 1 year, 3 months. All children passed a speech and hearing screening administered by a graduate student in speech-language pathology. This screening was to ensure that articulation and hearing acuity level were within the normal range for the purposes of conversational speech.

### Procedure

Administration of the reading comprehension subtests and story elicitation occurred in one session, separate from the administration of the IQ and achievement measures. Testing was conducted in a small, quiet room at a speech and hearing clinic adjacent to the laboratory school by speech-language pathology graduate students and supervised by a certified speech-language pathologist. Audiotaping equipment consisted of voice-activated variable speed speech-control cassette recorder (Sony models VSC-2002 and 37).

### *Storytelling*

Two oral, fictional narratives were elicited using a modification of the Expression Connection (Caraway, 1994; Klecan-Aker & Brueggeman, 1991; Klecan-Aker, Caraway, Gilmore, & Johnson, 1993), which was developed for use as a criterion-referenced measure of spontaneous storytell-

ing ability. This modification of the Expression Connection is derived from a number of research projects that were designed to discover the best ways of eliciting, transcribing, and analyzing children's stories (Applebee, 1978; Klecan-Aker, 1993; Klecan-Aker et al., 1993; Klecan-Aker & Kelty, 1990; Klecan-Aker, McIngvale, & Swank, 1987; Klecan-Aker & Swank, 1993; Stein & Glenn, 1979). It contains five problem-based, black and white, scenic stimulus pictures and accompanying sample stories to be used as models. In this study, the examiner chose one of the five pictures and used the same picture for all participants. The examiner presented the picture to the child along with the accompanying sample story as a model and the following instruction: "I am going to tell you a story. Listen to me carefully so that you will know what a story is. Then I'm going to ask you to make up a story of your own. Are you ready?" The examiner then chose a second story picture and presented it to the child with the prompts, "Now its time for you to make up your own story. You may begin...". Children were allowed to choose the picture that they wished to tell a story about from the remaining four pictures. Each child was allowed as much time as needed. All children generated two stories in less than 10 minutes. Prompts were used occasionally, but they consisted only of "Can you tell me more?" or "What else?" because other types of prompts would create a dialogue instead of a monologue. No more than two prompts were used per child. At a later date, all narratives were transcribed as specified by the Expression Connection analysis procedure, with no capitals or periods, as if they were running speech. After each story was transcribed, the story was replayed a second time to check for accuracy.

Transcribed stories were divided into T-units. A T-unit is the equivalent of a simple or a complex sentence. A simple sentence contains an independent clause and no subordinate clauses. It may have any number of modifiers. The subject or predicate, or both, may be compound. A complex sentence contains a main clause and one or more subordinate clauses that act as nouns, adjectives, and adverbs. A compound sentence is defined as two or more T-units, each of which consists of independent equal clauses (Hedberg & Westby, 1993).

Each T-unit was assigned a story grammar component label and subsequently a developmental level was determined. The Expression Connection provides guidelines for obtaining the following measures: number of words per



Table 1. Story grammar components, descriptions, and examples.

Story grammar components	Descriptions	Examples
Setting	introduces the main character and tells where and when the story will take place.	"one day, a was walking in the woods"
Initiating event	a statement of the problem	"The spaceship landed and two aliens came out."
Action	an attempt to solve the problem	"The girl gave the aliens some candy."
Internal response	thinking or feeling statements, may be sensory, cognitive, or	"She saw the aliens" "She thought she should run." "The aliens were happy."
Consequence	the result on an action; the outcome	"They became friends."
Ending	a resolution of the problem ;can also be a summary statement	"The aliens went back to their home."

Table 2. Description of story developmental levels.

<b>Level 0</b>	Any story that can not be placed in any of the other categories.
<b>Level 1</b>	No real use of story grammar components. Children are labeling or describing events, actions, or objects. There is no central theme.
<b>Level 2</b>	No real use of story grammar components. The children are still labeling or describing, but this time their statements follow a central theme or one topic.
<b>Level 3</b>	These stories contain the three story grammar components of initiating event, attempt, and consequence. Children are also beginning to use syntactical subordination.
<b>Level 4</b>	These stories contain the three story grammar components found in level 3, plus one more. The fourth component may vary from child to child.
<b>Level 5</b>	The stories contain the three story grammar components found in level 3, plus one more and an ending. The endings of level 5 stories are strong and indicate a resolution of the initial problem.
<b>Level 6</b>	These stories contain six story grammar components, three of which represent an episode system. The story grammar components consist of setting, initiating event, attempt, consequence, and an ending. The sixth component may vary from child to child and may be either an internal response or a dialogue statement.
<b>Level 7</b>	These stories contain seven story grammar components, three of which represent an episode system. These story grammar components consist of setting, initiating event, attempt, consequence, ending, internal response, and dialogue/reporting.

story, number of clauses per story, number of T-units per story, number of clauses per T-unit, and a developmental level based on the number and type of story grammar components present in the story. Story grammar components, based on the story grammars described by Stein and Glenn (1979), are detailed in Table 1. Descriptions of developmental levels are presented in Table 2.

The modification of the Expression Connection used in this study, included the development of two additional story developmental levels (levels 6 and 7), to encompass more appropriately the narrative development of school-age children. To ensure reliable developmental level assignment, participants had to produce two stories of the same developmental level in order to be included in the study. A sample story containing a T-unit analysis, all the story grammar components identified in the Expression Connection, as well as the actual coding of the components, can be found in Appendix A. Examples of levels 2 through 7 stories can be found in Appendix B.

**Reliability.** Inter-rater reliability of the story analysis procedure was established by having all stories scored a second time by an additional individual trained in the analysis procedure. Reliability for T-unit analysis was 98.7% and 85% for clauses. Reliability was lower for clauses because of some discrepancy as to what constituted a subordinate clause. Discrepancies were identified and resolved through consensus.

### Reading Comprehension

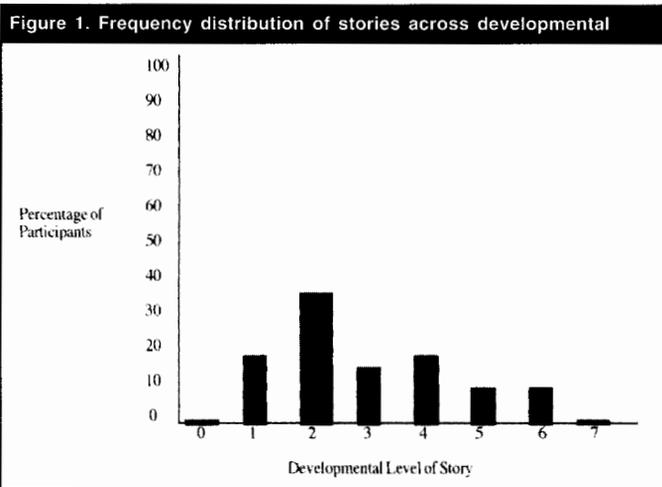
Each child was individually administered the Word Comprehension and the Passage Comprehension subtests of the Woodcock Reading Mastery Test-Revised (WRMT-R; Woodcock, 1985). The WRMT-R was chosen because it is a frequently used, standardized measure of reading achievement. Pearson Product Moment Correlation Coefficients were obtained to examine the relation between the reading comprehension subtest scores. They were found to be highly correlated ( $r = .80$ ). Therefore, only the Passage Comprehension results were used in the analysis. The first four items of the Passage Comprehension subtest require the participant to read a phrase and point to a picture representing that phrase in a multiple choice format. Later items consist of a modified cloze procedure in which the participant reads a short passage and identifies a missing key word. This part of the task requires the participant to state the missing word that would be appropriate in the



context of the passage. The cloze procedure is one way to measure reading comprehension. Answering questions about a passage read silently is another commonly used assessment procedure. Although both procedures tap comprehension processes, answering questions may require more expressive language skill. The authors of the Woodcock Reading Mastery Test - Revised reported a moderately high correlation ( $r = .70$ ) between the Passage Comprehension subtest and the Passage Comprehension subtest of the Woodcock-Johnson Psycho-Educational Battery (Woodcock, 1978).

### Results

Data were available on 36 of the 37 participants, as one of the participants did not complete the testing and was subsequently dropped from the study. Nineteen of the participants were male (53%) and seventeen of the participants (47%) were female. Developmental levels of stories obtained from the participants are detailed in Figure 1. Means, standard deviations, and ranges for performance on the passage comprehension subtest of the Woodcock Reading Mastery Test-Revised and the storytelling task are given in Table 3. The data for the developmental level of story, number of words, clauses, and T-units were positively skewed. Words per T-unit, clauses per T-unit, words per clause, and passage comprehension scores were relatively



**Table 4. Means, standard deviations, and extreme values for measured variables.**

	Developmental Level	Age
Age	-0.33*	
Passage Comprehension	0.54**	0.46**

**Table 3. Means, standard deviations, and extreme values for measured variables.**

Variable	Mean	Standard Deviation	Minimum	Maximum
Developmental Needs	3.0	1.6	1.0	6.0
Number of Words	48.8	28.5	14.0	121.0
Number of Clauses	8.1	5.0	5.0	24.0
Number of T-units	6.4	4.0	12.0	19.0
Words / T-unit	7.9	1.7	2.7	11.4
Words / Clause	6.4	1.3	2.1	9.1
Clause / T-unit	1.3	.2	1.0	1.6
Passage Comprehension	70.9	26.0	11.0	110.0

symmetric. In examining the obtained means, it should be noted that the performance on the passage comprehension measure by this group of children with language-learning disability was two standard deviations below the mean reported by the test authors for the normative group. The mean developmental level of story for the participants, as judged by the modified Expression Connection procedure, was three. Level three stories contain complete episode systems, but lack setting statements, internal responses, endings, and dialogue.

Spearman Correlation coefficients were obtained. As predicted by the hypothesis, developmental level of story, a measure of story schema or organization, was correlated with passage comprehension ( $r = .54, p < .0007$ ). A possible subsets regression procedure was used to examine this relation with age as a covarying factor. Age was included as a variable to control for its influence on interparticipant differences on the passage comprehension task. Both developmental level and age were predictors of passage comprehension ( $F [1,35] = 12.01, p < 0.002$ , and  $F [1,35] = 5.31, p < 0.028$ , respectively), although for the variable age,

**Table 5. Results of the regression analysis for the variables developmental level (Dev Lev) and age as predictors of passage comprehension.**

Source	DF	SS	MS	F Value	Pr > F
Model	3	8313.737	2771.246	5.77	0.0028
Error	32	15356.151	479.879		
Corrected Total	35	23669.889			
R-Square = 0.351 CV = 30.878 Root MSE = 21.906					
Source	DF	Type I SS	MS	F Value	Pr > F
Dev Lev	1	5765.675	5765.675	12.01	0.0015
Age (in mos)	1	2546.715	2546.715	5.31	0.028
Dev Lev * Age	1	1.347	1.347	0.00	0.958
Parameter	Estimate	T for HO: Parameter = 0	Pr > T	SEM	
Intercept	113.033	2.07	0.047	54.713	
Dev Lev	5.543	0.33	0.747	17.049	
Age	-0.661	-1.20	0.238	0.549	
Dev Lev * Age	0.009	0.05	0.958	0.177	

the direction of the relationship was negative. In other words, in this study, the older the participant, the lower the comprehension score. The interaction of developmental level and age did not add to the prediction model. See Table 4 for correlations and Table 5 for the results of the regression.

### Discussion

Results of the study revealed that, for this group of participants with learning disabilities, developmental level of story complexity was significantly related to and predicted skill in performance on one measure of reading comprehension, a fill-in-the-blank cloze procedure embedded in the context of a written passage. This finding is consonant with previous research investigating this relationship in populations of nonminority children who are typical learners, as well as minority children with learning disabilities (Caraway, 1994; Camoe Goldstein et al., 1993; Jax, 1988; Klecan-Aker & Swank, 1993).

A number of researchers have proposed models of text comprehension which describe mental operations used for extracting meaning, recalling, and summarizing (Kintsch & van Dijk, 1978; Snyder & Downey, 1991; Thorndyke, 1977). These mental operations utilize a framework for accessing knowledge about the world in general as well as knowledge about specific text structure for both understanding and producing text. For stories, this text structure consists of story grammar components which are causally and temporally ordered (story schema). Therefore, measures of both reading comprehension (text comprehension) and oral storytelling ability may tap into a similar cognitive/linguistic framework (story schema). In addition to the development of metalinguistic abilities employed in the decoding process (i.e., phonemic awareness), the development of this schema knowledge appears to be an important part of successful reading achievement.

Additional findings from the study add to existing knowledge about oral storytelling abilities in children with learning disability. Recall the mean level of stories produced by the participants was a level three, and that approximately one half of the participants produced stories that did not contain complete episode systems. Applebee (1978) found that at approximately six to seven years of age, children produced true narratives consisting of initiating events, attempts and consequences, logically sequenced cause-and-effect elements, strong well-developed plots, good character development, and endings that resolved story "problems." Additional research by Peterson and McCabe (1983) indicated that typically developing six-year-olds tell personal narratives that are well formed in terms of high point analysis. In other words, they contain information about setting, events that precipitate some problem to be solved or goal to be achieved, motivating states, attempts to solve the problem or reach the goal, consequences of these efforts, and reactions to the consequences. Only one

child in the present study group was under the age of six (age = 5;7). As a group, these children with learning disabilities appeared to be delayed in the development of storytelling skills.

In summary, findings of this study support a relationship between oral storytelling ability and reading comprehension, as measured by a cloze procedure, in a population of children with language-based learning disability. Such a relationship may be the result of a shared framework of cognitive/linguistic skills necessary for both orally constructing fictional narratives and constructing and organizing information from a written text. Future research should be directed toward further investigating the nature of the relationship between oral storytelling and reading comprehension ability, and whether exercises and activities designed to create and strengthen underlying cognitive/linguistic structures for comprehending and telling stories (story schema) might also serve to strengthen a child's ability to organize and retrieve information from written text.

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**Please address all correspondence to:** Susan Gilmore, PhD, Department of Communication Sciences and Disorders, University of Oklahoma Health Sciences Center, 825 NE 14<sup>th</sup>, PO Box 26901, Oklahoma City, Oklahoma, 73190, USA.

### References

- Applebee, A. (1978). *The children's concept of story*. Chicago, IL: The University Press.
- Beck, L., Perfetti, C., & McKeown, M. (1982). Effects of long term vocabulary instruction on lexical access and reading comprehension. *Journal of Educational Psychology*, 74, 506-521.
- Blachman, B. (1984). Language analysis skills in early reading acquisition. In G. Wallach & K. Butler (Eds.), *Language learning disabilities in school-age children* (pp. 271-287). Baltimore, MD: Williams and Wilkins.
- Camoe Goldstein, B., Camoe, Harris, K. C., & Klein, M. D. (1993). Assessment of oral storytelling abilities of Latino junior high school students with learning handicaps. *Journal of Learning Disabilities*, 26, 138-143.
- Caraway, T. (1994). *A study of the relation of storytelling abilities and reading comprehension in fourth and sixth grade African-American children*. Unpublished doctoral dissertation, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma.
- Catts, H. (1996). Defining dyslexia as a developmental language disorder: An expanded view. *Topics in Language Disorders*, 16, 14-29.
- Gillon, G., & Dodd, B. (1995). The effects of phonological, semantic, and syntactic processing skills in spoken language on reading ability. *Language, Speech, and Hearing Services in the Schools*, 26, 56-68.
- Golden, J. (1981). Children's concept of story in reading and writing. *The Reading Teacher*, 37, 578-593.
- Hammill, D. (1985). *Detroit Test of Learning Aptitude-2*. Austin, TX: Pro-Ed.
- Hedberg, N., & Westby, C. (1993). *Analyzing storytelling skills: Theory to practice*. Tuscon, AZ: Communication Skill Builders.
- Jax, V. (1988). *Narrative construction by children learning English as a second language: A precursor to reading comprehension*. Unpublished doctoral dissertation, University of California at Los Angeles, California State University, Los Angeles.
- Kamhi, A., & Catts, H. (1989). *Reading disabilities: A developmental language perspective*. Boston, MA: Little, Brown.
- Kaufman, A., & Kaufman, N. (1996). *Kaufman Test of Educational Achievement*. Circle Pines, MN: AGS.
- Kintsch, W., & van Dijk, T. (1978). Toward a model of text comprehension and production. *Psychological Review*, 85, 363-394.
- Klecan-Aker, J. (1993). A treatment programme for improving storytelling ability: A case study. *Child Language Teaching and Therapy*, 9, 105-115.
- Klecan-Aker, J., & Brueggeman, L. (1991). *The Expression Connection*. Vero Beach, FL: The Speech Bin.
- Klecan-Aker, J., Caraway, T., Gilmore, S., & Johnson, D. (1993). *An investigation of the oral narratives of normal fourth, sixth, and ninth grade students*. Unpublished manuscript.
- Klecan-Aker, J., & Kelty, K. (1990). An investigation of the oral narratives of normal and language-learning disabled children. *Journal of Childhood Communication Disorders*, 13, 207-216.
- Klecan-Aker, J., McIngvale, G., & Swank, P. (1987). Stimulus considerations in narrative analysis of normal third grade children. *Language and Speech*, 30, 13-23.
- Klecan-Aker, J., & Swank, P. (1993). The narrative styles of normal first and third grade children. *Language and Speech*, 30, 251-262.
- Laughton, J., & Morris, N. (1989). Story grammar knowledge of learning disabled students. *Learning Disabilities Research*, 4, 87-95.
- Maria, K. (1990). *Reading comprehension instruction: Issues and strategies*. Parkton, MD: York Press.
- Menyuk, P., & Chesnick, M. (1997). Metalinguistic skills, oral language knowledge, and reading. *Topics in Language Disorders*, 17, 75-87.
- Peterson, C., & McCabe, A. (1983). *Developmental psycholinguistics: Three ways of looking at a child's narrative*. New York: Plenum.
- Roth, F., & Spekman, N. (1989). Higher order language processes and reading abilities. In A. Kamhi & H. Catts (Eds.), *Reading disabilities: A developmental language perspective* (pp. 159-198). Boston, MA: Little, Brown.
- Semel, E., Wiig, E., & Secord, W. (1987). *Clinical Evaluation of Language Fundamentals - Revised*. San Antonio, TX: Psychological Corporation.



Snyder, L., & Downey, D. (1991). The language-reading relationship in normal and reading disabled children. *Journal of Speech and Hearing Research, 34*, 129-140.

Snyder, L., & Downey, D. (1997). Developmental differences in the relationship between oral language deficits and reading. *Topics in Language Disorders, 17*, 27-40.

Stein, N., & Glenn, C. (1979). An analysis of story comprehension in elementary school children. In R. Freedle (Ed.), *New Directions in discourse processing: Advances in discourse processes* (pp. 53-120). Norwood, NJ: Ablex.

Thorndyke, P. (1977). Cognitive structures in comprehension and memory of narrative discourse. *Cognitive Psychology, 9*, 77-110.

Velluntino, F. (1977). Alternative conceptualizations of dyslexia: Evidence in support of a verbal deficit hypothesis. *Harvard Educational Review, 47*, 334-354.

Velluntino, F., & Scanlon, D. (1982). Phonological coding, phonological awareness, and reading ability: Evidence from longitudinal and experimental study. *Merrill Palmer Quarterly, 33*, 321-364.

Wagner, R., & Torgesen, J. (1987). The nature of phonological processing and its causal role in the acquisition of reading skills. *Psychological Review, 101*, 192-212.

Weschler, D. (1974). *Weschler Intelligence Test for Children - Revised*. San Antonio, TX: The Psychological Corporation.

Wiig, E., & Semel, E. (1984). *Language assessment and intervention for the language-learning disabled* (2nd ed.). New York: Merrill/Macmillan.

Woodcock, R. (1978). *Development and standardization of the Woodcock-Johnson Psycho-Educational Test Battery*. Allen, TX: DLM.

Woodcock, R. (1985). *Woodcock Reading Mastery Test-Revised*. Circle Pines, MN: AGS.

## APPENDIX A

### Sample Story Analysis

T1 C2 T2 C1  
Once upon a time there was a giant who lived in a castle / the castle was in the  
T3 C1 T4 C1 T5 C1  
mountains/ the giant had no one to talk to / he was very unhappy / he was also very  
T6 C1 T7 C1  
angry / the giant decided to steal a companion / he went into the village and stole a little  
T8 C1 T9 C1  
boy / all the townspeople became angry and ran after the giant / the little boy started to  
T10 C1 T11 C1 T12 C1  
cry / he was frightened / the giant took the little boy back to the village / the townspeople  
T13 C1 T14 C1  
were very happy / and they let the giant come to visit every day / the giant was never  
lonely again

T= T-unit  
C= clause

T1= setting	T8= internal response/attempt
T2= setting	T9= consequence
T3= setting	T10= internal response
T4= setting/internal response	T11= attempt
T5= setting/internal response	T12= internal response
T6= setting/internal response	T13= consequence
T7= initiating event	T14= ending

## APPENDIX B

### Sample Developmental Levels

**Level 2 Story :** I drove in the car with my mom today. We went to the store and bought some groceries. Then we went to get some ice cream and I had a hot fudge sundae. It was good. Then we went to the bank and I got a balloon.

**Level 3 Story :** Billy's cat got stuck up in a tall maple tree. The cat had climbed up to the very top. Billy's dad got a ladder. He climbed up the ladder and brought the cat down safely.

**Level 4 Story :** Once upon a time, John went to the park with his mom. He went to play on the monkey bars with his friends. When he tried to hang upside down, he fell off and landed on his head. He went to his mom and asked her to look at the bump on his head. She gave him some ice to put on the bump so it would go away.

**Level 5 Story :** Once upon a time there was a girl named Sue. One afternoon she sneaked into the kitchen to get a cookie. She reached for the cookie jar. It fell on the floor and broke. She cleaned up the mess. She never sneaked a cookie before dinner again.

**Level 6 Story :** Once upon a time there was a little boy who lost his puppy. He was very sad. He loved his puppy very much. The boy put up some "dog lost" signs. One of the neighbors who had found the little dog saw the sign and brought the puppy home. The boy was so happy. His dog never ran away again.

**Level 7 Story :** Once upon a time a girl was walking in the forest. She got lost. When it was nighttime she got very scared and started to cry. Then she heard someone calling her name. It was her mom. The little girl was so happy. Her mom said, "We looked all over for you. We were so worried. You must never walk in the forest alone." Then the mom took her home and they lived happily ever after.

