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Story Generation in Five School-Aged Children with Language Impairment

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ABSTRACT

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This project examined the story generations of five children with language impairment (LI) between the ages of 5;11 and 10;1 across the treatment sessions of a narrative-based intervention program designed to improve social communication. These stories were analyzed to find whether the participants would approach the task by describing the stimulus pictures or if their stories would reflect an episodic structure containing cause and effect relationships. Additionally, the stories were analyzed for inclusion of emotion words to discern the participants' awareness of the characters' emotions. There was a high degree of variability in the participants' performance; however, the majority of the stories were composed of picture descriptions, and most of the participants generated short stories with few episodic elements in response to the probes over the course of treatment. In terms of emotion word use, two of the participants increased their use of emotion words in later sessions. Overall the participants' performance on the story generation probe did not reflect their performance in other treatment tasks including shared book readings, story enactments, and journal writing. This was likely due to their disinterest or fatigue in the story generation task and stimuli, as well as their continued need for the clinician modeling that was present in the other treatment tasks. Future research is needed to determine effective treatments that help school-aged children with LI recognize goal-directed behavior and emotional content in stories.

Keywords: language impairment, story generation, narrative, emotion understanding, episodic elements, intervention.

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DESCRIPTION OF THESIS STRUCTURE

The format of this thesis is in conformity with university submission requirements as well as standards for submission to a peer-reviewed journal in speech-language pathology. Parts of this work may be used in future articles in which the author is listed as a co-author. Contained in the appendices are an annotated bibliography, the participants' results of the Clinical Evaluation of Language Fundamentals-5 (CELF-5), protocols and a coding manual for the analysis system, and the participants' raw data.

Introduction

Barbara Hardy outlined the importance of narratives by stating, "… we dream in narrative, daydream in narrative, remember, anticipate, hope, despair, believe, doubt, plan, revise, criticize, gossip, learn, hate, and love by narrative" (Appleby, 1978, p. 13). Narratives are a functional aspect of communication across "contexts, cultures, and times," in conveying "culturally significant information" (Reilly, Losh, Bellugi, & Wulfeck, 2004, p. 230). Narratives are a part of daily life, playing a key role in social settings, in the classroom, and as a form of entertainment. They are used to communicate information about past events, dreams, and thoughts. Furthermore, narratives are the principal device through which individuals share stories.

Fictional narratives play an important role in teaching children about the world (Snyder & Downey, 1983). Research has shown that even typically developing children as young as three years of age have a basic understanding of stories (Appleby, 1978). They are naturally embedded in each child's school environment and elsewhere (Page & Stewart, 1985). In these environments, stories provide a nonthreatening and natural context where a broad spectrum of information about language structure and cultural values is introduced. While listening to the structural patterns and expressions a speaker uses in telling or reading a story, a child begins to form expectations about syntax and vocabulary. While listening to themes that appear in narratives, a child develops an understanding of social values (Appleby, 1978).

Researchers view narratives as a useful way of measuring and learning about children's linguistic capabilities. One of the reasons why researchers are interested in the narrative abilities of children is because of the high "ecological validity" of narratives in children's lives (Hughes, McGillivray, & Schmidek, 1997, p. 7). Children frequently encounter both oral and written story

narratives in their daily interactions. Because of this, stories are important to daily communication and can provide one of the more naturalistic settings for the evaluation of linguistic abilities (Botting, 2002; Hughes et al., 1997; Milosky, 1987; Reilly et al., 2004). During a story generation or retell, a child's speech is influenced less by the conversational input of other people than it is in conversational speech. In this context, assessment of areas such as pragmatics and syntax give a truer account of what the child is able to produce independently as fewer conversational scaffolds are present. Additionally, a narrative provides a holistic representation of the child's language abilities, including his or her ability to make inferences, use relevant word knowledge, and link referents across utterances (Milosky, 1987).

Furthermore, the ability to create written and oral narratives successfully is tied to learning and academic success (Milosky, 1987). Throughout a child's school years, narratives are deeply engrained in the classroom experience. Teachers use narratives to evaluate students' proficiency in organizing narrative content, relating the story to the listener, and adapting and linking the narrative to prior commentary. On a broader scale, narratives are used in the assessment of students' comprehension of school subjects such as history, literature, and science (Hedberg & Westby, 1993). Additionally, a child's inability to produce organized and cohesive oral narratives may negatively affect the quality of student-teacher interactions, potentially damaging a student's overall academic experience (Klecan-Aker & Brueggeman, 1991; Milosky, 1987). In summary, oral narrative production is an academic skill that children depend on daily (Milosky, 1987).

Story Narrative Analysis

Recognizing the importance of narratives in differing contexts, researchers have concluded that the assessment of narratives is useful in understanding individuals' linguistic and

conceptual development more fully (Hedberg & Westby, 1993). Story narratives have been of particular interest. Many systems exist to define and evaluate children's fictional story narratives. Story narrative analysis can be conducted at the macrostructural or microstructural level. At the microstructural level, analysis focuses on the "smaller units within the narrative" (Hughes et al., 1997, p. 111). These local elements include cohesive devices that tie sentences together as well as other linguistic structures such as tense markers, vocabulary, and sentence complexity. These components work together both to express the plot and to connect linguistic elements (Hughes et al., 1997). On the other hand, macrostructural analysis examines a narrative's global structure. Researchers using this level of analysis seek to understand the overall organizational pattern of a story (Hughes et al., 1997).

Many analysis systems can be classified within the microstructural and macrostructural levels. Two examples of story narrative analysis systems are Appleby's (Appleby, 1978) narrative level analysis and Stein and Glenn's (1979) episodic or story grammar analysis. These two analysis systems both assess narratives at a global or macrostructural level.

Narrative level analysis. Appleby's narrative level analysis focuses on the organization of children's stories (Appleby, 1978). His work classifies children's early story narratives into "six levels or types of plot structures" (Hughes et al., 1997, p. 112) that parallel Vygotsky's (1986) stages of concept development according to both content and developmental phases. Appleby's structures are built upon various uses and combinations of the two practices of centering (focusing the story on one central event or idea) and chaining (presenting the material as a sequence of events). Appleby's six levels are: heaps, sequences, primitive narratives, unfocused chains, focused chains, and narratives (Appleby, 1978; Hughes et al., 1997).

As children develop, their stories increase in complexity. Initially, children produce stories that Appleby classifies as heaps, or pieces of information presented randomly and without the use of chaining or centering (Appleby, 1978; Hughes et al., 1997). With time, children's productions progress throughout Appleby's levels. This progression from one level to the next occurs as children increasingly implement chaining and centering until finally story productions reach the complexity of true narratives. At this stage, narratives may be centered on either concrete or abstract elements and have an overall forward sense of motion as events build upon one another (Appleby, 1978).

According to Hedberg and Westby (1993), Appleby's narrative level analysis system is most clinically relevant for the evaluation of stories produced by individuals with "less sophisticated language" (p. 63). This includes preschool-aged children and children with moderate to severe language disabilities. It may not be appropriate for the analysis of older children's stories as these children produce narratives that exceed the complexity targeted by the system (Hughes et al., 1997).

Episodic or story grammar analysis. Although Appleby's (1978) narrative analysis system adequately gauges a child's ability to produce a coherent narrative while using the processes of centering and chaining, it does not focus on the child's use of higher level structural elements or how these elements work together to produce a fictional story. Episodic or story grammar analysis considers this information (Hedberg & Westby, 1993). The most frequently used form of this system is Stein and Glenn's (1979) model (Hughes et al., 1997).

Stein and Glenn's (1979) story grammar model examines the components that are present within episodes of a narrative. According to this system, a narrative contains one or more episodes, and each of these episodes may contain the following story grammar parts: a setting, an

initiating event, reactions to the initiating event (including an internal response), attempts to rectify the problem created in the initiating event, consequences, a reaction or resolution, and an ending. At minimum, an episode must include an initiating event or internal response, an attempt, and a direct consequence (Hedberg & Westby, 1993). In sum, episodes "[begin] with a state of equilibrium at the outset, then something occurs to disrupt that equilibrium, a character recognizes the disequilibrium, acts to repair the disruption, and the initial state of equilibrium is reinstated" (p. 108). Analysis is performed by parsing the narrative into T-units or child utterances and labeling each according to the story grammar element present in that segment.

When working with young children or children with language impairment (LI), story narratives often do not contain all the story grammar elements, and thus may not lend themselves to effective story grammar or episodic analysis. Young children generate stories with few episodic elements and, with time, progress toward more complex episodes. For this reason an optional, further step in Stein and Glenn's (1979) analysis system involves assigning a story structure level based on the complexity of the narrative. These levels are isolated descriptions, descriptive sequences, reactive sequences, abbreviated episodes, complete episodes, complex episodes, and embedded episodes. Actual use of story grammar or episodic analysis becomes possible only after a child's productions reach the level of reactive sequences—which, for typically developing children, occurs late in the preschool experience (Hughes et al., 1997).

Stein and Glenn's (1979) analysis system most accurately assesses a child's narrative abilities when the narrative is stimulated through the use of "minimally structured stimuli" (Hedberg & Westby, 1993, p. 112). In this way, the clinician can be more confident that the results reflect the child's abilities rather than the structure and plot of the stimulus (Hedberg & Westby, 1993).

Another story grammar analysis system is *The Edmonton Narrative Norm's Instrument* (ENNI; Schneider, Dubé, & Hayward, 2005). This instrument is a standardized measure that is meant to be used with a battery of tests in assessing children's language capabilities. The ENNI provides a systematic way of identifying whether or not key episodic elements are present in a child's story generation. This is performed through the use of wordless storybooks with individualized scoring protocols for each story. Each protocol is sequentially divided into story grammar elements with possible phrases a child may use when addressing each particular element. When a child accurately produces one of the elements, points are awarded for that category. This system is useful when comparing a child's language abilities against those of their peers through the use of raw and standard scores (Schneider, Hayward, & Dubé, 2006). Both ENNI, as well as Stein and Glenn's (1979) system, yield differing but important information about children's story narratives.

Narratives in Children with Language Impairment

As stated previously, story narratives are important to daily communication and to academic success. Story narrative ability can be evaluated using many systems including narrative level analysis and story grammar analysis. Both types of analyses yield useful clinical information about children's productive narrative abilities. In the literature, much has been published regarding the narrative abilities of typically developing children. However, researchers are also interested in the narrative abilities of children from other populations including children with LI. Researchers have observed that when the story narrative productions of these children are analyzed, they differ in many ways from those of typically developing children. These differences occur at both the microstructural level and the macrostructural level.

The production of cohesive and complete story narratives requires sophisticated linguistic capabilities—capabilities which typically developing children acquire at an early age. However, children with LI are limited in many of the linguistic areas important to the production of age-appropriate story narratives. For children with LI, narrative abilities may be slow to develop. The narratives of children with LI may not contain the more sophisticated elements that are present in the narratives of typically developing children. For this reason, it can be difficult to find an analysis system that adequately examines and identifies these children's narrative abilities. Research shows that compared to their age-matched peers, children with LI produce stories that are less cohesive (Liles, 1985), less complex (Fey, Catts, Proctor-Williams, & Zhang, 2004; Klecan-Aker & Kelty, 1990), and more confusing or incomplete (Gillam & Carlile, 1997). These children's narratives also contain more speech disruptions during story generations (Guo, Tomblin, & Samelson, 2008), fewer causal connections between events (Hayward, Gillam & Lien, 2007), fewer story grammar elements (Liles & Merritt, 1985), and fewer types of complex syntax (Reilly et al., 2004). The end result of these narratives is less narrative charm and listener engagement (Newman & McGregor, 2006), and a weaker overall narrative quality (Fey et al., 2004).

The literature also suggests that children with LI may continue to demonstrate weak narrative abilities as they enter and progress through the elementary school years. Fey et al. (2004) studied the oral and written story generation skills of children with specific language impairment (SLI), children with nonspecific language impairment (NLI) (with a low nonverbal IQ), and typically developing children when these groups of children were in both the second and fourth grades. The results of their study revealed that in both second and fourth grade, children with SLI and NLI produced fewer words, made more grammatical errors, and produced

stories with poorer quality than did typically developing children. In addition, the group of children with SLI demonstrated the least amount of growth in storytelling ability over the two years, contributing to an ever-widening gap across grades between children with SLI and their age matched peers (Fey et al., 2004). Both initially and over time, without intervention, children with LI may not make the narrative gains necessary to respond to the academic and social demands placed upon them as they progress through the elementary school years. These findings suggest that children with LI would benefit from interventional programs that are designed to foster the development of these skills.

The Current Study

The purpose of this study was to examine the narrative abilities of five school-aged children with LI as they told stories using wordless picture books across multiple sessions. In order to accomplish this aim, participants' narratives were evaluated based on the following questions: (a) Across sessions did the child label, describe, or interpret pictures? (b) Did the child indicate awareness of causal relationships? (c) Did the child label emotions experienced by the characters? (d) Did the child explain the relationships between characters' emotions and events in the story? These questions were judged to be pertinent in the consideration of immature or emerging narratives (Westby, personal communication, April 10, 2014). The participants' performance in each of these areas was coded using a system based on principles used in the ENNI.

This analysis system addressed some microstructural elements (e.g. use of emotion words) but focused mostly on macrostructural aspects of the story generations (e.g. causality, inclusion of story grammar elements, and relationship between emotions and events). Chamberlain (2014) posed the same research questions during a similar study. In Chamberlain's

study, four children with LI between the ages of 5;3 and 6;10 participated in an intervention that targeted increased emotion understanding. As a portion of this intervention, during each session, participants produced a story retell based on a storybook with cues from the administrator. Using the same questions stated above, each retell was scored for the use of labeling or describing, inclusion of causal relationships, labeling of emotion words, and indication of a relationship between emotions and events in the story. The results of the study were variable. During the story retells, many of the children simply described the pictures. Although some participants increased their inclusion of cause and effect over time, the change was not uniform. Three of the four participants increased their use of emotion words as the sessions progressed. The author attributed these results to the participants' overall unsophisticated expressive language and their decreased ability to make connections between areas of story content. The results of the study demonstrated the need for additional research in this area.

The current study differed from Chamberlain's (2014) work in several areas. First, the participants of this study represented a wider range of age and ability, spanning from the age of 5;11 to 10;1. Additionally, participants in this study generated their stories with minimal cues from the administrator both prior to and during the story generation task. And finally, although this study considered the same research questions as those addressed in Chamberlain's study, the analysis system differed. The analysis system employed in the current study focused on specific elements within each story. It was hoped that these modifications would better capture the emerging story retell abilities of the participants. In summary, the current study sought to examine how children with LI generated stories from a storybook in terms of their use of basic descriptions, cause and effect, and emotion words.

Method

This thesis was part of a larger study. The purpose of the larger study was to evaluate the effectiveness of an intervention program designed to improve social and emotional understanding in five school-aged children with LI. The larger project was constructed using a single subject, multiple baseline design. This portion of the larger study followed a case study design with pre and posttests. While the children were participants in a larger study, information included here relates only to the evaluation of narrative abilities during intervention sessions.

Participants

The five participants in this study included four girls and one boy. At the beginning of the study, these participants were between the ages of 5;11 (years; months) and 10;1. All of the participants were receiving speech and language intervention on a pull-out basis for 20 minutes twice a week. Intervention for all participants targeted expressive and receptive language. Prior to intervention, all participants passed a pure tone hearing screening administered by a school district speech-language pathologist. Additionally, participants were given a standardized measure of intelligence by a school district psychologist and were found to have IQ scores within the typical limits. Finally, all participants' language and social communication abilities were evaluated by three graduate students using *The Clinical Evaluation of Language Fundamentals-5* (CELF-5; Semel, Wiig, & Secord, 2013) and the *Children's Communication Checklist-2* (CCC-2; Bishop, 2006). The results of these evaluations for each participant are presented in Table 1. The subtest scores for the CELF-5 are included in Appendix B.

Table 1

Children's Communication Checklist-2 (CCC-2; Bishop 2006) and Clinical Evaluation of Language Fundamentals-5 (CELF-5; Semel, Wiig, & Secord, 2003) Percentile Scores

Instruments	Participants				
	P1 (7;11)	P2 (10;1)	P3 (6;7)	P4 (5;11)	P5 (9;7)
CCC-2[1] Subtests					
Speech	1	1	1	37	1
Syntax	1	9	1	2	0
Semantics	1	5	2	2	0
Coherence	16	2	2	2	1
Initiation	37	50	25	16	0
Scripted Language	37	25	50	50	1
Context	16	25	2	3	1
Nonverbal Communication	9	16	1	4	1
Social Relations	37	16	1	6	5
Interests	91	50	25	11	1
GCC[2] percentile	2	4	1	4	1
SIDI[3]	36	15	12	7	5
CELF-5[4]					
Core percentile	23	8	14	14	2

Note. [1]Children's Communication Checklist-2 (CCC-2). [2]General Communication Composite. [3]Social Interaction Difference Index. [4]Clinical Evaluation of Language Fundamentals-5 (CELF-5).

Participants for this study were attending the same school. Recruitment of participants was based upon referral from the school speech-language pathologist. The school speech-language pathologist reported that all of the referred participants experienced difficulties in social interactions with peers. Students who passed the pure tone hearing screening, achieved low scores on the CELF-5 and CCC-2, and received written parental consent to participate were included in the study. Intervention pertaining to this study was provided in coordination with the school speech-language pathologist to ensure that the intervention coincided with the participants' current Individualized Education Program (IEP) goals.

Participant 1 (P1). P1, age 7;11 was a Caucasian female. She was the sister of P2 and P3. P1 was identified with LI and specific learning disability (SLD) at the age of 6;4. At the time of this intervention, this participant was enrolled in a mainstream second grade class and also received special education services for reading. Additionally, she received speech and language services biweekly from the school speech-language pathologist, and therapy targeted articulation and language. P1's scores on the above mentioned standardized tests revealed severe language deficits with scores in the first percentile in the areas of speech, syntax, and semantics. Some of her strongest scores were in the areas of initiation, scripted language, and social relations; P1's core language score for the CELF-5 was in the 23rd percentile.

In observations conducted by her school teachers and clinician, P1 was noted to have difficulty contributing to conversation. She was seen to be "chatty" but limited by her lack of knowledge of many common children's topics as well as her difficulty inferring, interpreting, and predicting the responses of her conversational partners. Socially, she was seen to be generally cooperative in the classroom setting, but she appeared to be emotionally over-sensitive, often preferring to play independently of her peers.

Participant 2 (P2). P2 was a Caucasian female who was 10;1 at the beginning of the intervention. From an early age, P2 demonstrated difficulty with language and articulation. In preschool, she was diagnosed with LI. Testing at this time also revealed sound production deficits as she presented with several phonological processes. During later testing, P2 continued to regularly exhibit velar fronting and cluster reduction. This participant began receiving resource services for reading at the age of 8;0 when academic testing indicated SLD. At the time of the intervention, P2 was also participating in speech-language therapy with the school speech-language pathologist with goals focused on improving her articulation and syntax. Prior to the

intervention, P2's scores on the CELF-5 were depressed, with a core language score in the eighth percentile. Her performance on the CCC-2 revealed severe deficits in the areas of speech, syntax, semantics, and coherence. She also presented with low scores in the areas of nonverbal communication and social relations. P2's highest scores were in the areas of initiation, scripted language and context.

In social settings, P2 was identified as one able to make friends. However, her ability to participate successfully as a conversational partner was limited by her difficulty making inferences with regards to the topic as well as the emotional reactions of other conversational partners. Her semantic and syntactic errors also impeded her ability to express herself effectively. In social interactions, P2 was seen to be reticent around other children, often playing on her own rather than with her peers. Despite these observations, P2's teachers reported that her peers did not object to being placed in groups with her and liked being around her.

Participant 3 (P3). P3, age 6;7 was a Caucasian female who was diagnosed with LI and SLD at the age of 5;7. As a kindergartener, she received speech and language intervention, and she attended a self-contained resource class for written language and math. At the time of the study, P3 was enrolled in a mainstream first grade class and was receiving resource services for reading as well as continued speech and language services focusing on the areas of language and articulation. During testing, P3's scores were indicative of difficulty in the areas of nonverbal communication, social relations and context. Her scores in the subtests for speech, syntax, and semantics were similarly low with all scores placing her at or below the second percentile. Her core language score on the CELF-5 placed her in the 14th percentile.

P3's clinician noted that she often responded inappropriately to others' emotions, expressing little emotion herself during activities. In conversation, she often produced responses

that were off topic and that were delayed and incomplete. Overall, she behaved in a "shy" manner, speaking at a low volume in both her class and during speech and language therapy sessions. She was also seen in peer interactions to be very reserved, reticent, and seemingly fearful of approaching other children.

Participant 4 (P4). P4, age 5;11, was a Caucasian female who was identified with developmental delay (DD),[1] LI, and attention deficit hyperactivity disorder (ADHD) as a preschooler. P4 attended a special needs preschool and, at the age of four, participated in testing that revealed significant delays in cognition, social and emotional development, and receptive and expressive language. At the time of this study, P4 was enrolled in a mainstream kindergarten class. She was again identified with LI and accordingly, she received resource services for reading as well as speech and language services which targeted both language and articulation. Her CELF-5 core language score fell in the 14th percentile. More specifically, her performance on the subtests of syntax, semantics, and coherence were all at the second percentile. Other areas of difficulty included the subtests of context, nonverbal communication, and social relations, all with scores at or below the sixth percentile. In the area of scripted language, P4 scored in the 50th percentile, indicating a performance in this area similar to that of many of her peers.

Consistent with the previous diagnosis of ADHD, both P4's teacher and clinician noted her limited attention and regular off-topic comments. Her inconsistency in responding in conversation may also have been due to her difficulty with sustained attention and expressive language. In play, P4's behavior was also atypical. Her teacher reported that in both play and

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[1] All preschool children in the school district were initially given the label of developmental delay pending more definitive assessment.

during academic tasks, P4 preferred to work on her own and was seemingly fearful of approaching her peers.

Participant 5 (P5). P5, age 9;7, was a Caucasian male with SLD and a previous diagnosis of autism spectral disorder (ASD); however, there has been inconsistency with regard to P5's diagnosis of ASD. He was diagnosed with autism at the age of five by his pediatrician and at the age of eight by a neuropsychologist at a children's medical center. However, neither his previous nor his current educational team agreed with this diagnosis.

Academically, P5 was home schooled until the age of 8;3 when he began attending a public school and was enrolled in a mainstream second grade class. At that time, he was identified with LI by the school speech-language pathologist, and he began receiving speech and language services for articulation and language. He also received reading, math, and written language services through the special education department. Prior to this study, P5 received a diagnosis of SLD following an evaluation by the school psychologist.

At the time of this intervention, P5 was enrolled in a mainstream third grade class. He also continued to receive reading, math, and written language services in a self-contained resource class. In speech and language treatments, therapy focused on fluency, appropriate topic manipulation, and increased syntactic sophistication. His performance on the CCC-2 and CELF-5 supported the need for these goals as he scored in the second percentile for the CELF-5 core language score, and at or below the first percentile for all subtests of the CCC-2 (excluding the social relations subtests for which his score was in the fifth percentile).

P5's clinician reported that his difficulty interpreting nonverbal cues including facial expressions, voice inflections, and body language, impeded communication. Behaviorally, he was impulsive and demonstrated difficulty adapting his behavior from one setting to another. He

was motivated to interact in socially appropriate ways, and was retrospectively mildly aware of his own inappropriate behaviors, but had difficulty monitoring his behavior in the moment. P5 seemed to prefer to play independently of his peer group and when he attempted to enter activities with peers he did so in boisterous and disruptive ways.

Materials

Six books from the *A Boy, A Dog and A Frog* series by Mercer Mayer were used to elicit and support story generation during intervention sessions. These books were *A Boy, A Dog, and A Frog; A Boy, A Dog, A Frog, and A Friend; Frog on His Own; Frog Goes to Dinner; One Frog Too Many;* and *Frog, Where Are You?* In this project, the story generations in response to three of the six books were used. These three stories were: *A Boy, A Dog, and A Frog; A Boy, A Dog, A Frog, and A Friend; and Frog Goes to Dinner.* The subject matter of these books was judged to be appropriate for this group of participants as the books portray the adventures of a young boy with various animal friends. The stories in these books are not presented through written text, but rather with detailed illustrations that present the plot of the story. In these illustrations, the characters' emotions are identifiable by their body language and facial expressions. During intervention, participants were required to comprehend and generate a story narrative about the story content based on the events and emotions depicted in each illustration. This illustration-based presentation of story content provided participants with the freedom to generate original story retellings of each book across multiple sessions.

Procedures

The larger intervention project targeting emotion understanding in children with LI was administered by a graduate student clinician under the supervision of the school's speech-language pathologist. It was directed by two researchers specializing in clinical research

regarding children with LI. The main goal of the larger intervention project was to determine whether or not the novel intervention would result in increased social and emotional understanding in the participants.

At the beginning of the study, two participants received three baseline sessions while three participants received six baseline sessions. These sessions included a story generation using a book from Mercer Mayer's *A Boy, A Dog, and A Frog* series. During the body of the intervention, each participant was seen individually by a clinician in 20-minute sessions twice a week for ten weeks, for a total of 20 intervention sessions. The 20-minute sessions replaced the child's regular pull-out speech and language sessions. Sessions included activities that were focused on improving emotion understanding. These activities used an expanded story enactment procedure including shared storybook reading, story enactment, and journal writing.

This thesis project focused on the story generation activity. This activity was administered during the baseline, the follow-up, and approximately half of the intervention sessions. During these sessions, the participant was presented with one of six Mercer Mayer books and was instructed by the clinician to generate a story about the book independently. The child then flipped through the pages of the book at his/her own pace while he/she produced a story that coincided with the illustrations on each page. No cues were provided by the clinician during the story in order to promote independent work.

Each session was video recorded using digital camcorders, and during the majority of the sessions, participants donned a microphone to facilitate analysis of participant utterances. Using the video recordings, each utterance of the story generations was transcribed by a group of undergraduate student volunteers. Prior to analysis of the transcriptions, interjudge agreement for the transcriptions was achieved.

Analysis

The transcribed utterances were analyzed by two graduate students using a system that was created to respond to the aforementioned research questions. This system was similar to the ENNI story grammar analysis system in that it was tied to children's naming characters and describing specific events portrayed in the storybooks. The coding protocols and manual for this system are presented in Appendix B. Each transcribed utterance was assigned to one of the following categories based on the inclusion of the stated criteria. Each category and its corresponding criteria for inclusion are presented in Table 2.

Interjudge Agreement

In order to establish interjudge agreement for the transcriptions of the story retells, two graduate student clinicians transcribed 20% of the stories from the baseline sessions. These sessions were randomly selected. Upon comparison, the interjudge agreement was found to be 91% (using the following formula: A/N x 100, where A is the number of word agreements and N is the total number of words). The transcripts for the two clinicians were combined, and the clinicians reviewed and resolved disagreements to create a standard key which was later used as a basis to calculate the interjudge agreement for those transcriptions performed by volunteer undergraduate research assistants.

Table 2

Categories and Inclusion Criteria for Coded Data

Category	Criteria for Inclusion
Characters	All main characters of the story that the participant identified by name at least once. Pronouns were not included as valid character entries.
Setting	Any word that the child used which corresponded to a main setting of any of the story episodes.
Description of object	Phrases that functioned solely to describe characters, objects, and locations.
	Descriptions of the emotional state of characters were included with the "Emotion and Source of Emotion" category.
Description of action	Descriptions of the actions of characters or objects that did not also function to indicate character intent, character attempt, or event outcome.
	Descriptions that contained speaking acts which did not indicate character intent, attempt, event outcome, or emotion.
Intent	Expressions that indicated the intent to perform an action through the use of words such as "wants," "needs," "plans," or "thought it would be good to."
	Expressions that contained the phrase, "I'm gonna/going to" within a character quotation.
Following attempt	Utterances that indicated an attempt to perform an action through the use of words such as "tries," "starts to," or "goes to."
Outcome and/or reactions	Utterances that indicated the outcome of a prior attempt or intent through the use of a connective device such as "but," "instead," "so," "in order to," or "and then."
Emotion and source of emotion	Utterances that contained an emotion word such as "happy," "mad," "scared," or "lonely."
	A binary yes/no entry was included in a separate column corresponding to the emotion category. This entry was dependent on the inclusion of a source of emotion through the use of a connective device. Such devices included the following words: "because," "so," or "since."
Resolution	Utterances at the end of the story generation that functioned to provide a resolution to the events in the story.
Questions or reflections about the motives or actions of other characters	Utterances in which a character attempted to understand the actions or motives of another character.
Other theory of mind	Utterances which indicated the participant's acknowledgment of the thoughts of a character.
Housekeeping	Utterances about the storytelling task and not about the plot of the story.
Interjections	Utterances that included sound effects or comments which were not related to the plot or to the storytelling task.

Five undergraduate research assistants were trained to transcribe the story generations. Each student transcribed 12% of the stories from the baseline sessions. These sessions were randomly selected from the 20% that were transcribed by the two graduate student clinicians. The resulting transcriptions were compared with the standard key and each student transcribed samples until each reached at least 90% agreement. The average interjudge agreements were found to be 88%, 90%, 90%, 91%, and 92% for the five students. The students transcribed a total of 20, 17, 10, 5, and 10 story generations, respectively.

To establish interjudge agreement for the coding of transcriptions, the graduate student heading this project trained another graduate student in the coding process. Following training, both graduate students coded 10% of the total transcriptions for each of the three books. Upon examination of the coded transcripts, interjudge reliability for each of the three books was 89%, 87%, and 89%, respectively. Disagreements found in these transcriptions followed no discernible pattern. Due to the inconsistent nature of the disagreements, a two-step procedure for resolving disagreements was established. The first step involved collecting utterances in which disagreements were present. In the second step, the graduate student and the professor heading this project discussed each disagreement in order to establish a consensus about how to code the phrase correctly.

Results

Stories generated by each participant in baseline and treatment sessions were coded following the analysis system described above. The data are presented in figures and tables for each story generation combined with episodic elements in the following categories: Utterances identified as intent, following attempt, and outcome. Those utterances coded as description of object and description of action were combined and presented as descriptions. The percent of

phrases containing episodic elements was calculated by dividing the total number of episodic elements into the total number of salient utterances[2] produced during the story generation task. The same procedure was followed to calculate the percent of phrases containing descriptive utterances. These percentages were plotted for each session and presented individually for each participant. The percent of phrases containing episodic elements and descriptions per session were used in order to compensate for the decrease in the length of story generations that occurred over time in each participant. Because of these changes in story length, a figure indicating the total number of utterances in each story generation per session are presented for each participant.

The percent of phrases containing emotion words per session were also presented in a figure for each participant. Again, the percent of phrases containing emotion words included in each story generation, rather than a raw total of emotion words produced per story generation, was chosen as the best way to present this information because of the general decrease in story generation length over time. In addition to the percent of emotion words used per session, a table indicating the specific emotion words used in each story generation is included.

Results are presented using three figures and one table for each participant. The figures present each participant's production of descriptions and episodic elements, the length of each story generation, and the participant's use of emotion words in each session. The table presents the specific emotion words produced by each participant. In addition, all data in the figures are presented session by session. In addition to indicating the session number, each figure specifies the book used during the respective session. Book 1 corresponds to Mercer Mayer's *A Boy, a*

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[2] All utterances except those that had been placed in the housekeeping and interjections categories were included in the total number of salient utterances.

Dog, and a Frog. Book 2 corresponds to the book *A Boy, a Dog, a Frog, and a Friend.* And finally, Book 3 corresponds to *Frog Goes to Dinner.*

P1

As indicated in Figure 1, P1 generally approached the task of story generation descriptively, using more descriptive phrases than episodic elements during her generations. Her production of episodic phrases was consistently in the range of 10-24% (with the exception of Intervention Session 3, during which only 6% were episodic) until the final session. During this session, P1's use of episodic phrases decreased to 5% and her use of descriptions increased to 95%.

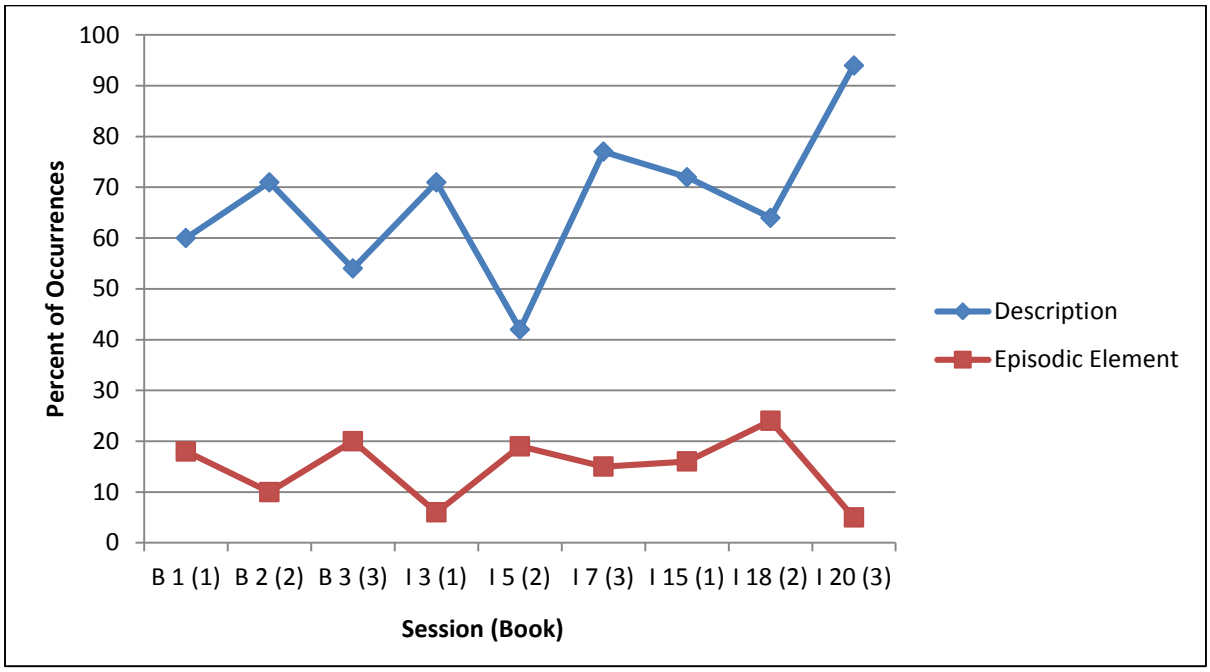

Figure 1. Percent of phrases containing description vs. percent of phrases containing episodic phrases per session for P1.

Figure 2 shows that P1's story generations decreased in length over time. This was seen especially in the second and third retellings of each story. For example, in the three story generations of *A Boy, A Dog, and a Frog*, P1 produced 45 utterances, 34 utterances, and 25 utterances, respectively. Her story generations for the other two books followed a similar pattern.

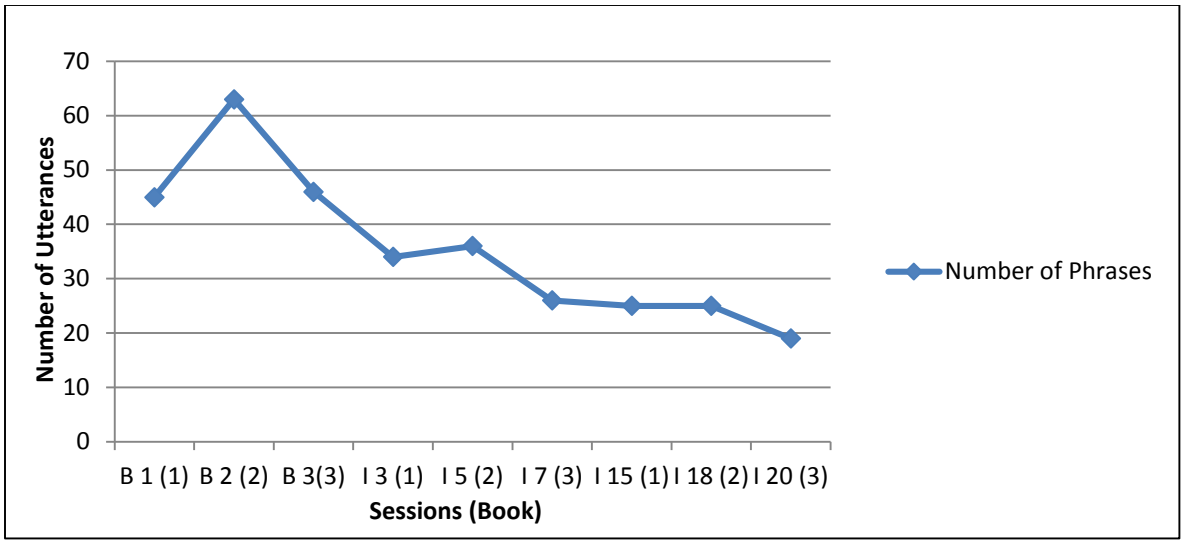

Figure 2. Length of story generations produced by P1.

Figure 3 demonstrates that, in addition to producing longer story generations when the stimuli were novel, P1 also produced more emotion words in her first exposure to the storybooks. During the baseline sessions, she produced 13, 12, and 12 emotion words, respectively. The session with the next highest number of emotion words was Intervention Session 3, during which she produced six emotion words. In her final story generation, P1 did not produce emotion words.

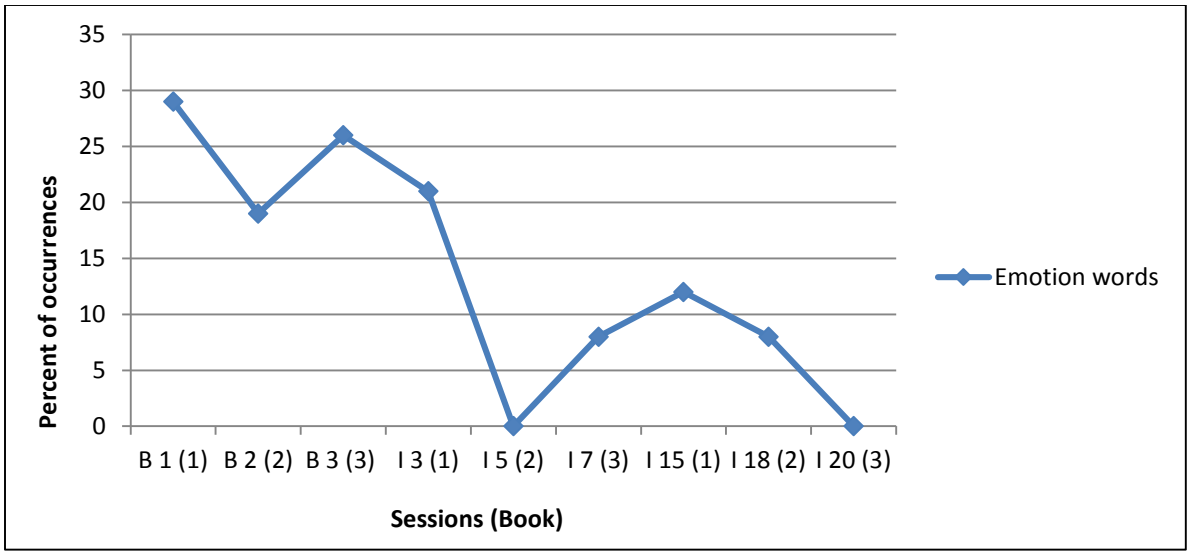

Figure 3. Percent of phrases containing emotion words per session for P1.

Table 3 also illustrates that P1 produced more emotion words in her first production of the stories. It should also be noted that, over the course of the baseline and intervention sessions, P1 linked a character's emotion to its source in only two instances. Her indication of causality occurred once during Baseline Session 3 for the emotion word *sorry* and once during Intervention Session 15 in her use of the emotion word *sad.*

Table 3

Emotion Words Produced in Each Session by P1

	Sessions (Book)								
	B 1 (1)	B 2 (2)	B 3 (3)	I 3 (1)	I 5 (2)	I 7 (3)	I 15 (1)	I 18 (2)	I 20 (3)
Emotion Words	mad-5 happy-4 sad-4	scared tired sad-3 mad-2 happy-5	sad-2 surprise mad-6 happy-2 sorry *	mad-3 sad confused scared		mad-2	sad* sad mad	sad mad	

Note. Emotion words linked to a source in the story are indicated using an asterisk (*). Words that were used multiple times in a story are indicated using the number of uses following a hyphen (e.g., mad-2).

P2

Like P1, P2 completed the story generation task by primarily employing descriptions to relate the events of the stories. As seen in Figure 4, with each successive generation of the stories, P2's use of descriptive phrases generally increased, while her episodic phrases generally decreased. This pattern continued until the final intervention session, Intervention Session 20, when 85% of P2's phrases were descriptive in nature and no phrases contained episodic elements.

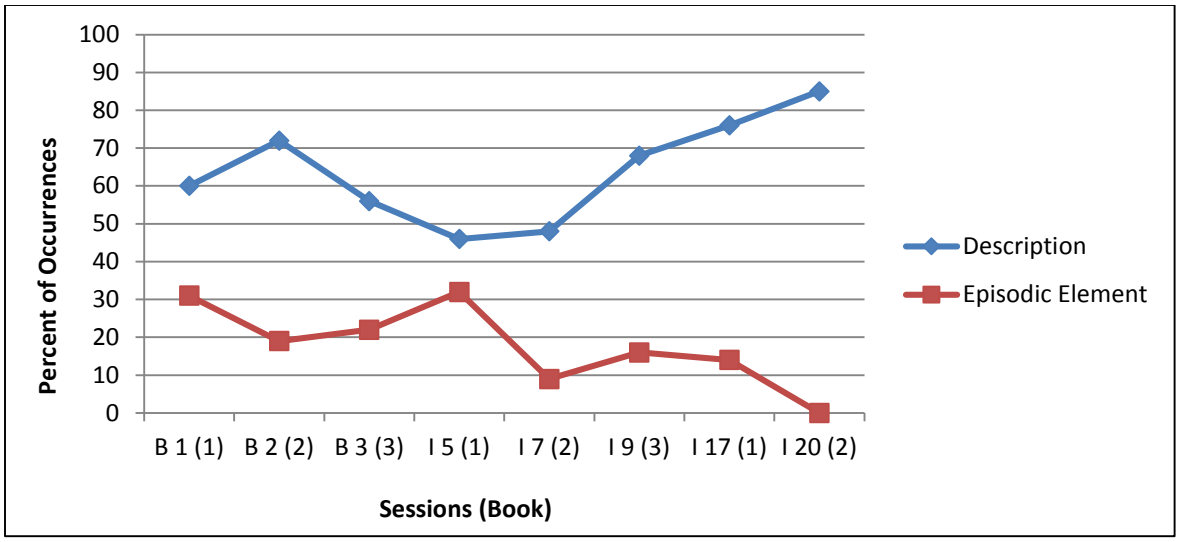

Figure 4. Percent of phrases containing description vs. percent of phrases containing episodic phrases per session for P2.

Figure 5 shows that the length of P2's story generations was variable. For the first two stories (*A Boy, a Dog, and a Frog* and *A Boy, a Dog, a Frog, and a Friend*), P2's story generations got progressively shorter in the second and third telling. However, the length of her story generation for the third story, *Frog Goes to Dinner*, increased in the second generation of the story. She produced the shortest story generations, 21 and 27 utterances, during the final two sessions.

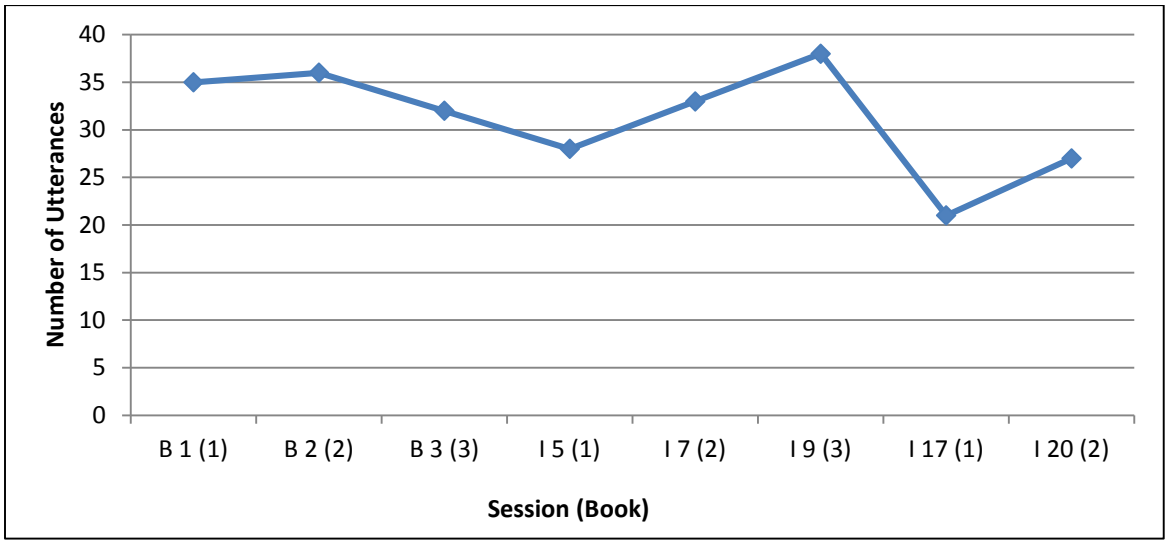

Figure 5. Length of story generations produced by P2.

As illustrated in Figure 6, P2's production of emotion words was highly variable but generally decreased over time across sessions. She produced two emotion words during Baseline Session 1 and three emotion words during Baseline Session 3. After this, the only other story generation that included an emotion word was Intervention Session 9, in which she produced one emotion word.

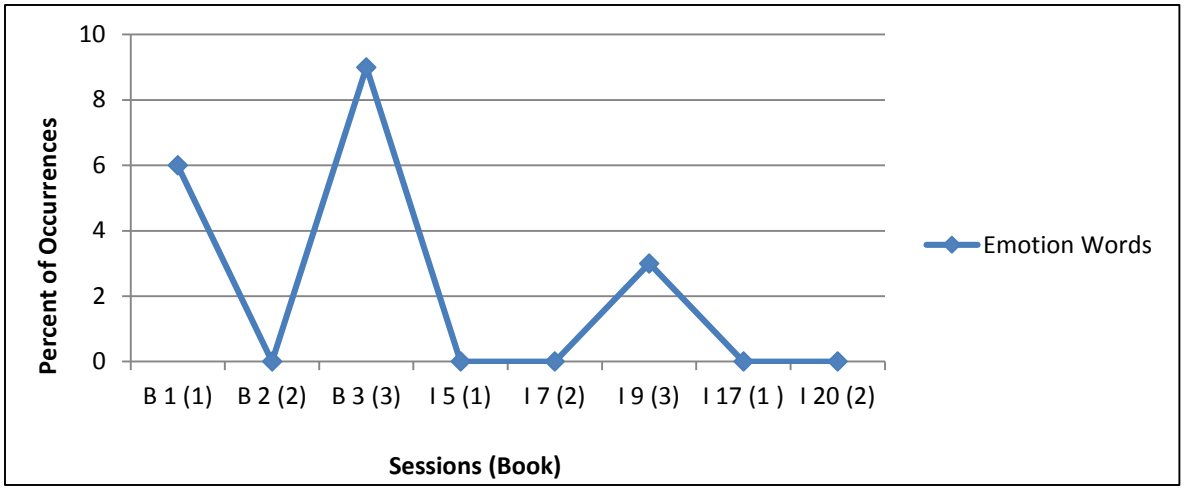

Figure 6. Percent of phrases containing emotion words per session for P2.

Examination of Table 4 shows that these emotion words were basic in nature (e.g. mad, happy) and were not connected to their source through the use of conjunctions that indicated causality. P2's limited use of emotion words during the probes did not resemble her use of emotion words during other session tasks.

Table 4

Emotion words produced in each session by P2

	Sessions (Book)							
	B 1 (1)	B 2 (2)	B 3 (3)	I 5 (1)	I 7 (2)	I 9 (3)	I 17 (1)	I 20 (2)
Emotion Words	mad-2		happy mad-2			mad		

Note. Words that were used multiple times in a story are indicated using the number of uses following a hyphen (e.g., mad-2).

P3

As Figure 7 indicates, over the course of the three baseline sessions and Intervention Session 3, P3 gradually increased her use of episodic elements. In Baseline Session 1, 100% of her phrases were descriptive in nature and none contained episodic elements. In contrast, by Intervention Session 3, only 50% of her phrases were descriptive and 39% of her phrases contained episodic elements. In the remaining sessions, however, P3 showed an overall decrease in her use of episodic elements. In the final intervention session, her descriptive phrases increased to 78% and her episodic phrases diminished to 17%.

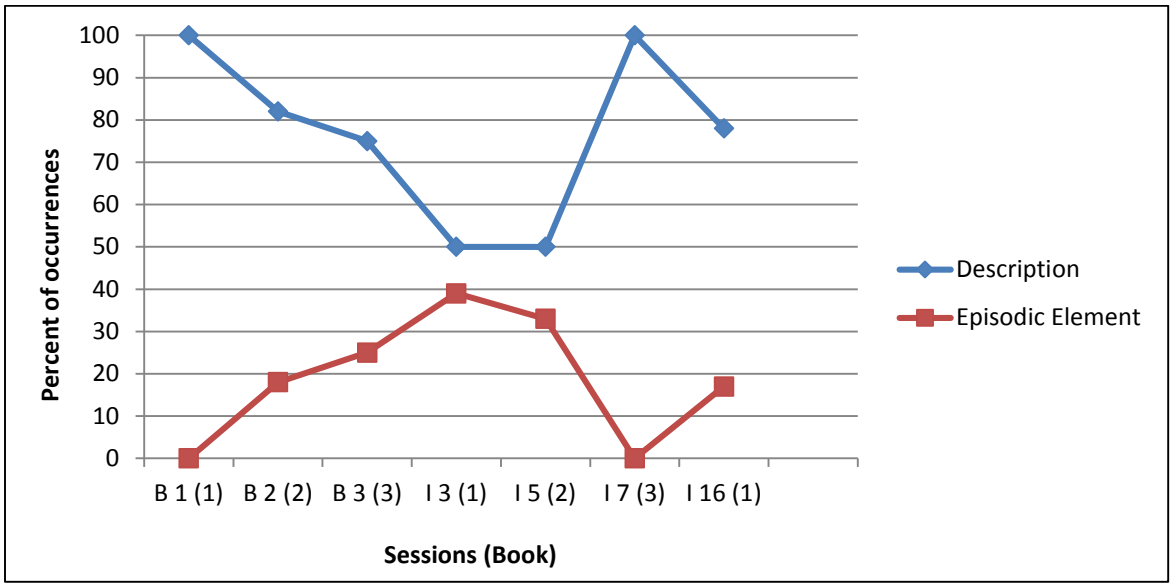

Figure 7. Percent of phrases containing description vs. percent of phrases containing episodic phrases per session for P3.

Overall, P3's story length was highly variable. The length of her stories increased in the second and third retellings of book 1. This increase can be seen in Figure 8. However, the number of phrases in each story generation was variable from session to session. Compared to the other participants, P3 generally produced the shortest story generations. Her longest generations—those generations produced in Intervention Sessions 3 and 16—contained only 18 utterances.

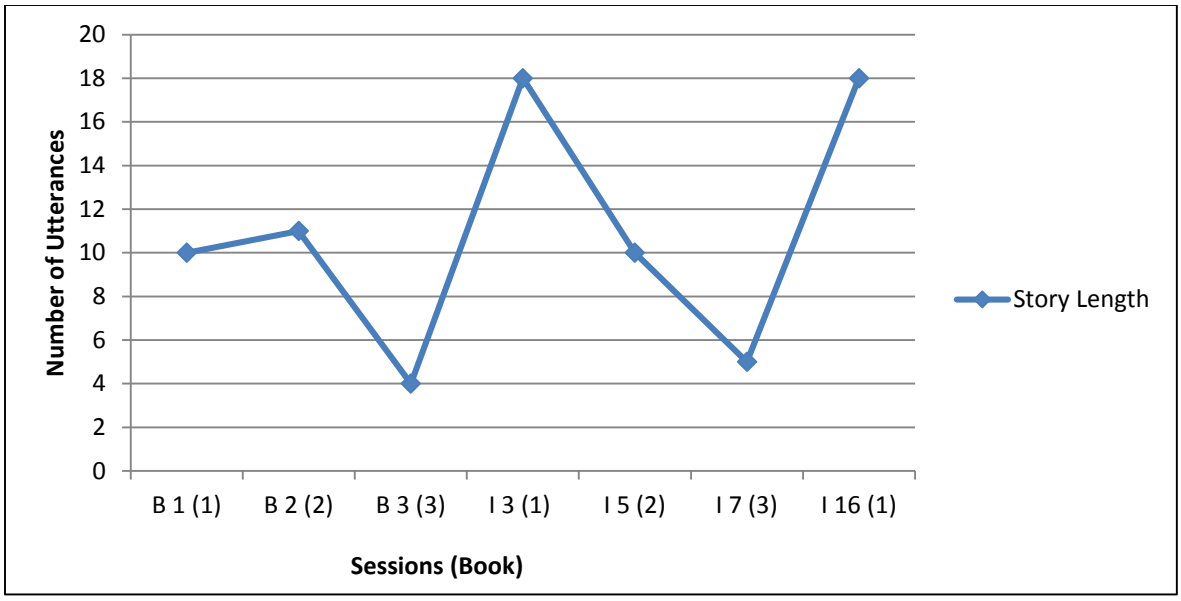

Figure 8. Length of story generations produced by P3.

Figure 9 demonstrates that the percent of P3's utterances that contained emotion words increased over time. Still, her production of emotion words was limited. During the baseline sessions, P3 produced no emotion words. Later in the course of treatment, she produced one emotion word per session in Intervention Sessions 3, 5, and 16.

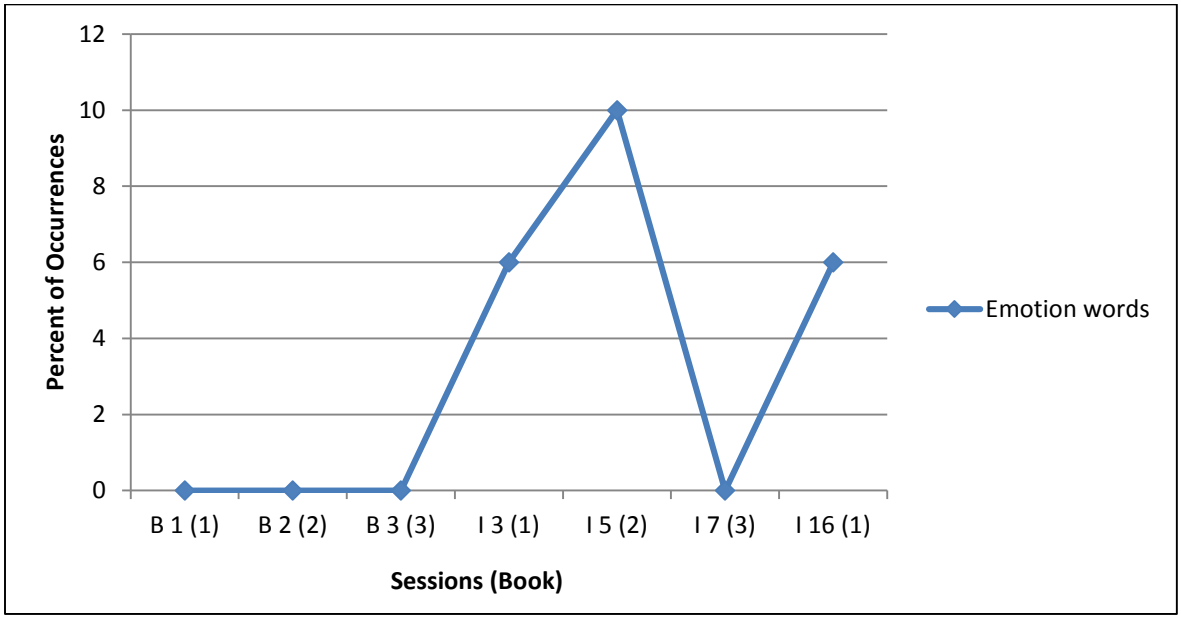

Figure 9. Percent of phrases containing emotion words per session for P3.

In Table 5 we see that, during these sessions, P3's limited her emotion word use to the words *sad* and *mad*.

Table 5

Emotion words produced in each session by P3

	Sessions (Book)						
	B 1 (1)	B 2 (2)	B 3 (3)	I 3 (1)	I 5 (2)	I 7 (3)	I 16 (1)
Emotion Words				sad	mad		mad

It should be noted that in Intervention Session 7, P3 produced no episodic elements or emotion words

P4

Figure 10 presents P4's use of descriptive and episodic phrases across sessions. This figure illustrates that, over time, P4 consistently produced more descriptive phrases than episodic phrases. Although the percent of descriptive phrases was always higher than the percent of episodic phrases throughout treatment, both percentages were variable from session to session.

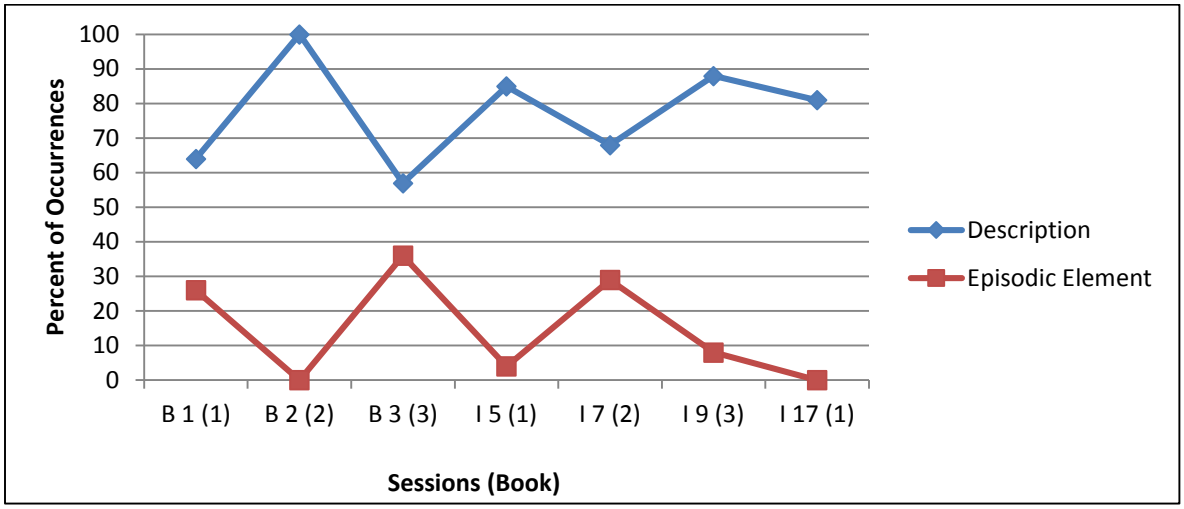

Figure 10. Percent of phrases containing description vs. percent of phrases containing episodic phrases per session for P4.

Similarly, Figure 11 illustrates that P4's story generation length was also variable from session to session. In the first baseline session, P4's story generation consisted of 38 utterances. P4's story generation in Baseline Session 2 showed a sharp decrease in length as she produced only 21 utterances. From here, in Baseline Session 3, P4 produced 28 utterances—a value that showed a general decrease over time until her story generation length again reached 21 utterances in the final session.

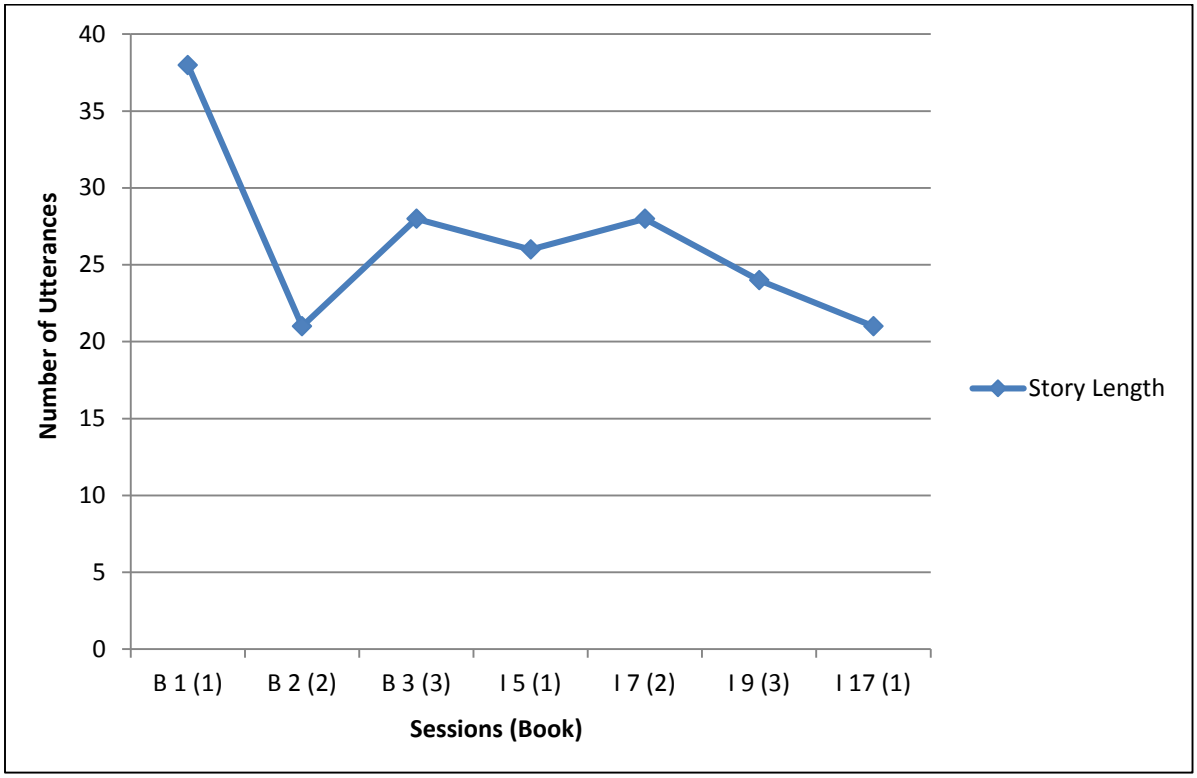

Figure 11. Length of story generations produced by P4.

Figure 12 indicates that like P3, P4 produced no emotion words during the three baseline sessions. During later sessions, her use of emotion words increased; she produced three emotion words in Intervention Session 5, one emotion word in Intervention Session 9, and two emotion words in Intervention Session 17.

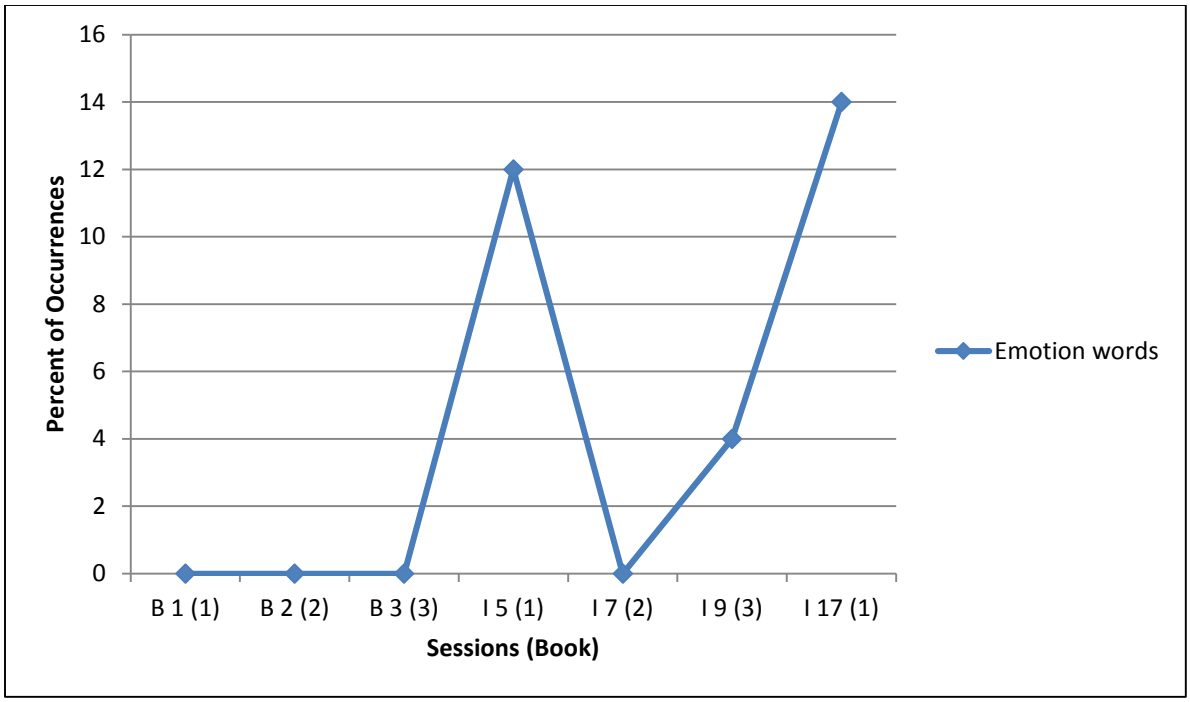

Figure 12. Percent of phrases containing emotion words per session for P4.

Examination of Table 6 specifies that during these sessions P4 indicated the source of the emotion in one instance. She did so as she used the causal conjunction *cause* in the phrase "he was scared cause he's on the water." Of the six emotion words she used, P4 used the emotion word *scared* three times.

Table 6

Emotion words produced in each session by P4

	Sessions (Book)						
	B 1 (1)	B 2 (2)	B 3 (3)	I 5 (1)	I 7 (2)	I 9 (3)	I 17 (1)
Emotion Words				sad scared* scared		mad	sad-2 scared

Note. Emotion words linked to a source in the story are indicated using an asterisk (*). Words that were used multiple times in a story are indicated using the number of uses following a hyphen (e.g., mad-2).

P5

Figure 13 indicates that, overall, P5 produced more descriptions than phrases containing episodic elements throughout the baseline and intervention sessions. P5 decreased his use of descriptive phrases and increased his use of episodic phrases over time. In Baseline Session 1, 78% of his phrases were descriptive in nature while only 3% of his phrases contained episodic elements. By Intervention Session 20, 62% of his phrases were descriptive and 33% were episodic. His increase in phrases with episodic elements was fairly consistent, only decreasing between Intervention Sessions 3, 5, 8, and 15.

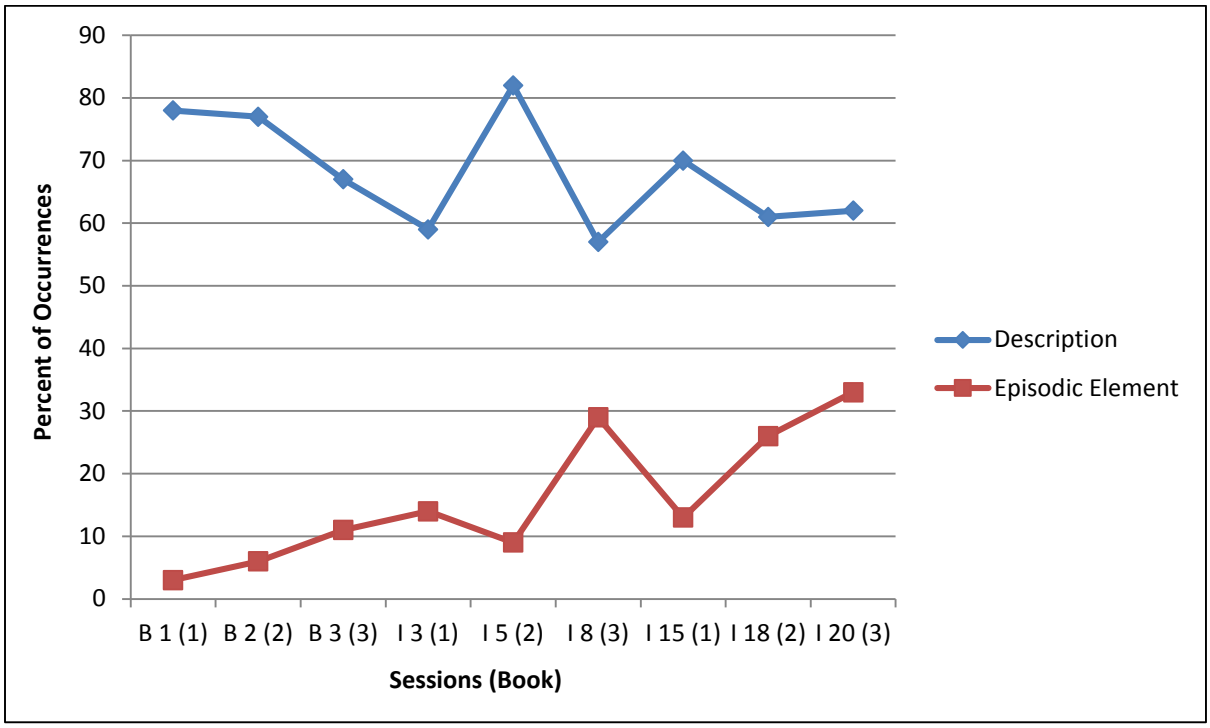

Figure 13. Percent of phrases containing description vs. percent of phrases containing episodic phrases per session for P5.

Although P5's use of episodic elements increased over time, Figure 14 shows that the length of his story generations decreased. In the initial baseline session, P5 produced a story generation made up of 37 utterances. However, by the final intervention session, his story generation contained only 21 utterances.

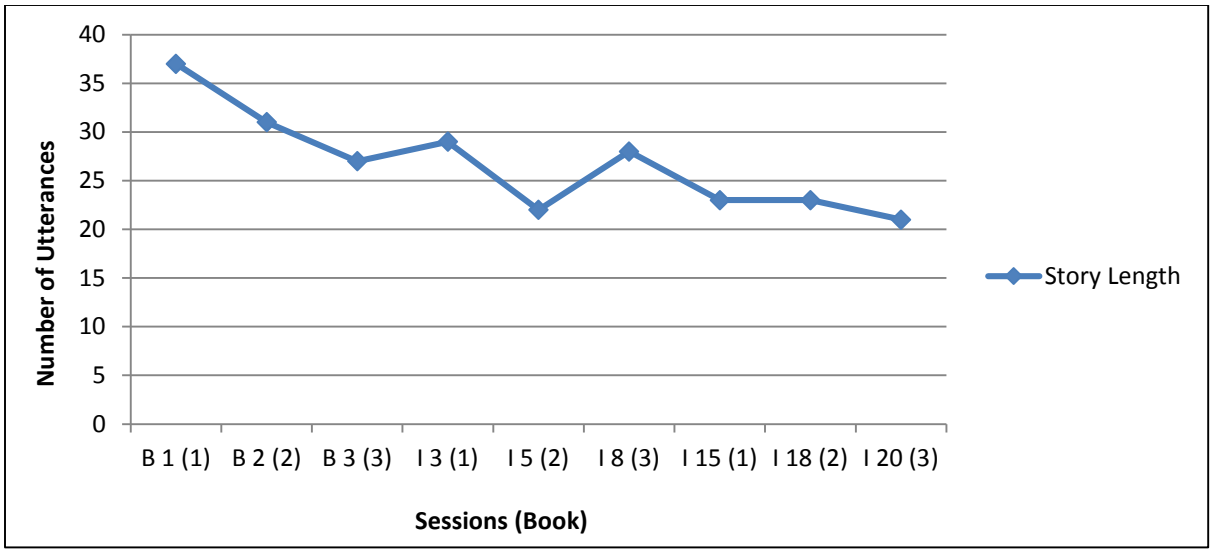

Figure 14. Length of story generations produced by P5.

As seen in Figure 15 and Table 7, P5 also demonstrated a decrease in emotion word use over time. His highest production of emotion words was in the first baseline session, when he produced eight emotion words. This session was equal to Baseline Session 2 and Intervention Session 3 for the greatest variety in emotion words. In each of these sessions, P5 produced five different emotion words. In the sessions after Intervention Session 3, however, P5 showed a decrease in emotion words, producing one, three, four, one, and zero, respectively. P5 linked the emotion words to their source once in Baseline Session 2 and once in Intervention Session 3.

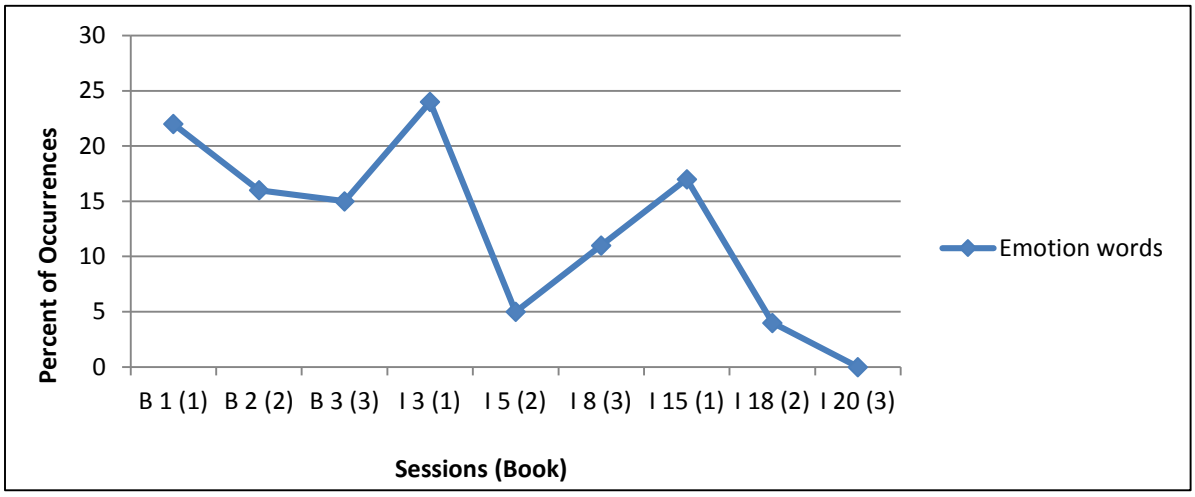

Figure 15. Percent of phrases containing emotion words per session for P5.

Table 7

Emotion words produced in each session by P5

	Sessions (Book)								
	B 1 (1)	B 2 (2)	B 3 (3)	I 3 (1)	I 5 (2)	I 8 (3)	I 15 (1)	I 18 (2)	I 20 (3)
Emotion Words	angry mad-2 sad lonely happy-3	mad afraid sad exciting* happy	mad-4	sad mad-2 happy sad-2* lonely	mad	sad-2 mad	mad-3 lonely	mad	

Note. Emotion words linked to a source in the story are indicated using an asterisk (*). Words that were used multiple times in a story are indicated using the number of uses following a hyphen (e.g., mad-2).

Discussion

While the participants generally presented the events of each story by using descriptive phrases, relatively few of these phrases contained episodic elements. Also, many of the participants produced shorter stories in the second and third telling of the stories. Within these general patterns, there was still a high degree of variability among (and within) participants. Because of this variability, each participant will be discussed individually below.

P1

Of all the participants, P1 produced the longest story generations throughout the baseline and intervention sessions. These story generations were largely descriptive in nature. The long, descriptive style of her stories coincided with the pre intervention reports from P1's school teachers and clinician that P1 was "chatty"—or wordy in conversation—but seemed to express little content.

During the initial four story generations, P1 produced numerous, varied emotion words. However, like many of the other participants, P1's use of emotion words, story length, and her inclusion of episodic elements decreased over time. P1 appeared to grow tired of the books, and

her decreases in length and complexity were likely affected by her increasing fatigue with the stimuli and the task.

During the course of treatment, P1 produced phrases that showed some awareness of characters' thoughts and motives. For example, in Intervention Session 5, P1 indicated that one character questioned the motives or actions of another character three times. In the same session, she recognized the mistaken perspective of a character, noting, "The frog, and he thought he was dead." In Session 5, these reflective comments were associated with a relatively high number of episodic elements and the lowest percentage of descriptive phrases of the entire treatment. This suggested that P1 was capable of producing more sophisticated behaviors, but the behaviors did not continue in subsequent sessions.

P2

P2, the oldest of the participants, showed a decreased use of episodic elements and emotion words over time. This was particularly puzzling considering her performance on other intervention tasks. In the intervention segment of the session, she showed relative maturity in inferring the characters' behavior and emotions. For example, when participating in story enactments with the clinician, she identified some character emotions from the stories and suggested the source of these emotions. She made logical inferences about characters' reactions to story events. P2 also described the perspective of the characters as she reflected on the thoughts and beliefs of story characters in every intervention session. Nevertheless, the story generation task rarely elicited these behaviors. P2's failure to demonstrate these abilities within the story generation task may have been due to several factors. For example, P2 may have been dependent on the support and scaffolding provided by the clinician in the intervention activities. It may have been the case that she did not perceive or understand the emotion in the frog stories

in the same way that she did those within the intervention storybooks. It is also possible that she was not motivated by repeated retellings of the frog stories.

It was also noted, however, that P2 altered her story generation tactic as the intervention progressed. In the baseline and initial intervention sessions, P2 approached the task by recounting the events of the story from a third-person or narrator's perspective. However, beginning in Intervention Session 13, P2 altered her approach to the task. At this point, she began telling the stories from the perspective of the characters. That is, she spoke for the characters, as if in a reader's theater. As a result, in Intervention Sessions 17 and 20 she included far more phrases that were not analyzed because they were onomatopoeias or sentence fragments. These stories seemed shorter and more simplistic and contained fewer of the key words required for coding utterances as episodic phrases. Many of these words would not naturally occur in the participants' story generation (e.g., not indicating an intent through the use of the key word "want" by explicitly stating "He wants to get him;" but rather, using another phrase such as "he's gonna get him" which implicitly conveys intent.) As a result, these words appeared fewer times in the later intervention sessions and fewer of the phrases were coded as containing episodic elements. Although the data reflect decreases in length, episodic elements, and emotion word inclusion, P2's shift in storytelling style more fully incorporated the perspective-taking skills that were trained during the other session tasks. This shift may be indicative of the development of higher level skills that were not captured with this analysis system.

P3

P3, the second-youngest and lowest functioning participant, was described prior to treatment by her school clinician as having a reticent nature with a general hesitancy to approach other children and to speak at an audible level. Her reticence and immaturity probably contributed to the relative brevity of all of her story generations. However, P3 was the only participant to produce a longer story generation in the final session than in the first baseline session. That being said, the length of P3's stories was highly variable.

P3 did her best work during the fourth and fifth story generations. These generations occurred in the only two sessions in which she produced utterances indicating understanding of theory of mind. Unfortunately, her use of episodic elements, story length, and implementation of theory of mind decreased following Intervention Session 5.

Prior to intervention, P3's school clinician reported that P3 had difficulty both expressing and understanding the emotions of others. In all three baseline sessions, she produced no emotion words. As treatment continued, P3 showed a small increase in her use of emotion words, but in the final sessions, her performance tapered off once more.

In sum, P3's performance was variable in all of the measured areas. This may have been in response her to varying levels of engagement in the task.

P4

P4's performance was also variable. As discussed above, P4 had a history of ADHD. Her clinician and classroom teacher reported that she had difficulty maintaining attention during tasks and frequently expressed off-topic comments. During the study, P4's behavior during, and attention to, the tasks was more variable than that of the other participants. Of all the participants, she seemed to have the most difficulty attending to the tasks.

A high level of variability was seen in all measured aspects of P4's performance. However, one area in which P4 demonstrated some gains was in emotion word use. P4 was the youngest participant in the study, and she produced no emotion words during the baseline story generations. However, she did produce emotion words in three of the five treatment sessions. In one of these instances, she also indicated the cause for the emotion. Although her performance was still variable, her production of emotion words in the final sessions may have indicated that she was beginning to attend to the emotions of characters in the stories.

P5

P5 had the lowest formal test scores of all the participants, suggesting that he had particular difficulty with language tasks and concepts. At the same time, he was the only participant to show a fairly consistent increase in his use of episodic elements over time. This increase in the use of episodic elements occurred even in the context of a fairly steady decrease in story length as the sessions progressed. He used a number of emotion words in the baseline story generation probes, but these generally decreased in his story generations during the intervention sessions. It appeared that although he focused more on episodic elements, he did not continue his use of emotion words. It is possible that he could not manage to focus on the emotions when he was concentrating on the episodic elements. In addition, P5 seemed to have particular difficulty taking the perspective of characters in the stories. P5's teacher reported that he had particular difficulty interacting with his peers in socially appropriate ways. Perhaps his difficulty taking the perspective of story characters was related to his difficulties in social situations with peers.

Conclusions and Interpretations

Overall, the task of generating a story with the use of a wordless story book was difficult for the participants. Previous research in this area reported similar findings, suggesting that language deficits result in their use of immature strategies when children are presented with storytelling tasks. In studies by Chamberlain (2014), Klecan-Aker and Kelty (1990), and Liles and Merritt (1985), the participants' performance was characterized by their use of picture descriptions, their inclusion of variable levels of emotion words, and the implementation of few story grammar elements. Similarly, the participants in this study generally presented the stories as a series of picture descriptions rather than as causally-related events leading to a conclusion. More specifically, most of the participants included a relatively stable number of episodic elements in their story generations, although some produced fewer elements during their second or third encounter with each book. Then, in the final session, inclusion of episodic elements decreased for four of the five participants. The only participant whose performance followed a different trend was P5. Unlike the other participants, he showed a steady increase in the production of episodic elements over time.

The participants also exhibited difficulty recognizing, labeling, and interpreting the emotional content of the books used in the story generation task. Two of the participants, P3 and P4, produced no emotion words during the baseline sessions and then began including emotion words later in the intervention. These two participants were the youngest in the study and the emotion words that they produced in later sessions were basic in nature (e.g., *sad*, *mad*, and *scared*). However, the majority of the participants in the study—P1, P2, and P5—produced fewer emotion words at the end of treatment than at the beginning of treatment.

The lack of change or decrease in the observed behaviors was both concerning and puzzling considering the children's performance in the activities conducted in the intervention sessions. The clinician observed that during other intervention tasks, the participants' presentation of stories differed greatly from their presentation of the frog stories used in the story generation task. For example, in the story enactment task, rather than describing the pictures in the book, the participants nearly always used the characters' dialogue to recount the stories. While presenting the stories in this manner, the participants included many phrases about the events in the story and the characters' internal and external reactions to these events. In the journaling task at the end of each session, the participants also produced phrases that expressed cause and effect relationships.

A number of factors might explain the fact that the story generation probes did not reflect the behaviors observed in the intervention tasks. To begin with, elements of the story generation task itself may have distracted the participants from consistently performing according to their actual capabilities. Since participants were asked to provide repeated stories for similar books, they may simply have tired of the story generation task. This might explain the fact that with the exception of P3, all of the participants produced increasingly brief story generations as the story generation probes progressed. In addition, although initially judged to be appropriate for the task, the books did not seem to be compelling to the participants. Perhaps the small, rather complex illustrations were difficult for the participants or the emotional content of the books may have been too subtle for the participants to capture and internalize. During the story generation task, the participants sometimes voiced their disinterest with the task and the books with phrases such as "This is a long book" and "Wait, we already watched this book."

In contrast, the storybooks that were chosen for the intervention activities presented simple plots that emphasized the association between specific events and characters' emotional reactions to those events. Large, colorful illustrations highlighted facial expressions of emotion. In addition, the events portrayed in these stories described the characters' emotions in situations that might be familiar to the participants such as being left alone in the dark or losing a favorite toy. It may have been the case that a different set of stimulus materials or a more engaging presentation of the story generation probe task might have been more motivating for the participants.

The discrepancy between the participants' performance in the story generation probes (frog stories) and their performance in the treatment activities probably reflected the increased clinician scaffolding that was included in the story enactment and journaling tasks. In these tasks, the clinician modeled the use of dialogue containing causal conjunctions (e.g., "He is sad *because* he is all alone."). The clinician modeled many of the episodic key words from the stories in other therapy activities as well, and the children responded well to these cues. Without the clinician support, however, the children did not consistently produce these words.

Another factor that may have influenced the results of the story generation task was the conservative nature of the analysis system. The analysis system used to identify episodic elements in this project was stringent. In order for a description to be considered episodic, the participant had to use specific linking words. However, it is possible that utterances in which the participant could have been conveying intent, a following attempt, or an outcome were not coded as such simply because he or she did not include the wording required for inclusion in an episodic element category. For example, for a phrase to be coded as containing intent, the participant had to include one of the following phrases: "wanted to," "was going to," or "thought

it would be a good idea." In one story, P5 mentioned the action of one character saying that "and, and he was about to throw the frog out." The words "he was about to…" in this phrase could be indicative of a character's intended action and P5 may have wished to convey this character's intention of throwing the frog out. However, worded as it was, the phrase could not be coded as demonstrating a character's intent and was instead coded as a descriptive utterance. It is possible, therefore, that the analysis system may not have accurately captured the participants' actual abilities in this area.

Limitations

The current case study had a number of limitations. These include the variability of the participants' performance, the nature of the probes, and the limited time for intervention. With regard to variability of performance, this was noted not only among participants, but also within the behaviors of each child. In fact, for most of the participants, individual variability was evident during their story generations in the baseline sessions. Ideally, in an intervention study, the participants demonstrate a low, stable performance during the baseline sessions. Such performance during the baseline sessions allows researchers to view progress and tie favorable results to the intervention. This study, however, did not produce such results. The variable results of the baseline sessions did not allow for concrete conclusions regarding the participants' abilities in this area at the start of treatment. Such performance also made it unclear whether the participants' performance in later sessions occurred as a result of the treatment. In the measures of emotion word use, only two of the five participants, P3 and P4, consistently produced low levels of emotion words during the baseline sessions. The increased number of emotion words appearing in these participants' later sessions may have been linked to the treatment. On the other hand, P1's, P2's, and P5's emotion word use was variable throughout the baseline and

treatment sessions. No increase in these participants' emotion word use during the course of the treatment was observed.

Considering the nature of the probes, the variability of participant performance suggests that the story generation tasks were problematic. As indicated previously, observation of the participants' performance in other activities cast doubt on the effectiveness of the probes to reflect the participants' change or growth.

With regard to the duration and intensity of treatment, the intervention program was carried out within a limited treatment schedule (i.e., biweekly, in 20-minute sessions over 10 weeks). This time period may have been inadequate to produce gains in performance, at least as measured by a story generation task. It was the case, however, that the school clinician reported improvement in the participants' narrative productions and emotion word use following the treatment program, as did some parents. It is possible that with more time in treatment, changes might be evident in probe tasks as well.

Future Research

The current study poses may questions that future research might address. In a general sense, research is needed to find intervention programs to help children with LI transition from describing what they see in the pictures of a story to recognizing goal-directed behavior in episodic events. In addition, future study should be aimed at determining effective ways of supporting children's understanding and expression of emotion in literature. Also, it will be important to develop probes and analysis systems that can be used to measure children's abilities accurately and to show growth and change.

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Appendix A

Annotated Bibliography

Appleby, A. (1978). *The Child's Concept of Story.* Chicago: University of Chicago Press.

Purpose of the work: This work examined the ways that children interact with stories.

Summary:
This book began by discussing some uses of language and how those uses are related to general mental processes. The author then shifted his focus toward elementary school-aged children and how this population perceives and organizes stories, as well as why they tell them. Appleby also discussed adolescents and young adults and how their responses to stories correspond to general stages of mental development. In the final chapter, the author revisited the original topic of language uses.

Conclusions:
The author pointed out that children's concept of what stories are, how they organize stories, why they tell stories, as well as their responses to literature evolve over time. This evolution takes place as changes occur in the child's perceptions of the relationship between the story and his or her own life, the child's level of mastery of the rules of use in literary form, and the child's encounters with complex personal and literary experiences.

Relevance to the current work: Appleby's description of children's narrative use and form provided insight about the abilities of typically developing children while also introducing a basic system for evaluating early story constructions.

Botting, N. (2002). Narrative as a tool for the assessment of linguistic and pragmatic impairments. *Child Language Teaching and Therapy*, 18*(1),* 1-21.

Purpose of the study: The purpose of this article was to discuss the efficacy of using narratives to describe children's language abilities quantitatively. The article also aimed to expound upon the use of narratives as a mode of differentiating between the similar language patterns of children with linguistic and pragmatic impairments.

Method:
Participants: Ten children participated in the study. Five of the participants were children with specific language impairment (SLI) between the ages of 7;7 and 8;8. The other five participants were age-matched to the children with SLI and had a diagnosis of pragmatic language impairment (PLI). Prior to participation in the study, all children took part in testing that evaluated the areas of receptive and expressive language, non-verbal abilities, single word reading, and non-verbal intelligence.
Procedures: Each child participated in a retelling task and a generative story task. In the retelling task, the child looked at a wordless storybook while listening to an oral version of the story. He/she was then asked to retell the story using the pictures from the book. The generative task

required each participant to look through the pages of a wordless storybook while telling an accompanying story spontaneously. All narratives were then analyzed for length and narrative devices, story structure, and other general considerations.

Results: The scores for the retell task were in the normal range for the participants with SLI and PLI. However, a more detailed analysis revealed that both groups produced stories with a decreased number of subordinate clauses and shorter sentences. During the generative productions, the participants with SLI had a low mean story length compared to that of a typically developing group. In this task, both groups (SLI, PLI) produced increased tense marker errors compared to a typically developing group. From one task to the next, the participants with SLI tended to produce a consistent amount of errors in the areas of tense, negatives, emphatics and sound effects.

Conclusions: The results supported the notion that children with SLI have poor working memory. This was evidenced by the carryover of errors and accurate productions from one task to the next. Consistent errors in the productions of children with SLI as seen in the generative task were: increased tense marker errors, shorter story lengths, and poor story organization. These results support the claim that this task may be more appropriate for distinguishing older children with SLI from those with PLI. The data provided evidence that the primary barrier for children with SLI was linguistic while the barrier for those with PLI was socio-cognitive in nature.

Relevance to the current work: This study provided information about the narrative abilities of children with LI in relation to those of children in other populations.

Chamberlain, M. (2014). *Story generation in four children with language impairment.* (Master's thesis), Brigham Young University, Provo, Utah.

Purpose of study:
This study analyzed narrative productions in children with LI by examining how four children in this population produced story retells using a story book.

Method:
Participants: Four children with LI (three boys and one girl) between the ages of 5:3 and 6:10 participated in the study. Prior to starting the intervention, all participants were evaluated using the *Comprehensive Assessment of Spoken Language* (CASL) and the *Universal Nonverbal Intelligence* Test (UNIT).
Procedures: Each participant was seen in 20, 20 minute sessions. During these sessions, intervention activities targeting emotion understanding, book sharing, story enactment, and journal writing were centered around the Mercer Mayer books *A Boy, A Dog, and A Frog* and *A Boy, A Dog, A Frog, and A Friend.* At the beginning of each session, the participant was presented with one of the Mercer Mayer books and was asked to produce a corresponding story with minimal clinician prompts. These story productions were video recorded, transcribed, and each phrase was coded according to whether the phrase fell into the category of description, cause and effect, or emotional content.

Results: Participant 1 (P1) only produced utterances describing the characters or their actions, he increased his use of emotion words across sessions. Participant 2 (P2) primarily labeled or described pictures across the sessions. She produced one emotion word, *happy,* five times across the sessions. Participant 3 (P3) produced more complex story elements across sessions and also increased his use of emotion words as intervention progressed. Participant 4 (P4) produced three complex story elements across the sessions, but the majority of his utterances functioned to label/describe pictures. P4 used various emotion words across sessions as descriptors.

Conclusions: Children with LI have difficulty with narrative tasks. The difficulty of the task may have been linked to these children's difficulties with expressive language, in making connections in story content, or with structural language. The intervention was not well-suited for all of the participants, while others made gains.

Relevance to the current work: This study examined the story-generation capabilities of children with LI, using storybooks to guide the retells. The current study also examines this skill in school-aged children with LI and uses some of the same materials that this study used.

Dodwell, K., & Bavin, E. L. (2008). Children with specific language impairment: an investigation of their narratives and memory. *International Journal of Language & Communication Disorders,* 43(2), 201-218. doi: 10.1080/13682820701366147

Purpose of the study: The purpose of this study was to evaluate the relationship between memory ability and performance in narrative tasks in children with SLI.

Method:
Participants: Study 1: The participants were divided into three groups. There were 16 children with SLI between the ages of 6-7, 25 typically developing children that were age matched to the SLI group (AM), and 15 typically developing children that were matched to the SLI group according to their scores on the CELF-P (LM). Study 2: All subjects from Study 1 participated in Study 2. Only the group with SLI and the AM groups were evaluated.
Procedures: Study 1: All participants listened to a story, retold it, and answered comprehension questions about it. Each participant's performance was scored according to the content of the retell and the responses to the questions that he or she provided. Each participant also generated his or her own story and was later asked to recall that story. Each participant's performance was evaluated using the *Expression, Reception, and Recall of Narrative Instrument* (ERRNI, Bishop, 2004). Study 2: The subjects participated in a series of tasks including various working memory tasks (e.g., Digit span, Word span, Central executive tasks, episodic buffer), as well as inhibition and attention tasks.

Results: Study 1: For comprehension, the group with SLI had lower scores than the AM group for both the *The Birthday Story* retell and the ERRNI inferencing questions. The group with SLI performed similarly to the other groups in the other areas of comprehension. For narrative telling and recall, the group with SLI performed more poorly than the AM group for the story retell, and better than the LM group for ERRNI generation. Study 2: For the Digit and Word span tests, the AM group performed better than the group with SLI. For the Central Executive test, there were no differences in the true/false section, but the AM group was able to recall longer lists than the

group with SLI. During the attention task, the SLI group made more errors than the AM group. During the inhibition task, there was no difference between the groups.

Conclusions: Children with SLI had difficulty retaining information in working memory while simultaneously processing and integrating new information. These children performed better when recalling the stories they told. The results suggested that the auditory processing structure of typically developing children might be more sophisticated than that of children with SLI.

Relevance to the current work: This study evaluated story retells in children with SLI—specifically in relation to their memory skills. It also looked at the various contributing factors to these children's decreased abilities in this area.

Fey, M. E., Catts, H. W., Proctor-Williams, K., Tomblin, J. B., & Zhang, X. (2004). Oral and written story composition skills of children with language impairment. *Journal of Speech, Language, & Hearing Research, 47*(6), 1301-1318. doi: 10.1044/1092-4388(2004/098)

Purpose of the study: This study followed the written and oral storytelling abilities of four groups of children with varying degrees of LI in the second and fourth grades.

Method:
Participants: A total of 538 children in the second and then fourth grade participated in the study. These participants were divided into four diagnostic groups: 262 children were in the group with typical language (TL), 111 children were in the group with SLI, 75 children were in the group with nonspecific language impairment (NSLI), and 90 children were in the group with a low nonverbal IQ (LNIQ). The children were classified into the groups based on performance in a series of language assessments including the CELF-3, the PPVT-R, and the CREVT. Intelligence testing was performed using the WWPSI-R.
Procedures: Each child participated in two sessions in both the second and fourth grades. In each of these sessions, each participant listened to the administrator model a description of three sequential cards and a prewritten story accompanying the cards. Following this, the participant was asked to do the same—in oral or written form—on his or her own. Each story was transcribed using Systematic Analysis of Language Transcripts (SALT) conventions, and analyzed based on the number of different words produced, the mean length of C-unit, the total number of C-units, clausal density, percentage of grammatical C-units, and quality.

Results: The female participants outperformed the males in all areas in the second grade except for the percentage of grammatical C-units. They maintained this superiority in the fourth grade in the areas of narrative quality, number of C-units, and number of different words. All participants performed better in oral than in written composition in the second grade and made greater gains from second to fourth grade for written stories than for oral stories. Among the four diagnostic groups, the group with TL performed better than the group with LNIQ for different words, quality, and grammar. The group with LNIQ performed similarly to the group with SLI and better than the group with NLI. However, from second to fourth grade, the group with SLI demonstrated less growth in storytelling ability over the two years than observed in the other

groups. Children in the group with TL who had previously been characterized has having LI in kindergarten reverted back to a lower-level LI-like performance in fourth grade.

Conclusions: The gender difference in story production suggests that clinical expectations should be higher for girls than for boys in the area of storytelling. The research also suggests that some children with an early diagnosis of LI who are judged to have recovered by the second grade may not have made a full recovery. Also, narrative production in both the oral and written modalities ought to be performed in the diagnostic process in addition to standardized tests.

Relevance to the current work: This study examined the narrative production abilities of children with LI compared to typically developing children. It also evaluated the progression of narrative production abilities across the elementary school years.

Gillam, R. B., & Carlile, R. M. (1997). Oral reading and story retelling of students with specific language impairment. *Language, Speech, & Hearing Services in Schools, 28* (1), 30.

Purpose of the study: This study evaluated the oral reading and story retelling abilities of children with SLI compared to those of typically developing children.

Method:
Participants: Twelve children with SLI and 12 children matched to the group of children with SLI for single-word reading ability participated in the study (READ-M).
Procedures: After answering a general question about a book's topic, students were given a book to read aloud. Students then retold the same story they read previously. Reading was scored using the Reading Miscue Inventory procedures, which specifically noted the number of reader substitutions, omissions, insertions, repetitions, and corrections during the reading. The phrases during the oral reading were scored according to graphophonemic, syntactic, and semantic-pragmatic similarity to the original text. Retelling analyses for consistency with the original stories were also performed.

Results: Overall, the group of children with SLI's performance on both the oral reading and story retell tasks was lower than that of the READ-M group. During the oral reading section, children in the SLI group had more miscues and fewer self-corrected errors than the READ-M group. These students also made more syntactic and semantic errors while reading. Although the group with SLI retellings were judged to be confusing and incomplete, the SLI and READ-M groups retained comparable amounts of information from the oral reading to the retell activity. Analysis showed a correlation between oral reading and story retelling abilities as children who performed better at some aspects of oral reading produced better story retells.

Conclusions: The difficulties experienced by the group with SLI during the oral reading task suggested deficits in integrating and interpreting print cues as well as deficits in perceiving errors. During the story retells, the confusing nature of the group with SLI's retells may have been attributable to differences in prior knowledge, slow language processing rates and/or working memory deficits. The performance of the group with SLI during the oral reading in the areas of percentages of self-corrections, grammatical acceptability, and degree of meaning

change during the oral reading were good predictors of retelling abilities. Although the children with SLI missed many cues, this did not negatively influence their understanding of the story.

Relevance to the current work: This study examined the storytelling abilities of school-aged children with SLI in relation to their oral reading abilities. It provided information about this population's ability to process and integrate lexical cues while reading and later, retelling stories.

Guo, L. Y., Tomblin, J. B., & Samelson, V. (2008). Speech disruptions in the narratives of English-speaking children with specific language impairment. ***Journal of Speech, Language, and Hearing Research, 51*****, 722-738. doi: 10.1044/1092-4388(2008/051)**

Purpose of study: This study examined the differences in number and types of speech disruptions between typically developing children and children with specific language impairment (SLI).

Method:
Participants: The participants included 20 fourth-grade children with SLI, 20 typically developing second-graders with similar language scores to the children in the SLI group (LA group), and these same 20 typically developing children while in the fourth grade (CA group). The children's language abilities were evaluated using the CELF-3, the PPVT-R, and the CREVT. Intelligence testing was performed using the WPPSI-R.
*Procedures***:** Each child participated in a spoken narrative production task during two, two-hour sessions of testing in the second and fourth grades. Participants listened to the administrator model a description of two sets of three, chronological cards and a prewritten story accompanying the cards. Following this, the participant was asked to do the same on his or her own. Each story was transcribed using Systematic Analysis of Language Transcripts (SALT) conventions and divided into C-units. The C-units were then analyzed for length of silent pauses, presence of vocal hesitations, background measures of narratives, rates of speech disruptions, and disruption rates by syntactic positions.

Results: In many of the measures, the performance of the SLI group resembled that of the LA group. For example, the group with SLI and the LA groups both produced fewer words in their narratives than the CA group and had speech disruptions in similar syntactic positions. When compared to the CA group, the group with SLI produced higher silent pause rates in the range of 500 to 1000 ms, but not for any other durational categories. In relation to syntactic position, the group with SLI produced more speech disruptions than the CA group before phrases, but not before sentences, words, or clauses. There was no significant difference measured in the total vocal hesitation rates between the group with SLI and the CA group, although differences in types of hesitations may have been present.

Conclusions: The data from this study supports the hypothesis that the presence of speech disruptions is related to language ability. This was seen as children with lower language ability demonstrated increased disruption rates when compared to those of typically developing children. Accordingly, children with increased language abilities were more fluent. Children with SLI may produce more silent pauses than vocal hesitations when compared to their peers because they have increased difficulty activating linguistic elements due to their weak representation of linguistic knowledge. The presence of speech disruptions at phrase boundaries, rather than at sentence or

clausal boundaries, provides further evidence in support of immature lexical representations for children with language impairment.

Relevance to the current work: This work evaluated the speech disruptions in children with SLI in an oral narrative context. Similarly, the current study examines the story generations of children with language impairment.

Hayward, D. V., Gillam, R. B., & Lien, P. (2007). Retelling a script-based story: do children with and without language impairments focus on script and story elements? *American Journal of Speech Language Pathology, 16*(3), 235-245. doi: 10.1177/026565909300900202

Purpose of the study: This study analyzed the story-telling abilities of children with LI compared to those of their age-matched peers.

Method:
Participants: 44 school-age children, 22 with LI and 22 of their age-matched peers (AM) participated in the study. The children with LI had nonverbal IQs between 75 and 120 as judged by the Kaufman Brief Intelligence Test, Second Edition (Kaufman & Kaufman, 2005) and performed at least 1.25 SDs below the mean on at least two areas of the Test of Language Development—Primary, Third Edition (Newcomer & Hamill, 1997). Some of the children in the LI group also had a diagnosis of learning disability.
Procedures: After discussing the familiar script of eating at McDonald's with the participant, the examiner read a related story and asked 14 comprehension questions about the story's main elements. The child then retold the story. The story was transcribed and segmented into CT-units. They were then evaluated for the use of obligatory and optional elements using Schank and Abelson's (1977) criteria. The data was also analyzed for temporal order accuracy using Slackman and Nelson's (1984) procedure, and then for causal connectivity using Trabasso and Sperry's (1985) criteria.

Results: Analysis revealed that both the group with LI and the AM group produced more obligatory than optional CT-units in their retells. In terms of the temporal sequence accuracy, the children in the AM group produced few sequencing errors while 41% of the children in the group with LI only produced one CT-unit that was related to the story. In examining causal connectivity, the data showed that children in the AM group more regularly recalled phrases that were causally connected than the children with LI.

Conclusions: The children with LI tended to focus more on script elements rather than using both the causal connectivity and script elements when retelling the story. Additionally, the fact that the participants with LI had difficulty with temporal sequencing may be related to difficulty with flexible application of script frameworks, difficulty assessing and integrating relevant script knowledge, or general difficulty with memory, seeing patterns, and abstracting rules.

Relevance to the current work: This study examined the story-telling capabilities of school-aged children with LI of script-based stories. The current study examines the story-generation abilities of the same population in response to an intervention.

Hedberg, N. L., & Westby, C. E. (1993). ***Analyzing storytelling skills: Theory to practice.*** **Tucson, AZ: Communication Skill Builders.**

Purpose of the work: This text discussed the foundational principles of the role of narratives in language and also explored various methods of collecting and analyzing narratives.

Summary: Hedberg and Westby began by explaining the significance of narratives including their function in various settings as well as their utility in teaching and understanding various linguistic and cognitive skills. The authors also outlined several of the most common methods of collecting and analyzing narratives including story grammar analysis, narrative level analysis, and various measures of narrative cohesion. The work concluded with a discussion on the interpretation of narrative analysis results.

Conclusions: The authors stated that the study of narrative production is valuable as narratives can provide important information about an individual's linguistic and cognitive abilities. Narratives are closely tied to literacy and can be used in academic settings to predict future success in literacy tasks. Studies show that individuals with language disorders are less knowledgeable about story structure and tend to have difficulties with narrative production. The various types of narrative analysis measure different aspects of narratives and are best used with specific populations. Although the authors confirmed the need for further research in this area, they also described methods and offered suggestions to provide direction for intervention with individuals with language disorders.

Relevance to the current work: This work details various methods for narrative analysis and the rationale for using them with individuals with language disorders.

Hughes, D., McGillivray, L., & Schmidek, M. (1997). ***Guide to narrative language: Procedures for assessment*****. Eau Claire, WI: Thinking Publications.**

Purpose of the work: This work provided an overview of the basic procedures for narrative language assessment.

Summary: The authors began by outlining general information about narratives and their assessment including various types of narratives and how children typically develop narrative language abilities. The authors also discussed different types of narrative systems. Narrative system analysis can be performed using various systems, including those specifically designed to examine microstructural or macrosctructural elements. The authors also discussed various procedures to aid in the elicitation, transcription, and interpretation of narrative samples. One analysis system, the *School Language Sample (SLS),* was addressed specifically as a longitudinal measure of narrative language abilities.

Conclusions: The authors concluded that narrative language assessment may be an effective tool for measuring language abilities both initially as well as in determining eligibility for services. However, specific measures such as the measure of the mean length of utterance are not sensitive enough to compare populations. In transcription and analysis, one of the more effective means of segmenting utterances to be used in analysis is the T-unit. As a longitudinal assessment, the SLS

was shown to be effective in measuring the growth of spoken and written narrative abilities in school-aged children.

Relevance to the current work: This work focused on the various types of narrative analysis systems as well as many ways of assessing these productions.

Klecan-Aker, J. S., & Kelty, K. R. (1990). An investigation of the oral narratives of normal and language-learning disabled children. *Journal of Childhood Communication Disorders. 13* (2), 207-216. doi: 10.1177/152574019001300207

Purpose of the study: This study examined the stories of typically developing fourth grade children and children with language-learning disabilities to ascertain differences between the groups.

Method:
Participants: Twenty fourth graders participated in the study. Ten children had normal language abilities, and the other 10 were classified as having a language-learning disability. Each group consisted of five males and five females.
Procedures: Each participant was individually shown an eight-minute film. Following the film, the child was asked to tell the story of the film to the examiner. The examiner provided minimal cues and questions during the narrative. The participant responses were all audio recorded and transcribed. Using a modified version of Appleby's developmental levels of narratives, each story narrative was assigned a developmental level.

Results: The children with normal language collectively produced more sophisticated stories than the children with a language-learning disability. The normal language group produced four primitive narratives, one focused chain, and five true narratives while the children with a language-learning disability produced one sequence and nine primitive narratives.

Conclusions: The children in the normal language group produced stories that were more complex and that contained more story grammar elements than the children with a language-learning disability. The increased complexity in the stories of the typically developing children reflects a greater understanding of the relationships between the plot and the individual elements that influence the plot of the story. The simpler stories of the children with a language-learning disability may also have been tied to difficulty with the immediate recall of characters and events in the story.

Relevance to the current work: This study focused on the differences in narrative ability between typically developing children and children with LI. Similarly, the current work is concentrated on assessing the story retell abilities of children with language impairment in response to an individualized treatment.

Liles, B. Z. (1985). Cohesion in the narratives of normal and language-disordered children. *Journal of Speech and Hearing Research,* 28, 123-133.

Purpose of the study: This study described children's use of cohesive devices, story grammar, and sequencing in storytelling situations.

Method:
Participants: The study included 10 females and 10 males with LI between the ages of 7;6 and 10;6. These participants were matched according to age and gender with 20 of their typically developing peers.
Procedures: Each participant viewed a film with an administrator of the study. Following the film, the participant was asked to tell the administrator about the film. The participant was then asked to summarize the film for a familiar adult who had not seen the film. Following both summaries, participants responded to questions about the content of the film. Each session was videotaped, transcribed, and coded for inclusion of cohesive elements.

Results: Both participant groups produced more sentences for the adult who had not seen the film. More specifically, both groups increased the number of personal reference, complete, and conjunctive ties when speaking to the adult unfamiliar with the film. During their summaries, typically developing children used more sentences and personal reference ties while the children with LI produced shorter narratives and used more incomplete and erroneous ties. In response to the questions about the film, the children with LI performed more poorly than the typically developing children, especially in response to questions regarding story grammar elements and relationships between characters and events. The data indicated no correlation between age and use of cohesive devices in either group.

Conclusions: The data suggested that the performance of both of the groups of children was not related to age. Children in both groups were able to respond to the listener's level of familiarity with the film and adapt the length and use of cohesive devices in the narrative to his or her listener's needs. The decreased number of personal reference ties in the narratives of the children with LI may have been tied to their decreased ability to organize ideas and communicate relationships between characters and events.

Relevance to the current work: This work focused on the narrative abilities of children with LI compared to those of typically developing children with respect to the use of cohesive

Liles, B. Z., & Merritt, D. D. (1987). Story grammar skills in school age children with and without language disorder: Story generation, story retelling, and story comprehension. *Journal of Speech and Hearing Research, 30* (4), 539-552.

Purpose of the study: This study examined the story narratives of older children with LI.

Method:
Participants: The participants included 20 children with LI between the ages of 9;0 and 11;4 and 20 of their typically developing, age and gender-matched peers. In total, there were 22 boys, and 18 girls.

Procedures: The study consisted of three tasks. These included the generation of three stories, retells of two stories, and responses to 16 comprehension questions about the retells. These tasks were completed by each participant individually and in a single session.

Results: The children with LI produced significantly fewer story grammar components than did their peers during both the generation and the retell activities. In both activities, the group of typically developing children produced more complete episodes. During the comprehension task, children with LI responded incorrectly to more of the questions requiring understanding of the relationships in the story

Conclusions: The data suggested that both typically developing children and children with LI have organizational skills when it comes to narrative production, but children with LI are less effective in using and producing complete episodic structure. This was seen as the children with LI produced stories with more incomplete episodes and inaccurately responded to questions that assessed the relationships between parts of the stories.

Relevance to the current work: This study evaluated the structural composition of story narratives produced by children with LI.

Newman, R. M., & McGregor, K. K. (2006). Teachers and laypersons discern quality differences between narratives produced by children with or without SLI. *Journal of Speech, Language, and Hearing Research. 49,*1022-1036.

Purpose of the study: This study examined the differences in narrative quality between groups of children with and without SLI.

Method:
Participants: The participants included ten children with SLI who had a mean age of 6;2. These participants were age-matched to a group of 1 typically developing children. The narratives were rated by a group of adults made up of female laypersons with children the same age as the participants. Another rater group consisted of teachers who worked with children the same age as the participants.
Procedures: In individual sessions, each participant was given a wordless storybook (*Frog, Where Are You?)*, and was told to look at all the pictures and then return to the beginning and tell a story that accompanied the pictures. These narratives were audiotaped, transcribed orthographically, and segmented into C-units for analysis according to fluency, length and complexity, syntactic features, and story grammar. They were also given quality ratings by the two listener groups.

Results: There was no significant difference between groups for ratings of fluency, noun, and verb phrase complexity. However, the narratives of the typically developing participants were significantly longer with higher proportions of grammatical C-units than those of the participants with SLI. The listeners generally gave the typically developing children higher quality ratings. Both listener groups reported that quality judgments were based primarily on vocabulary and story grammar elements and not sparkle, fluency, or syntax.

Conclusions: Similar to the findings in previous studies, both listener groups judged the narratives of the participants with SLI to be poorer than those of their typically developing peers. This coincides with the idea that there is a perceptual difference in narrative quality between typically developing children and children with SLI, noticeable to many listeners. The objective measures confirmed the hypothesis that narration is affected by SLI as these participants performed significantly more poorly than their peers in the following three areas: length, grammaticality, and story grammar inclusion.

Relevance to current work: This work studied the narrative productions of children with SLI and outlined the differences between these productions and those of their age-matched peers.

Page, J. L., Stewart, S. R. (1985). Story grammar skills in school-age children. ***Topics in Language Disorders,*** **5(2), 16-30.**

Purpose of the work: This chapter provided an overview of how children learn and use story grammars.

Summary: The chapter provided a description of story grammars and their significance in everyday speech tasks. This included a discussion of how typically developing children develop the ability to implement story grammars. Page and Stewart also discussed the various uses and methods of assessing narrative capabilities by examining story grammars. The chapter concluded with a discussion of the various methods for training the use of story grammars.

Conclusions: The authors pointed out that stories are an important part of daily life. One construct that is used for understanding and structuring stories is the story grammar model. They stated that the assessment of story grammar knowledge is difficult due to the large number of assessment options and factors that influence the results. Instruction in the area of story grammars is important as it provides children with the knowledge necessary to understand and generate stories of their own. Many techniques exist to train these skills, although limitations in the research made it difficult to identify the most effective means of teaching story grammar knowledge.

Relevance to the current work: Page and Stewart's overview of story grammars provided insight about story grammar analysis and how this knowledge develops in typical children and children with LI. The current study utilizes a story grammar approach in evaluating the narrative skills of children with LI.

Reilly, J., Losh, M., Bellugi, U., & Wulfeck, B. (2004). "Frog, where are you?" Narratives in children with specific language impairment, early focal brain injury, and Williams syndrome. ***Brain and Language, 88,*** **229-247. doi: 10.1016/S0093-934X(03)00101-9**

Purpose of the study: This study compared the story generations in typically developing children (TD), children with focal brain damage (FL), children with SLI, and children with Williams Syndrome (WMS).

Method:
Participants: Study1: Age-matched groups of children with SLI, FL, and TD children participated in the study. These children were between the ages of 3;11 and 12;10. Study 2: This study included children from three groups: children from the WMS group between the ages of 4;9 and 12;9, as well as the children from the SLI and TD groups in Study 1.
Procedures: Study 1: Participants were presented with Mercer Mayer's wordless book, *Frog, where are you?,* and, after having examined the pictures, were told to generate a story based on the book. Transcriptions were coded for grammatical competence, aspects of narrative structure, evaluative devices, and length. Study 2: The procedures in this study were the same as those in Study 1. Narrative structure and use of evaluation were also assessed to evaluate cognitive and social aspects of narratives.

Results: Study 1: In terms of both morphological errors and syntactic complexity, the FL group performed better than the SLI group, but both groups had decreased abilities compared to the TL group. However, while the older children with FL performed similarly to the TL group, the SLI group still had a delayed performance. Study 2: The complexity and accuracy of performance of children with SLI and WMS varied according to age and group in all areas. In the areas of syntax and morphology, children with SLI and WMS both performed poorer than the TD group. However, older children with WMS produced more types of complex syntax that older children with SLI. The groups showed vast differences in social and cognitive aspects of narrative ability. Socially, the group with WMS outperformed the other two groups for all ages. Cognitively speaking, children with SLI demonstrated initial delays for narrative structure and thematic integration, but with age, grouped with the TD children. On the other hand, children with WMS maintained diminished cognitive abilities across all ages.

Conclusions: The findings of the studies suggested that in the measured areas of cognition, children with SLI demonstrated increased inferencing and integrative abilities compared to children with WMS. In these children, cognitive skills were negatively affected by their general intellectual impairment. Children with SLI demonstrated difficulty with measures of morphosyntax. Performance in social aspects of narratives in children with WMS of all ages was superior to that of children with SLI and TD. This was logical considering the propensity of children with WMS to use language for social rather than intellectual purposes.

Relevance to the current work: This study provided information about the nature of difficulties experienced by children with SLI in narrative production.

Roth, F. R., & Spekman, N.J. (1986). Narrative discourse: Spontaneously generated stories of learning disabled and normally achieving students. *The Journal of Speech and Hearing Disorders, 51* (1), 8-23.

Purpose of the study: This study compared the spontaneously generated stories of children with learning disabilities and normally developing children when measured at various ages.

Method:
Participants: The study involved 48 children with learning disabilities and 48 typically developing children. The participants were divided into three groups of 32, with a group at each of the 8;0-9;0, 10;0-11;0, and 12;0-13:0 age ranges.
Procedures: Each child was seen individually and was asked by the experimenter to make up a fictional story. Up to three prompts could be given to encourage complete, detailed stories. All participant responses were audiotaped and transcribed verbatim. These transcriptions were then divided according to propositions and then separated into one of seven story grammar categories.

Results: The stories produced by children with a learning disability were shorter, and were made up of more incomplete episodes. These incomplete episodes were generally missing the setting statements and middle portions of the episodes—or portions that contain the cognitive planning, actions, and attitudes of the protagonist. Also, these stories used fewer causal relations.

Conclusions: The stories produced by the participants with learning disabilities were similar to those of younger typically developing children. Their stories generally presented initiating events and their consequences—spending less time providing story context and more time talking about major events. Of the three necessary episodic elements, the element missing most frequently was the middle element or "attempt." This lends support to the idea that these children's skills were still in the developmental stages.

Relevance to the current work: This study examined the differences in story generations between the children with a learning disability and typically developing children. These stories were evaluated using Stein and Glenn's story grammar model.

Schneider, P., Hayward, D., & Dubé, R. V. (2006). Storytelling from pictures using the Edmonton Narrative Norms Instrument. *Journal of Speech-Language Pathology and Audiology, 30* (4), 225-239.

Purpose of the work: This work aimed to ascertain the effectiveness of the Edmonton Narrative Norms Instrument (ENNI) as a measure of the storytelling abilities of children with LI and typically developing children.

Method:
Participants: The study included 377 participants between the ages of 4;0 and 9;11. The participants were divided by age. Each age group contained 50 typically developing children (with equal numbers of males and females) and 15 children with LI (with an unequal number of males and females). Language skills were evaluated using either the CELF-III or the CELF-Preschool.
Procedures: The materials included six, wordless stories. Each participant attended two sessions. In the first session, the participants were shown the pages of one wordless storybook. After the participants previewed all the pages, the administrator turned to the beginning of the story and turned the pages as the participant told a corresponding story. In the second session, participants completed a comprehension task about the materials. Story productions were transcribed and coded for the inclusion of three specific story grammar units (initiating event, attempt, and outcome).

Results: The data indicated that participants increased their use of story grammar units as they got older. At every age, typically developing children received higher scores for story productions than children with LI, except in the nine year-old group. The results indicated that the use of this protocol may contribute to the prediction of group membership as 80% of the participants were correctly classified using this measure.

Conclusions: The data suggested that there is a developmental trend for the number of story grammar units to age 7. The measurement of story grammar use can provide information about storytelling development for younger children. On its own, this analysis would not be sufficient to identify the presence of LI at any age, as children with LI present with impairments in different areas and this test only examines one skill area.

Relevance to the current work: An analysis system similar to the system employed in this study was used in the current work.

Snyder, L. S., & Downey, D. C. (1983). Pragmatics and information processing. ***Topics in Language Disorders, 4*** **(1), 75-86.**

Purpose of the work: This article discussed the role of various information processing systems in relation to general pragmatics and children's story narrative abilities.

Summary: The authors stated that children use the processes of attention and semantic memory to understand and effectively process stimuli around them. They also explain that individuals' selective attention and memory organization abilities contribute to their ability to use appropriate pragmatics in social situations. These processes are also necessary for the production and comprehension of story narratives.

Conclusions: The authors concluded that communicative competence is directly influenced by an individual's ability to implement schema-directed and selective attention processing. By providing numerous and varied contexts for language learning, clinicians aid in the development of these processing abilities. Consideration of a child's processing strengths and weaknesses will maximize language learning.

Relevance to the current work: This work provided information about two information processing systems that contribute to the development of narrative production and comprehension.

Swanson, L. A., Fey, M. E., Mills, C.E., & Hood, L.S. (2005). Use of narrative-based language intervention with children who have Specific Language Impairment. ***American Journal of Speech-Language Pathology, 14*****, 131-143.**

Purpose of the study: This study evaluated the effectiveness of a six week narrative-based language intervention in improving the areas of narrative form and syntax in children with SLI.

Method:
Participants: The participants included ten children with SLI between the ages of 6;11 and 8;9. Each child qualified to participate by having a score at least -1.5 SD below the mean on the speaking composite of the Test of Language Development (TOLD—P3).
Procedures: In three pretreatment sessions, participants were given a model story and were asked to create their own stories when given two sets of three sequential pictures. During treatment, each participant was seen three times a week for six weeks for a total of 18 sessions. During these sessions, participants completed a retell task, a retell-imitation task, a sentence imitation task, a story generation task, and were given the targeted stories to take home and practice prior to the subsequent session. During the follow-up session, assessments were completed to assess the areas of narrative, working memory, and syntax.

Results: One measure of story quality (the NQ) showed significantly higher scores following treatment in eight participants, while the other measure of story quality (the NDW) showed gains in only one participant. There were mild improvements noted in the scores from the sentence imitation task during the course of treatment. No improvement was seen in the scores of grammar or working memory.

Conclusions: The statistically significant gains in NQ scores indicated that this may be a good measure of story quality in future studies. The NDW was not seen to be a valid measure of story quality as many variables may have affected the results. The lack of improvement in the area of syntax was likely due to the brevity of treatment. This may have also been due to the difficult level of the story content the participants encountered during the study. Various modifications to the narrative based language intervention such as different stories, more reenactments of stories, the use of icons to teach story grammar, and the use of different outcome measures, were suggested in hopes of their producing more favorable treatment outcomes.

Relevance to the current work: Like this study, the current study seeks to evaluate the effectiveness of a narrative-based language intervention in improving the performance for various linguistic and syntactic skills in children with LI.

Ukrainetz, T. A., & Gillam, R. B. (2009). The expressive elaboration of imaginative narratives by children with specific language impairment. *Journal of Speech, Language, and Hearing Research, 52,* 883-898.

Purpose of study: This study examined the artistic aspects of the imaginative narratives of children with SLI compared to those of their typically developing peers.

Method:
Participants: Forty-eight children participated in this study. These children were divided into four groups: 6 year-old children with SLI, 6 year-old typically developing children, 8 year-old children with SLI, and 8 year-old typically developing children.
Procedure: Each participant listened to and answered questions about a model story. They were then shown a set of pictures and were asked to tell a story about the pictures. This process was then repeated, but the participant was only given one picture and was asked to tell a story about

it. The participants' narratives were transcribed and scored for inclusion of 13 elaborative elements using a modified high-point analysis system.

Results: In both age groups, the children with SLI performed more poorly than their peers for seven of the categories. Then, at 8 years of age, children in the SLI group also performed poorly in three more areas. The younger groups and the children with SLI also included fewer simple elaboration functions than the children in the older and typically developing groups. Children in all of the groups included more elaborative elements in the second story.

Conclusions: Children in the SLI groups demonstrated difficulty producing narratives with simple elements of expressive elaboration. In fact, at 8 years of age, children with SLI performed similarly to the typically developing six-year-olds. The increased number of elaborative elements that was seen in the second story for all groups may have been due to the fanciful subject matter of the second picture and the improvement in the task with practice.

Relevance to the current study: This study evaluates aspects of narrative production in children with SLI.

Vandenwalle, E., Boets, B., Boons, T., Ghesquiere, P., & Zinc, I. (2012). Oral language and narrative skills in children with specific language impairment with and without literacy delay: A three-year longitudinal study. ***Research in Developmental Disabilities,*** **33, 1857-1870.**

Purpose of the study: This longitudinal study examined the differences in the development of narrative skills in children with SLI with and without literacy delay and their typically developing peers over a period of three years.

Method:
Participants: Eighteen children with SLI participated in the study. Of these 18 children, 10 had normal literacy skills (SLI-NL), and eight had delayed literacy skills (SLI-LD). The children with SLI were age matched to 14 of their typically developing peers. All participants began the study at the end of their kindergarten year.
Procedures: Participants were evaluated in the areas of oral language, vocabulary, word fluency, productive morphology, listening comprehension, story retelling, storytelling, reading, spelling, and reading comprehension. The evaluations for these areas were divided between the three years of the study.

Results: The group of typically developing children scored higher than the groups of children with SLI in all areas except for in the sentence and text listening tasks in various grades. In the areas of text comprehension and storytelling, the children in the SLI-NL group moved towards their peers in grades 1 and 2 while the children in the SLI-LD group remained significantly lower. In the story retelling task, however, the children in the storytelling task, the children in the SLI-NL group scored in between the two other groups. All three groups told longer stories in the story retelling task compared to the storytelling task. In the reading comprehension measure, the children in the SLI-NL and control groups had similar scores while the children in the SLI-LD group had significantly lower scores.

Conclusions: The children in the SLI-LD group had persistent language problems across all domains until at least second grade, in spite of the language therapy they began receiving in kindergarten. In the tasks that required the combination of various receptive oral language skills, the children in the SLI-NL group caught up to the control group over time. This improvement may have been linked to the increased print exposure that this group received. The children in the SLI-LD group may have experienced difficulty with the reading comprehension task may because the prompts for the task were short and simple.

Relevance to the current work: The current work examines the narrative skills of school-aged children with LI in response to a social communication intervention.

Appendix B

Clinical Evaluation of Language Fundamentals-5 (CELF-5)

Clinical Evaluation of Language Fundamentals-5 (CELF-5)

Participant	CELF-5 Percentile Rank Scores					
	Age	Sentence Comprehension	Word Structure	Formulated Sentences	Recalling Sentences	Core
P1	7;11	25	16	50	25	23
P3	6;7	1	1	1	2	14
P4	5;11	25	9	9	2	7
	Age	Word Classes	Semantic Relationships	Formulated Sentences	Recalling Sentences	Core
P2	10;1	16	5			8
P5	9;7	16	2	1	2	2

Appendix C

Analysis System Protocols and Coding Manual

Story Analysis Protocol, Book 1: A Boy, a Dog, and a Frog

Story Feature	Acceptable	Number or word	Source of emotion, yes/no **(because, since, so)**
Character: boy	Boy/guy/kid (not pronoun)		
Character: dog	Dog (not pronoun)		
Character: frog	Frog (not pronoun)		
Setting: water	Pond/water/outside		
Setting: home	Home, bathroom		
Description/naming of object/ thing/ adjective	Bucket/boot/wet/ ---list. Also, description of state of character, location (ex: he was in the pool)		
Description of action	Boot in the water (fell)/ turtle let go/ Frog jump in/boy catch dog—not expressed as an intent or as a consequence of an event ---- list with page number if possible. Talking about the act of speaking (he's <u>like</u>, "…"/ he <u>said</u>, "…"), or if the quote itself if it is about an action ("he's jumping in the water") (**note: if the quote itself includes intent/attempt word, that utterance will go in that respective category)		
Initiating intent p. 4	Boy wants to catch frog (must have word to express intent-***want/need/thought that would be good*** **etc,** ***I'm gonna—if used in a quote***)		
Initiating attempt p. 4	The boy tries to net/catch the frog (must indicate attempt—***try/starts to, began***)		
Emotion	p. 4 boy is excited/happy		
	P. 4 frog is sad/worried		
	P. 5 boy is surprised/worried		
	P. 5 frog is concerned		
	P. 6 frog is angry/mad/negative		
	P. 7 boy is sad/mad/disappointed		
	P. 7 frog is happy/pleased/satisfied		
Outcome p 5-7	The boy and the dog fall in the water (must be linked to the prior attempt or		

	intent using "**but",** "**instead**", "**so**" , "**in order to**" or other connective device)		
Initiating intent p. 8	The boy **wants/tries** to catch the frog		
Initiating attempt p. 8	The boy **tries/ starts** to catch the frog		
Outcome p. 9	The frog gets away ("**but",** "**instead**", "**so**" , "**in order to**")		
Emotion	P. 10 The frog is happy P. 10 The boy is mad		
Initiating intent pp 10-11	Boy wants to catch frog Boy plans to trap/net frog		
Initiating event 10-11	Boy tells dog to help catch frog (has to use signal word--**tries, starts to, goes to**).		
Outcome pp. 12-13	Frog gets away/Boy nets dog (with connective device)		
Emotion	p. 13 boy is happy/satisfied (mistakenly) p. 13 frog is concerned p. 15 frog is mad/angry/negative p. 16 boy is angry/mad p. 17 frog is sad/disappointed		
Initiating intent attempt p. 18-19	Boy and dog **want to/plan to** leave/go home		
Initiating attempt p. 18-19	Boy and dog leave/go home (**starts, tries**)		
Emotion	p. 19 frog is sad		
	P. 20 boy is sad/mad/disappointed		
Outcome. 27 Emotion	Frog is sad/lonely		
Initiating intent pp24-30	Frog **wants/plans** to follow boy. Frog **wants** to jump in tub.		
Initiating event or attempt pp24-30	Frog **goes to/starts to/tries** to follow boy home Frog **goes to/starts to/tries to** follow boy to bathroom/tub Frog **starts to/tries to/ goes to** jump into tub		
Emotion	p. 27 frog is happy p. 28-29 boy is happy p. 29 frog is surprised p. 30 frog is happy		
Other Emotions (link to page or content if possible)	Emotions not stated in one of the above emotion categories		
Resolution	p. 27-29, Boy, dog and frog are together, having fun, boy caught frog, etc.		

Trying to understand motives/thoughts of others	Statements that indicate that one character wants to know/understand what another character is doing/thinking (ex: Frog was like, “What is he doing?”)		
Other TOM	Statements that comment on what a character thinks/knows/ understands.		
Housekeeping	Statements used by participant that are unrelated to plot and related to organization/telling of story (ex: I skipped that page, the end).		
Interjections	Utterances that are sound effects, or other interjections that **stand on their own** and do not fit into other areas of template. (ex: this book is long, what?, he shouldn’t do that)		

Story Analysis Protocol, Book 2: A Boy, a Dog, a Frog, and a Friend

Story Feature	Acceptable	Number or word	Source of emotion, yes/no
Character: boy	Boy/guy/kid (not pronoun)		
Character: dog	Dog (not pronoun)		
Character: frog	Frog (not pronoun)		
Character: turtle	Turtle (not pronoun)		
Setting: Outside	Outside/water/fishing hole/pond		
Description/naming of object/ thing/ adjective	Object/character /character with description. Description of state of object or characters Description of location (ex: he was on the rock)		
Description of action	Boy is fishing/frog jumped in the water/the boy is holding the dog—not expressed as an intent or as a consequence of an event ---- list with page number if possible Phrase includes an action (verb) Talking about the act of speaking (he's <u>like</u>, "…"/ he <u>said</u>, "…"), or if the quote itself if it is about an action ("jumping on the table") Includes dialog describing action "He's like, 'get that turtle!" Or He said, "The frog jumped in the water." " (**note: if the quote itself includes intent/attempt word, that utterance will go in that respective category)		
Intent p. 1-2	Boy wants/plans/decides to go fishing/catch a fish Also if character addresses another character saying "I'm gonna go" or other action, score as intent.		
Following attempt p. 1	The boy starts to/tries to catch a fish/fish/catch something		

Outcome p. 2-3	The fishing pole bends/something is on the line/he caught something/fish (connective device)		
Outcome p. 4	The boy falls in the water/the dog and frog jump in the water		
Emotion	p. 1 the boy is happy		
	P. 2 the boy is happy/excited		
	P. 3 boy is scared/worried		
	P. 5 boy is mad/angry		
	p. 5 turtle is mad/angry		
Intent p. 5-6	The boy wants to/plans to catch the turtle/get back at the turtle/follow the turtle (must have intent word) and/or the boy wants the dog to get the turtle The turtle plans to/wants to get away p. 6		
Following attempt p. 7	The dog starts to/tries to get the turtle/bark at the turtle/bite the turtle		
Outcome p. 8	The turtle bites the dog (with connective device)		
Emotion	p. 7 the dog is mad p. 7 the turtle is mad		
	p. 8 the boy is surprised		
	p. 8 the dog is surprised/shocked/upset/mad/scared/ hurting		
	p. 8 The frog is scared		
Intent p. 9	The boy wants to/plans to try to get the frog off the turtle/get the dog free, etc.		
Following attempt p. 9-10	The boy tries/starts to pull/carry the dog away		
Outcome p. 10	The turtle hangs on (connective device)		
Emotion	P. 9 The dog is sad/hurt p. 9 the boy is determined/upset p. 10 the dog is sad/hurt		
Intent p. 11	The turtle wants to/plans to/ decides to let go/go back in the water/go away		
Following attempt	The turtle starts to/tries let go/get back in the water		
Outcome	p. 12 the turtle is gone/goes away (connective device)		
Emotion	p. 12 the boy is happy p. 11-12 The dog is sad/hurt		
Intent p. 13-14	Turtle wants to/decides to/plans to get/bite/pull the dog		

Following attempt p. 14	The turtle tries to/starts to bite the dog's tail/bite the dog/pull the dog		
Outcome p. 17	The dog falls in the water/the turtle pulls the dog in the water (connective device)		
Emotion	p. 14 the boy is surprised/shocked p. 14 The dog is surprised/shocked p. 16 The boy is sad/upset p. 16 The dog is scared/upset/mad/shocked/surprised		
Intent p. 16	The boy wants to/decides to go after/rescue/save the dog/get in the water/take his clothes off		
Following attempt p. 17-18	The boy starts to/tries to take clothes off/get ready to get in the water		
Outcome p. 18 Outcome p. 19 Outcome p. 20	The dog surfaces/comes up The boy gets dressed/the dog gets out of the water The turtle comes up/is/looks dead		
Emotion	p. 19 the boy is mad p. 20 the boy is shocked/sad/upset p. 20 the frog is sad/worried		
Intent p. 21	The boy wants to/plans to/decides to get the turtle out of the water/use stick to get the turtle out		
Following attempt p. 21	The boy tries to/starts to get the turtle out/use a stick to get the turtle out		
Outcome	The boy gets the turtle out (connective device)		
Outcome p. 22	The boy thinks the dog killed the turtle		
Emotion	p. 22 The boy is mad (at the dog) p. 22 the dog is sad/guilty		
Intent p. 23-24	The boy wants to/decides to /plans to bury the frog		
Following attempt p. 24	The boy starts/tries to dig a hole/grave		
Outcome p. 25-26	Boy digs a hole/grave/plants a flower (connective device)		
Intent p. 26	The turtle plans to/decides to/ wants to/ wake up/get the fishing pole		

Following attempt p. 27	The turtle tries to/starts to take the pole to the boy		
Outcome p. 25	The boy lifts the turtle/the dog/ frog jumps up (connective device)		
Emotion pp. 27-28	The boy is happy/surprised p. 27 The boy is happy p. 28 The frog is happy p. 27-28 The dog is happy p. 28		
Other Emotions (link to page or content if possible)			
Resolution	p. 29 Boy, dog, frog, and turtle all go home/off together. They are all friends		
Trying to understand motives/thoughts of others	Statements that indicate that one character wants to know/understand what another character is doing/thinking (ex: Turtle was like, "What is he doing?") I don't know why he did that. Why did he do that? Dialog, "Why are you doing that?"		
Other TOM	Statements that comment on what a character knows/thinks/understands (Not describing intent?		
Housekeeping	Statements used by participant that are unrelated to plot and related to organization/telling of story (I missed that page. That page is ripped. I read this book already.)		
Interjections	Utterances that are sound effects, or other interjections that stand on their own and do not fit into other areas of template. (ex: this book is long, what?, he shouldn't do that)		

Story Analysis Protocol, Book 3: Frog Goes to Dinner

Story Feature	Acceptable	Number or word	Source of emotion, yes/no (**Because, since, so)**
Character: boy	Boy/guy/kid (not pronoun)		
Character: dog	Dog (not pronoun)		
Character: frog	Frog (not pronoun)		
Character: turtle	Turtle (not pronoun)		
Character: parents	Dad/Mom/Parents (not pronoun)		
Character: sister	Sister/girl (not pronoun)		
Character: parking attendant	Guy/man/parking guy (not pronoun) (incidental character)		
Character: waiter #1 (moustache)	Waiter/guy/man (not pronoun)		
Character: waiter #2	Waiter/guy/man (not pronoun) (to receive credit must distinguish from waiter #1 saying, "another" or using some descriptor.		
Character: Musicians	Horn player, band, musician, etc. (not pronoun)		
Character: woman with hat	Lady/woman/lady with hat (not pronoun)		
Characters: man in couple	Couple/man/guy/ people (not pronouns)		
Characters: woman in couple	Woman/lady (not pronoun)		
Setting: home	Home/room		
Setting: restaurant	Restaurant/eating place		
Setting: car	Car/in the car		
Description/naming of object/ thing/ adjective	Object/character /character with description --- list. Also, description of state of character, Description of state of object or characters Description of location (ex: he was in his chair)		
Description of action	Boy eating dinner/frog jumped in pocket/they are driving—not expressed as an intent or as a consequence of an event --- list with page number if possible		

	Talking about the act of speaking (he's <u>like</u>, "…"/ he <u>said</u>, "…"), or if the quote itself if it is about an action ("jumping on the table") (**note: if the quote itself includes intent/attempt word, that utterance will go in that respective category) Action (verb) Includes dialog describing action "He's like, 'get off my table." Or He said, "The frog jumped in the salad." Act of speaking, "Frog is like/said, 'Oh no.'"		
Intent p. 2-3	Frog wants/plans/decides to go with the boy Also if character addresses another character saying "I'm gonna go" or other action, score as intent.		
Following attempt p. 2-3	"The frog starts to/tries to jump/get in the boy's pocket—		
Outcome p. 4	The frog is at the restaurant with the boy (connective device)		
Emotion	p. 2 dog is sad/disappointed		
	P. 3 dog (and or turtle) is sad/lonely		
	P. 3 frog is happy/excited		
	P. 4-5 Dad (and or Mom) is happy Frog is happy		
Intent p. 6-7	The frog wants to/plans to jump in the horn/get away/jump around (must have intent word)		
Initiating attempt p. 6-7	The frog starts to/tries to jump in the horn/get away/jump around		
Outcome p. 8	The frog jumps/lands/is inside the horn (with connective device) and/or the musician cannot blow the horn		
Intent p. 9	The musician wants to/plans to see what is inside the horn or where the frog went		
Following attempt p. 9	The musician tries/starts to look inside the horn or where the frog went (connective device)		
Outcome p. 10	The frog falls on the musician's face (connective device)		

Outcome p. 11	The musician falls in the drum (can be conjoined with outcome above with "and" or have another connective device)		
Emotion	P. 8 The musician is surprised P. 9 The musician(s) is mad/angry/confused p. 10 surprised/angry/ happy/thinks it's funny p. 11 angry/mad happy/thinks it's funny p. 12 angry puzzled/confused happy/amused/thinks it's funny		
Intent p. 13	Frog wants to/plans to/ decides to get away or jump on the salad plate		
Following attempt	Frog starts to/tries to get away or jump on the salad plate		
Outcome pp. 14-15	The waiter serves the salad with a frog/frog is in the salad (connective device)		
Emotion	p. 15 The lady/woman is shocked/surprised/horrified p. 15 frog is happy		
Intent p. 16	Frog wants to/decides to/plans to get away/jump		
Following attempt p. 16-17	Frog tries to/starts to get away/jump		
Outcome p. 17	The frog jumps/lands in the glass (connective device)		
Emotion	p. 16 lady is shocked/surprised		
	P. 17 lady is sad/shocked Waiter is mad		
Outcome	Lady complains to the waiter		
Intent p. 19	Frog wants to/decides to be friendly/kiss man's nose		
Following attempt p. 19	Frog starts to/tries to kiss/touch man's nose		
Emotion	p. 18 Lady is man/angry p. 19 man is surprised p. 19 woman is surprised/shocked/confused waiter is mad		
Intent p. 20-21	Waiter wants to/plans to/decides to catch frog		

Following attempt (not shown)	Waiter tries to/starts to catch frog		
Outcome	Waiter catches frog (connective device)		
Emotion	p. 20 Waiter is mad/angry man is surprised woman is surprised/shocked/confused		
Intent p. 22-23	Waiter wants to/decides to /plans to take frog out		
Following attempt p. 22	Waiter starts/tries to take frog out		
Outcome p. 23	Boy protests/tells waiter to stop (connective device)		
Intent p. 24	Boy plans to/decides to/ wants to/ get frog back		
Following attempt p. 24	Boy tries to/starts to ask for frog		
Outcome p. 25	Boy gets his frog back (connective device)		
Emotion pp. 22-23-24-25	Waiter is mad Mom/Dad is/are mad Boy is scared/upset Sister is mad Frog is sad/scared Boy is happy and relieved Frog is happy		
Intent p. 25	Waiter wants to/plans to/ throw family out		
Following attempt p. 25	Waiter starts to/tries to throw family out/tell them to go away		
Outcome p. 20-21	Family has to go/goes/drives home (connective device)		
Emotion	Mom/Dad is are mad Sister is mad Boy is mad/sad Frog is sad		
Intent p. 28	Dad wants to/decides to/ plans to tell boy to go to room		
Following attempt p. 28	Dad starts to/ tries to tell boy to go to room		
Outcome p. 29	Boy goes to room (connective device		
Emotion	p. 28 Dad is mad Sister is mad p. 29 Boy is sad Frog is sad		
Outcome p. 30	Boy and frog are happy/laughing in room/think it is very funny (connective device)		
Emotion	p. 30 Boy is happy		

	Frog is happy		
Other Emotions (link to page or content if possible)			
Resolution	p. 30 Boy and frog think that they played a funny trick/ they think that the restaurant adventure was fun/funny.		
Trying to understand motives/thoughts of others	Statements that indicate that one character wants to know/understand what another character is doing/thinking (ex: Frog was like, "What is he doing?") I don't know why he did that. Why did he do that? Dialog, "Why are you doing that?"		
Other TOM	Statements that comment on what a character knows/thinks/understands (Not describing intent?		
Housekeeping	Statements used by participant that are unrelated to plot and related to organization/telling of story (I missed that page. That page is ripped. I read this book already.)		
Interjections	Utterances that are sound effects, or other interjections that **stand on their own** and do not fit into other areas of template. (ex: this book is long, what?, he shouldn't do that)		

Coding Manual

Initiating intent: Child must use words such as *want, plan, decide*, or *maybe I should* (as dialog). If these words are not used, the utterance is counted as either a description of an object or a description of an action.

Following Attempt: Child must use words such as *tries to,* or *starts.* If these words are not used, the utterance is counted as either a description of an object or a description of an action.

Outcome: Phrase must be causally linked to initiating event, attempt, or intent. Child must use words such as *so, because, so then, if, and then, but,* or *and* (not just chaining). Some participants use connective words at the beginning of every phrase (e.g.: and then…). Examine each phrase to see how the connective words are being used. If the phrase clearly indicates cause and effect, then it can be counted as an outcome.

For each emotion: Note if a source is indicated in the yes/no column. For our purposes, in order to say that a source is indicated, a connective word MUST be used (e.g.: the boy was happy *because* he caught the frog OR the frog was sad *cuz* the dog and boy left).

Questions about motives/thoughts of others: Include utterances that clearly indicate that a character is wondering about what another character is doing or thinking. (e.g.: "And frog's like, "What are you doing?

Other TOM: Any utterances that include words such as thinking, wondering, know (e.g.: Then he didn't know where the frog was.) This shows that the participant is examining the thoughts of a character.

Housekeeping: any phrases the participant includes that are unrelated to the plot (e.g.: I think I already read that page.)

Interjections: Utterances that are sound effects, or other interjections that stand on their own and do not fit into other areas of template. (e.g.: This book is long, What?, He shouldn't do that).

Utterance inclusion criteria:

- Include all words of the phrase somewhere (don't omit filler words or repetitions)
- Utterances may be split if parts of utterance fit into different categories (e.g.: original utterance: The boy wants to catch the frog so he tried to get him in the net. Split utterance: The boy wants to catch the frog—intent, so he tried to get him in the net—following attempt)
- If utterances are split, indicate that the entire utterance has not been represented using … on split end. (e.g.: …so he tried to get him in the net.)

Appendix D

Raw Data

Raw Data for Participant 1

Categories	Sessions								
	B1	B2	B3	I3	I5	I7	I15	I18	I20
ID characters	3	4	4	2	3	1	2	4	1
ID setting	2	1	2	2	1	3	2	1	3
Object description	5	7	2	2	4	3	2	3	3
Action description	22	38	23	22	11	17	16	13	15
Total descriptions	27	45	25	24	15	20	18	16	18
Intent	2	0	1	1	5	0	1	0	1
Following attempt	3	0	1	1	5	0	1	0	1
Outcome	3	6	7	0	1	4	3	6	0
Total episodic elements	8	6	9	2	11	4	5	6	2
Resolution	0	1	1	1	2	0	1	1	0
Complete episodes	1	0	0	0	1	0	0	0	0
Theory of Mind	0	0	0	0	1	0	0	0	0
Questioning Thoughts/actions	0	0	0	0	3	0	0	0	0
Emotion words	13	12	12	7	0	2	3	2	0
Listed words	mad mad happy mad mad sad sad sad mad sad happy happy happy	scared tired sad sad mad mad sad happy happy happy happy happy	sad surprise mad happy mad mad mad mad sad happy mad sorry*	mad mad mad sad confused scared scared		mad mad	mad sad sad*	sad mad	
Total salient phrases	45	63	46	34	36	26	25	25	19
% Descriptive	60	71	54	71	42	77	72	64	94
% Episodic	18	10	20	6	19	15	16	24	5
% Emotion	29	19	26	21	0	8	12	8	0

Note. Source of emotion is indicated using an asterisk.

Raw Data for Participant 2

Categories	Sessions							
	B1	B2	B3	I5	I7	I9	I17	I20
ID Characters	3	4	8	3	1	8	1	4
ID setting	2	1	1	1	0	2	0	0
Object Description	3	3	1	4	7	0	7	2
Action Description	18	23	17	9	9	26	9	21
Total Descriptions	21	26	18	13	16	26	16	23
Intent	4	0	0	7	3	0	3	0
Following Attempt	5	1	3	1	0	1	0	0
Outcome	2	6	4	1	0	1	0	1
Total Episodic Elements	11	7	7	9	3	2	3	1
Resolution	1	1	2	2	0	1	0	1
Complete Episodes	1	0	0	0	0	0	0	0
Theory of Mind	0	2	0	1	0	0	0	1
Questioning Thoughts/actions	1	0	2	3	2	4	2	2
Emotion word/source	2	0	3	0	0	1	0	0
Listed words	mad mad		happy mad mad			mad		
Total Salient Phrases	35	36	32	28	33	38	21	27
% Description	60	72	56	46	48	68	76	85
% Episodic	31	19	22	32	9	16	14	0
% Emotion	6	0	9	0	0	3	0	0

Raw Data for Participant 3

Categories	Sessions						
	B1	B2	B3	I3	I5	I7	I16
ID Characters	2	1	1	2	2	1	2
ID setting	1	1	1	1	0	0	2
Object Description	2	2	0	5	1	1	2
Action Description	8	7	3	4	4	4	12
Total Descriptions	10	9	3	9	5	5	14
Intent	0	0	0	0	0	0	0
Following Attempt	0	0	0	4	0	0	0
Outcome	0	2	1	3	3	0	2
Total Episodic Elements	0	2	1	7	3	0	2
Resolution	0	0	0	0	0	0	0
Complete Episodes	0	0	0	0	0	0	0
Theory of Mind	0	0	0	1	1	0	0
Questioning Thoughts/actions	0	0	0	0	0	0	0
Emotion word/source Listed words	0	0	0	1 sad	1 mad	0	1 mad
Total Salient Phrases	10	11	4	18	10	5	18
% Description	100	82	75	50	50	100	78
% Episodic	0	0	0	6	10	0	6
% Emotion	0	0	0	6	10	0	6

Raw Data for Participant 4

Categories	Sessions						
	B1	B2	B3	I5	I7	I9	I17
ID Characters	2	3	5	3	2	2	3
ID setting	2	1	0	2	1	1	2
Object Description	7	0	5	3	2	2	3
Action Description	19	21	11	19	17	19	14
Total Descriptions	26	21	16	22	19	21	17
Intent	0	0	1	0	0	1	0
Following Attempt	5	0	3	1	2	0	0
Outcome	5	0	6	0	6	1	0
Total Episodic Elements	10	0	10	1	9	2	0
Resolution	0	0	1	0	0	0	0
Complete Episodes	0	0	0	0	0	0	0
Theory of Mind	2	0	1	0	1	0	0
Questioning Thoughts/actions	0	0	0	0	0	0	1
Emotion word/source	0	0	0	3	0	1	3
Listed words				sad scared* scared		mad	sad sad scared
Total Salient Phrases	38	21	28	26	28	24	21
% Description	64	100	57	85	68	88	81
% Episodic	26	0	36	4	29	8	0
% Emotion	0	0	0	12	0	4	14

Note. Source of emotion is indicated using an asterisk.

Raw Data for Participant 5

Categories	Sessions								
	B1	B2	B3	I3	I5	I8	I15	I18	I20
ID Characters	3	4	5	3	4	6	3	4	6
ID setting	2	1	1	2	1	2	2	1	2
Object Description	9	8	3	1	4	1	1	2	3
Action Description	20	16	15	16	14	15	15	12	10
Total Descriptions	29	24	18	17	18	16	16	14	13
Intent	0	0	0	1	1	0	0	0	0
Following Attempt	0	0	1	2	1	0	2	1	5
Outcome	1	2	2	1	0	8	1	5	2
Total Episodic Elements	1	2	3	4	2	8	3	6	7
Resolution	0	0	1	0	1	1	0	2	1
Complete Episodes	0	0	0	0	0	0	0	0	0
Theory of Mind	0	0	0	1	0	0	0	0	0
Questioning Thoughts/actions	0	0	0	0	0	0	0	0	0
Emotion word/source	8	5	4	7	1	3	4	1	0
Listed words	angry mad sad mad lonely happy happy happy	mad afraid sad exciting*mad happy	mad mad mad	sad mad mad happy sad* sad* lonely		mad sad mad	sad mad mad lonely	mad	sad
Total Salient Phrases	37	31	27	29	22	28	23	23	21
% Description	78	77	67	59	82	57	70	61	62
% Episodic	3	6	11	14	9	29	13	26	33
% Emotion	22	16	15	24	5	11	17	4	0

Note. Source of emotion is indicated using an asterisk.