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CHILDREN'S STORY RETELLING AS AN ORAL LANGUAGE SAMPLING
TECHNIQUE IN DIFFERENT MODALITY CONDITIONS

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JAMIE CHRISTINE GAZELLA

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CHILDREN'S STORY RETELLING IN DIFFERENT MODALITY CONDITIONS

By

Jamie Christine Gazella

A THESIS

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ABSTRACT

CHILDREN'S STORY RETELLING IN DIFFERENT MODALITY CONDITIONS

By

Jamie Christine Gazella

This study explored story retelling as a procedure for standardizing language outcomes. Its purpose was to determine whether the child's linguistic response to the story retelling task was differentially influenced by the presentation modality (audio alone or audiovisual). This independent group design was conducted on twenty-nine white, English-only speaking males aged 4;3 to 5;6 years. It compared global measures of language to see which modality caused children to produce the most complex language. Results indicated that there were no statistical significance between the two modality presentations in the areas of language analyzed-- quantity of language (total number of utterances, total number of words, and Mean Length Utterance), lexical quality of language (Type Token Ratio and total number of different words), and syntactic quality of language (sentence type, completeness, and complexity).

This is dedicated to Richard L. Gazella. Grandpa, I "hung in there!"

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter One

BACKGROUND INTRODUCTION

Oral Language Sampling

Oral language sampling has become a valuable tool for clinically assessing language skills (Morris-Friehe & Sanger, 1992). This procedure typically involves individuals engaged in conversation in a relaxed natural setting with limited structure. Children may talk about a topic of their choice or respond to cues about a topic given by the clinician. Best clinical practices require the speech-language pathologist to follow the child's lead in conversation.

The speech samples are expected to be representative of a person's habitual language patterns. The components of language, (i.e., pragmatics, semantics, morphology, phonology, and syntax) can all be evaluated with this procedure. According to Miller (1981), "the evaluation of children's productive language through free-speech sample analysis is one of the most revealing procedures available to us." (Page 9) Shipley and McAfee (1992) concur that an evaluation of language capabilities is not complete without taking language samples. They help determine whether language impairment exists, and specifically, what the deficit is. The child's needs then can be specified, and treatment strategies designed to meet them.

It is reasonable to ask why spontaneous oral language sampling is so valued given that many different standardized tests are available for evaluating a child's expressive and receptive language competency. However, many existing language tests analyze a child's language only at a word or sentence level (Merritt & Liles, 1989). They typically rely on such elicitation methods as recalling, categorizing, and imitating words and sentences. John and Berney (1967) stated that imitative tasks may be dull for younger children. According to Mandler, Scribner, Cole, and DeForest (1980), these methods make categorical and associational demands that don't always allow children to express their "true" habitual language. For example, the act of categorization requires a very specific type of decontextualized language response that seldom is required for routine communication. Younger children and those with limited education may not have fully developed this skill (Mandler, et al., 1980). In contrast, **language sampling** allows language to be assessed in a more comprehensive manner.

Benefits of Language Sampling

Stockman (1996) identified four advantages of oral language sampling. First, the language itself is highly accessible to observation when elicited in natural contexts. Language sampling could be present virtually anywhere that natural conversation occurs. Therefore, no specific planning is required to elicit the sample.

Second, language sampling reflects a child's individual language style, including his/her cultural distinctions. Ethnic variation in language use may be misinterpreted or penalized by conventional tests that do not take into account these differences. Such cultural

biases can be minimized in language sampling when the child leads the conversation using his/her own words, experiences, lifestyle, and upbringing as a guide.

Third, oral language sampling also has practical utility. It can be used with all people who communicate using speech. Language sampling, unlike standardized tests, does not require a certain response to be provided by the child during the assessment.

Finally, language sampling permits a comprehensive competency assessment. It offers the opportunity to observe form, content, and use. Pragmatics is particularly neglected and difficult to assess with standardized tests. But with oral language sampling, many routine pragmatic features can be observed (e.g., children's turn-taking pragmatic skills when communicating with a clinician). Form and content can be analyzed by observing the number and types of words used, as well as the accuracy of a child's phonemic productions. Sentence structure, or syntax, can be analyzed to determine the type, appropriateness, and complexity of the grammar produced by the child.

Limitations of Language Sampling

Stockman (1996) also identified four limitations of language sampling. The typical method for obtaining language samples is via conversational speech. It may be difficult to a elicit adequate language samples from young children though because the child plays a large role in the success of getting the language sample (Dollaghan, Campbell, & Tomlin, 1990). In clinical contexts, children may be shy or uncomfortable around strangers. Therefore, they may not talk as much or in the same manner as they do in more familiar

circumstances. The child's attention to the task may also have an impact, as well as his/her motivation.

Second, language which is adapted to a particular context of use need not reveal the full range of skills in a child's repertoire. Since there is a reduction of communicative pressure on children to use language other than what is easy for them, the language sample may not reveal the extent of a person's language competencies or skills. Wren (1995) demonstrated the effect of elicitation context on children's syntactic constructions. She compared seven different techniques (involving free play with puppets, storytelling, explanation of a game, stories from pictures, viewmaster, specific tasks-birthday party, and sentence building tasks) for eliciting language. Using a repeated measures design, she examined how these language elicitation techniques affected the quantity and quality of language produced by children. This was done by evaluating the utterance length and number and types of syntactic structures that were at or above the criteria for Stage V of the Language Assessment, Remediation, and Screening Procedure (LARSP). Each of the seven techniques were examined with the goal of revealing which one yielded the most complete picture of a child's language abilities. She concluded that no one task elicited the most representative example of a child's language. For example, the birthday task elicited the most utterances, whereas the story retelling technique yielded the most adjectives. Only a combination of the techniques revealed the array of skills that a child was capable of producing. According to Wren (1985),

"most recommended techniques for eliciting language from young children (even such ones as "tell me about your favorite TV show this week") yield either minimal language or language that is not representative of what the child can actually produce" (83).

A third limitation of language sampling is that it requires a lot of time to administer and analyze appropriately. An adequate sample for analysis may require a lengthy conversation between the examiner and child. The number of utterances needed for good representation of language skills also is debatable, although 50 utterances seem to be regarded as appropriate for most research and clinical purposes (Wren, 1985). Transcribing this many utterances plus those of the examiners can be time intensive. There also are no set topics in conversational speech. Thus, a clinician may have to make assumptions about what was said by the children when their speech is unclear. The clinician may be forced to exclude the utterances, or worse, obtain another language sample.

Finally, considering all the factors that can create variability in an oral language sample, it is not surprising that the standardization of the language sampling procedure has surfaced as an important clinical issue. This study responded to the lack of standardized language sampling analysis procedures. Standardized testing generally is beneficial because it decreases the potential effect of extraneous situational factors on performance. A clinician needs to be sure that an individual's performance on a test is due to linguistic skill and not to the manner of testing. Presently, standardized procedures for the language sampling approach do not exist. Consequently, it would be impossible to replicate language sampling conditions and outcomes. Standardizing the language sampling method would allow a clinician to obtain language under uniform conditions. Once a standardized language sampling procedure is established, norms may be generated so that a child's language sample can be compared to that of his/her peers.

Language sampling is an integral part of language assessment. Developing a language sampling analysis procedure in which the disadvantages of language sampling can be reduced and the advantages accentuated is warranted. If language sampling is to remain a viable procedure for language assessment, one must find a way to overcome these limitations. **Story telling** methods offer one way to do this.

Story Telling

Interest in using story telling methods in the field of speech language pathology has increased in recent years as researchers and clinical practices have come to focus on pragmatics and discourse competency. Although the main focus of using story telling currently has been to test a child's story comprehension and narrative discourse skills, there is the potential to use this technique for eliciting language samples to grammatical skills. According to Merritt and Liles (1967),

"Narrative analysis takes into account a wide range of language abilities that are used regularly in the child's educational environment. It facilitates a broad description of a child's language use encompassing the interaction of sentence formulation, use of linguistic devices to conjoin meaning across sentences, and the general organization of content." (p. 438)

Story telling could be used effectively to elicit a language sample. Liles (1993) suggested that stories provide valuable data about children's pragmatic and linguistic abilities. At the same time, story telling is a natural cultural experience in many societies. Stories provide part of the scaffolding for learning language in children's environments. They stimulate a child's imagination (John & Berney, 1967). Narratives are common forms of stimulation for

children because of "their critical role of exposing children to language routines" (John, Homer, & Berney, 1970, p. 250).

Language sampling that relies on habitual conversation may not detect impairments due to the lack of task difficulty. Children may avoid words and respond to the clinician as simply as possible to avoid using more complex language. If unnoticed by a clinician, these children could be portrayed as normal speakers. In contrast, story telling may prove to be a strong indicator of language impairment, even if the child appears normal in habitual conversation. This method may actually indicate language impairment better than some of the standardized tests available (Culatta, Page, & Ellis, 1983). The present study was motivated by the possibility that story telling can also be used as a standardized oral language sampling procedure. **Story generation** is one way to elicit language from a child.

Story Generation

Story generation requires children to invent a narrative using their own words. It is not the same task as telling a story that one already knows. If children were familiar with a story, requesting them to talk about it would be a retelling task. Story generation allows children to be creative and original in their narrative presentation. In many cases, children are shown pictures (static or dynamic) and asked to make up a story about what they saw (Schneider, 1996, Dollaghan, et al., 1990, Shroyer & Hamilton, 1996).

Benefits of Story Generation

Story generation allows a child to use his/her own words. In addition, there is less

structure and pressure placed upon the child to answer a question or talk about a subject/topic

a clinician proposes. Transcription time is also decreased so long as the story context is

bounded by a picture or theme. The clinician does not have a significant verbal role while

a child tells a story, so obviously, the child takes the lead. The narrative abilities of a child

during the story generation task could also indicate if a child is learning-disabled. Some

children who are learning disabled have the skills needed to produce narratives, but do not

utilize these skills as efficiently as normally developing children (Morris-Friehe & Sanger,

1992).

Limitations of Story Generation

The difficulty with a story generation task is the lack of structure surrounding the

topics generated by the children. Even if pictures are presented for children to describe (as

is the case of many research studies), there is no definitive indication that the stories told by

one child will be ones that can be compared to another. Different life experiences may cause

different interpretations of pictures. In addition, the children may discuss dissimilar topics,

which makes reliable comparisons between the two impossible. Therefore, the obstacle of

discovering a way to make a standardized language sampling technique remains. In addition,

pragmatics cannot be analyzed using this technique because of the limited interaction

between the clinician and the narrator. Wren (1985) suggested that comparability among

children, their typical productions, and the representativeness of the language elicited must

be kept in mind when selecting language eliciting tasks. Story generation does not allow comparisons across different children because there is no control over the story theme. **Story retelling** may alleviate this problem.

Story Retelling

Story retelling is another story telling method. It requires the child to be presented a story (i.e. written, verbal, or oral with visual components). The child must then retell the events that occurred in the story to another person. Story retelling differs from story generation in some crucial ways. Story retelling gives the child a specific topic to discuss. The clinician's familiarity with the story script makes for easier and shorter transcription. When words are unclear, this familiarity makes interpretation more accurate. If all children are told the same story under the same conditions, then norm referencing may be possible for the language sampling task.

Benefits of Story Retelling

Control of language forms. Storytelling has many assets as pointed out above. Hedberg and Stoel-Gammon (1986) proposed that retellings could expose complex language organization skills. Culatta, et. al, (1983) asserted that story retelling validly reflects the child's use of language. The clinician provides a foundation for language expression in the form of the story, and the child then is given the flexibility to use his/her own words (within the vocabulary boundaries supplied by the story) and grammatical style to tell the story. Sutter and Johnson (1995) observed that with longer stories, memory is taxed enough so that

children cannot just repeat the story verbatim, but relay it in their own linguistic style. John and Berney (1967) showed the importance of story telling and designed their experiment to prove that story retelling demonstrates "how a child selects from and organizes the continuous flow of stimuli--a process which is truly representative of his everyday environment" (p. 266). By providing a child with the stimuli and story that is retold, the clinician is able to control the topic of the language sample, and alleviate the problem created by lack of similarity in story themes among children.

Familiarity of the task. Story retelling is a common language experience for many children beginning at an early age. Applebee (1978) stated that during the preoperational stage of development (two to six years of age), the typical response to discussing stories is to retell the story. Applebee (1978) also found that most six and nine year old children elaborated stories by recalling or retelling them. As age increases, storytelling skills become more refined and the stories more complex in structure.

Reduction of transcription time. Storytelling is also advantageous because there is less language to transcribe. The child generally is the only person who speaks during the retelling task.

Predictor of academic success. Narrative tasks require strong metalinguistic skills and processing demands are also placed on the child with narrative tasks such as story retelling. Therefore, story retelling could be a good index of future academic success (Paul & Smith, 1993).

Technical standardization. Advancements in media technology make it possible to standardize story delivery protocols in ways that were not available years ago. Radio and

television are the biggest influences in modern society. Thus, a child could be presented a story under the same visual/oral conditions as any other child participating in the same story retelling task.

So far, different story presentation conditions have used. For example, a clinician may tell a child the story (with or without pictures present). Consequently, there is no control over the way the story is narrated. One clinician may not tell the story the same way as another (e.g., words may be stressed differently). This could give one child an advantage over another. Even when the story is told by the same clinician, it may not be narrated the same way for every child. Using media technology this obstacle to story retelling standardization can be overcome.

Stories can be presented in three different ways using media technology. These are audio only, video only, and audiovisual presentation possibilities. The video only method is viable for the story generation task whereas the other two methods are viable for the story retelling task.

Limitations of Story Retelling

Naivety of the listener. There are a few limitations associated with story retelling. For instance, children may not provide an adequate recapitulation of a story because they assume that the clinician is familiar with it. Details are omitted, which most likely include descriptions and elaborations (Liles, 1993). This problem can be solved by having the child retell the story to a different person who s/he knows is not familiar with the tale (Liles, 1993; Ripich &

Griffith, 1988; and Schneider, 1996). A more complete retelling ought to yield a larger sample of language.

Lack of pragmatic information provided. Another problem arises because no turn-taking interactions are required. Therefore, a broad range of pragmatic skills cannot be observed. This problem may be minimized again by including a new participant in the interaction. For example, when the new person enters the room, the manner in which the child greets the newcomer, if at all, could be examined. This could also be accomplished by asking questions about the story after the child has retold it. Turn-taking that occurs between the two individuals during this question and answer period could be analyzed, focusing on specific areas such as the child's eye contact, response appropriateness or relevance to the topic.

Interest of subjects. Cooperation and motivation of the subject remains an important factor. One way to increase story retelling incentives is to alter the story presentation. Dynamic audiovisual presentations may be more interesting to a child then looking at static pictures with an oral accompaniment.

Lack of standardization. Finally, there are not standardized procedures for story retelling. Some investigators have orally presented stories to be retold. (Schneider, 1996), while others have presented static pictures with oral narration (Schneider, 1996, Shroyer & Hamilton, 1996). Hayes, Kelly, and Mandel, (1986) utilized dynamic pictures that subjects watched. Without a standard method to present the stories, story retelling would not be useful as a norm-referenced for language sampling procedure.

Story Generation Versus Story Retelling

Both story generation and story retelling are useful methods for eliciting language. When assessing a child's narrative skills, the clinician discovers how well an individual has mastered the skills of correct sequencing of events, memory/recall, stating a narrative that is cohesive, and utilizing story schema. Also, a clinician could determine if the child is sympathetic to an unfamiliar listener when telling the story. All of these areas provide descriptive information about language discourse language information beyond the single word level or even sentence level so often found in formal standardized language tests (Ripich & Griffith, 1988).

Merritt and Liles (1989) compared the story generation and story retelling methods. Their study aimed to show which method was of more clinical value. Forty children (20 normal and 20 language-disordered children, ages 9;0 to 11;4 years), were observed. The targeted performances measured were story length, and number of story grammar parts, complete episodes and story components mentioned.

The children were exposed to story stems in the story generation part of the experiment. These story stems consisted of "a human protagonist and setting information and was designed to evoke images of an adventure involving a series of goal-based events," (p. 439). The children were shown what to do before they generated a story. They generated a total of three stories.

For the story retelling task, the children were given two stories to retell. The stories were modified versions of the stories *Buried Alive* and *Shipwrecked*. The children each took

part in a practice retelling, and then were shown a black and white video of the stories. After exposure to the stories, they were asked to retell them.

For the story component measures, both the normal and language-disordered children showed a larger number of story components in the story retelling task. Both groups (normal and impaired) used more complete episodes in the story retelling method. They used more clauses in the story retelling task as well. Finally, the story retelling task showed more emphasis on the setting in the story than did the story generation task.

The investigators concluded that both tasks were strong techniques that reflected children's narrative abilities. But they felt the story retelling task would be more beneficial to a clinician. This task provides a longer language sample, and the longer the language sample, the more representative of the child's abilities it ought to be. Merritt and Liles mentioned that the story retelling method took less time to transcribe because the clinician was familiar with the story and could decipher what the child said from contextual information. This made the retelling tasks more reliable when scoring. The story retellings by children also contained more story grammar components in their narrations. Finally, because the stories were the same for the children, comprehension testing could be done. This could not occur with story generation. Examining a child's comprehension increases the scope of the assessment, giving the clinician more information for making diagnostic decisions. Consequently, the study's results suggest that the story retelling procedure may be the best task to use when using story telling to standardize language sampling. However, there are still problems to solve when using the retelling method. This study was designed to address some of these issues, as considered below.

Statement of the Problem

Language sampling is a valuable and necessary resource when describing an individual's language strengths and weaknesses. A major obstacle to its use, however, is that standard language sampling procedures do not exist. Story retelling is a possible way to increase the validity and reliability of language sampling across children. However, problems still remain to be solved. This study was developed to address one of these difficulties, namely the problem of using consistent story delivery procedures.

Modality of Input

The modality of input used for story delivery is an important aspect to address. Visual only, audio only, or combined audiovisual modalities have been used to elicit stories from children. Each condition is described below.

Visual Only

Many studies utilize the story telling task by asking children to generate a story about what is happening in a video or series of static pictures. For example, Dollaghan, et al., (1990), did a study in which children watched an 108 second black and white video and were expected to tell what happened afterwards. In the visual only condition, the child tells a story based on what was seen. This visually aided story generation task is not considered a story retelling task (Liles 1993 as cited in Schneider 1996). Although some information about the events are provided to the child, the actual verbal rendering of a story is not.

Therefore,

"visually presented stories not accompanied by narration present the additional requirement of translating visual into verbal information. This differs from orally presented stories, which provided prior linguistic structures" (p. 86).

A child has to create the linguistic structure, making the visual presentation a generation task. Oral/verbal story retelling, strictly interpreted, requires one of two modality inputs, either audiovisual or audio only.

Audio Only

Audio only input requires children to listen to the story with no visual input. Investigators may read a story out loud to the children (Culatta, Page, & Ellis, 1983; Ripich & Griffith, 1988; Schneider, 1996). Another way to elicit a story retelling with audio only input has involved children listening to a radio presentation (Hayes, et.al., 1986).

Audiovisual

Audiovisual input allows children to listen to the story at the same time they see pictures of the story events. Some researchers have exposed children to oral readings with static visual stimuli (usually pictures) shown at the same time (Schneider, 1996; Paul & Smith, 1993; Shroyer & Hamilton, 1996; Pomper, Sauer, & Hedberg, 1996; and Pratt & MacKenzie-Keating, 1985). Sutter and Johnson (1995) had subjects listen with headphones to a story from a tape with a static picture accompaniment. John and Berney (1967) had a librarian read children a story and then the children retold it using pictures to guide them. Hayes, et., al., (1986) compared television and radio presentations of stories that children

were to retell. Finally, Gibbons, Anderson, Smith, Field, and Fischer, (1986) presented children with either an audiovisual or audio only story that was seen and/or heard on television. Those children who saw the audiovisual story were then able to use toys that represented the figures in the story when they were retelling what had happened.

Comparative Effects of Different Modality Conditions

Research has hinted that story retelling is a way to obtain information about one's grammatical language abilities, although studies have focused mainly on discourse areas of competency. These studies have differed in their story delivery methods and end results also have varied. Pratt and MacKenzie-Keating (1985) compared the effects of aural/oral and videotaped story presentations on language performance. They found that the children who both watched and listened to a tape produced more semantic referential errors than did those who just heard the story. In contrast, Gibbons, et al., (1986) found that four-year-old children produced more elaborations and remembered dialogues better in audiovisually presented story condition than in an audio only condition. However the two studies employed different types of language measures. Beagle-Roos and Gat (1983), as cited in Gibbons, et al. (1986), compared televised audiovisual stories with radio. They found that individuals who were exposed to televised audiovisual stories remembered more details about characters and action events. Radio input helped facilitate the recall of spoken words. Like Beagle-Roos and Gat (1983), Hayes, et al., (1986) observed that their subjects had a more difficult time remembering and understanding the story when they listened to a radio instead of watching television. Those who heard the story were able to recall sound effects

and more of the conversations between the speakers. Salomon (1979), as cited in Hayes, et al., (1986) believed that visual input contributed the most to the spatial and figural aspects of the story depicted. Salomon (1979) also thought that verbal understanding and logical thinking were best facilitated by verbal presentation.

Schneider's recent 1996 study seems to have been the most comprehensive comparative study of the effect of story presentation modalities. She examined the effects of various story presentations on the language productions 16 language impaired children ages 5;7 to 9;9 years. None had more than mild articulation difficulties. She presented the stories to every child in four conditions: (1) The children saw the story events in pictures only (story generation task) or (2) they heard the story with no pictures (story retelling audio only task) or (3) they heard the story with picture accompaniment at the same time and (4) picture accompaniment after the oral story presentation (story retelling audiovisual task). The purpose of the study was to determine if the different presentations impacted a child's story, and "whether each presentation form may be appropriate for gathering information about different aspects of narrative abilities" (Page 87).

The stories with pictures present were from the book, Oops, by Mercer Mayer. For all stories used, the same main character was present, with the introduction of new supporting animal characters in each additional story. The stories had the same number of words, clauses conjunctions, etc.. The children told/retold the stories to an aide who was introduced as someone not familiar with the story to the children. The unfamiliar listener only responded to the child's story with neutral responses.

The results did not show a consistent bias effect of the input modalities explored.

For example, there was no statistically significant evidence that the children produced longer stories in one modality condition than another, as measured by either the number or words or utterances. However, the story generation task (pictures only) yielded a smaller number of story grammar units than the other modes of stimulus presentation. The pictures only yielded in the largest amount of both irrelevant and new information. The oral (audio only) presentation resulted in the largest number of story grammar units and the most complete story episodes.

Limitations of Existing Research

The above cited studies do not show consistent agreement on the effect of different types of story presentation modalities on language performance. A given method may be better for one aspect of language but not another. Few studies have compared story presentation modalities modalities using morphosyntactic measures of language performance. Such measures could include utterance length, number and types of words used, as well as the complexity of grammatical structure.

Although Schneider (1996) took the initial steps of toward story retelling responses to obtain a language sample from children, many aspects were not explored. There are four issues that should be considered that were not addressed in Schneider's (1996) study. First, there has not been systematic exploration of morphosyntactic variables. Schneider did examine the sample in terms of the Mean Length Utterance (MLU) and vocabulary diversity as assessed by the Type Token Ratios (TTR). Both are important aspects of language to examine when analyzing language samples, but she did not look at the syntactic structure of

the utterances spoken by the children in her study. Analysis of syntactic structure would indicate if a child was speaking at a word, phrase, or sentence level. If the child uses sentences in speech, then the complexity of the sentences could be examined. For example, one could monitor if a child used noun and/or verb elaborations, simple, complex, and/or elaborated sentences. The later suggests more mastery of language.

The second issue to address is the population used in Schneider's study. The children were all language impaired. In order to obtain from a standard language sampling procedure, normally developing children need to be tested. In addition, the children used in Schneider's study were older. To standardize language sampling for screening children with potential language impairments, a clinician needs to know whether a procedure is suitable for a young child. Early identification is important for intervention success. Therefore, research needs to show how younger children perform on a story retelling task.

Third the use of media technology in the study may also have a strong effect on the outcome of the research. Schneider (1996), like most studies, used static still pictures which need not be presented in a uniform way. Dynamic audiovisual and audio only presentations, which have already been pre-recorded, control for the manner in which each child is orally told the story. Schneider did not control for this variable in her study. In addition, static still pictures may be harder for children to understand when they are required to interpret action scenes.

Finally, story retelling and story generation needs to be clearly differentiated. Schneider confounded both story retelling and story generation in her study, yet does not

analyze the strength of one language sampling elicitation method. Instead, many methods are examined. This study takes only one of those methods, story retelling, and attempts to determine if the modality input of the story (either audio only of audiovisual) affects the quantity and quality of language produced by the children.

Purpose

All four factors mentioned above were considered when designing this study. Therefore, the purpose of this investigation was to determine whether young normal males' morphosyntactic responses to the story retelling task were differentially influenced by their exposure to a specific presentation modality (audio only or audiovisual). Specifically, the following questions were asked:

1. Is there a difference between audio only and audiovisual story presentations in the quantity or amount of the language provided by the children during story retelling?

2. Is there a difference between audio only and audiovisual story presentations in the syntactic and lexical quality of the language provided by the children during story retelling?

Chapter Two

METHODS

In this experiment, story retelling was used as a standard procedure for eliciting oral language samples from children. Selected grammar measures were evaluated under two different modalities (audio alone and audiovisual) in an independent group design. The goal was to determine whether there are differences between the modalities in the quantity and quality of language elicited.

Subjects

Description of Subjects

The subjects were 29 normally developing children. All were Caucasian males who were monolingual English speakers. The mean age of the children was 4;10, with a range of 4;2 to 5;6 (see Table 1). They were all students at Michigan State University's Child Developmental Laboratories in East Lansing.

This study followed an independent group design with random assignment of subjects to treatment conditions. Because of the subjects' large age range, the two groups were carefully matched so that the ages in one group corresponded to those children in the other group as shown below.

Table 1. Ages for Subject Pairs in Modality Presentations at the Time of Testing.

Subject Number	Age (yr;mo;day)	Modality Condition
1	5;4;23	Audio
2	5;4;15	Audiovisual
3	5;3;22	Audio
4	5;3;21	Audiovisual
5	4;7;4	Audiovisual
6	4;6;24	Audio
7	5;6;10	Audiovisual
8	5;4;6	Audio
9	4;8;10	Audio
10	4;9;2	Audiovisual
11	4;2;8	Audio
12	4;2;9	Audiovisual
13	5;3;8	Audio
14	5;2;11	Audiovisual
15	4;2;25	Audiovisual
16	4;4;23	Audio
17	4;1;20	Audio
18	4;2;15	Audiovisual
19[a]		Audio
20[b]		Audiovisual
21	4;11;10	Audiovisual
22	4;10;0	Audio
23	4;5;22	Audiovisual
24	4;6;9	Audio
25	5;0;3	Audio
26	5;1;8	Audiovisual
27	4;6;11	Audiovisual
28	4;8;4	Audio
29	5;2;26	Audio
30	5;2;27	Audiovisual
31	5;0;6	Audiovisual
32[a]		Audio

a - Identifies children who refused to participate in the experimental task.
b - Identifies a child who was out of town during the testing process.

Subject Selection Criteria

Normally developing children who met the following criteria were selected as subjects if they were:

1.   male.

2.   Caucasian (non-Hispanic).

3.   4;0 to 5;6 years of age.

4.   monolingual English speaking.

5.   Preschool-enrolled at Michigan State University's Child Development Laboratories, and

6.   had passed a speech and hearing screening.

An attempt was made to keep the sample as homogenous as possible because of the small subject pool. Therefore, the subjects attended the same school and came from similar socioeconomic backgrounds. The sample also consisted only of young males in order to control for potential gender biases. Males were chosen because they have been shown to be at higher risk for language disorders than females.

Subject Selection Procedures

Gaining subject access. The children were enrolled in either a morning or afternoon class at Michigan State University's Child Developmental Laboratories. Selection of the children involved several steps. A list of males between the ages of 4;0 and 5;6 years who met the selection criteria was obtained from the school. Next, these children's teachers

responded to a questionnaire that elicited information about each child relative to the selection criteria (see Appendix A). Only those children who received a good/normal overall rating as designated on the form from the teacher survey were chosen as potential subjects. This screening phase generated an initial list of approximately 54 potential subjects. Parental consent was sought in a letter describing the study (see Appendix B). The correspondence also contained a parental consent form and a parent questionnaire as shown in Appendices C & D, respectively.

The returned parent consent forms and questionnaires were examined by the investigator. Approximately 13 parents did not want their children to participate. These 13 children were removed from the potential subject pool, and their teacher questionnaire forms discarded.

The remaining subject pool with parent consent forms was reviewed. None of the parents expressed concern about their son's language development or hearing. However, about 27% of them reported that their children had multiple ear infections at younger ages. Originally, these children were going to be excluded from the subject pool because ear infections have been linked to language delay. But, removing them would have depleted the subject pool extensively. Furthermore, none of the parents were concerned about the ear infections at the time of the study and did not feel that their children had any hearing difficulties related to the previous infection/s. This opinion also could be corroborated by the language screening. Once the parent consent forms and questionnaires had been reviewed, there were 41 potential subjects for the study.

Speech and hearing screening.   In the final step of the selection process, the 41 children were given the Preschool Language Scale-3 (PLS-3) (Zimmerman, Steiner, & Pond, 1979) and a hearing screening.   These standard procedures were administered by the investigator and a second year graduate student from Michigan State University's Audiology and Speech Sciences program.   The graduate student subsequently assisted with data collection and transcription of the children's language samples as well.   Other than being alerted to her expected duties, the student was not told about the purpose of the study.

Before the screening and testing occurred, time was set aside for developing rapport between the test givers and the children.   The children's classrooms were visited at least twice in order to allow for the children and teaching staff to feel comfortable with the investigator and assistant.

Screening began after this rapport period.   The screening testing was done in two rooms designated by the Child Development Laboratories.   One of the test givers accompanied the child from the classroom to the testing site.   Often, the teaching staff assisted with the process when the child appeared to be concerned about leaving the classroom.   The child was given the opportunity to refuse to participate.   If the child agreed to join the test giver, he was escorted to the screening site.   The children were always supervised and never left alone.

The PLS-3 (Zimmerman, Steiner, & Pond, 1979) was administered to ensure that the potential subject's expressive and receptive language abilities fell within the range of normal performance for the child's age.   This test provides norm referenced information about

expressive and receptive language abilities in the age range studied. Scores were analyzed using a 90% confidence interval.

Hearing screening was done using standard play audiometry procedures. The child's hearing was screened bilaterally at 20 - 25 dbHL for 500, 1000, 2000, and 4000Hz using an audiometer and headphones. The child was instructed to respond to the tone by placing a block into a bucket or raising his hand. In one testing room, there was a tile floor, that amplified ambient noise from vents, cars outside, and distant classrooms. Therefore, some children required the audiometer to be turned up from 20dB to 25dBHL in order to hear tones at 500Hz and 1000Hz. In these cases, the child's response to the auditory comprehension section of the PLS-3 was scrutinized carefully to make certain that he was within normal limits for his age. If the child passed the auditory comprehension portion of the PLS-3, then he was judged to have adequate hearing for the story retelling task despite having passed the hearing screening at 25dB for the lower frequencies. The second room was carpeted and did not have the ambient noise levels that prevented the children from passing the screening at 20dBHL for all frequencies. Following the speech and hearing screening, each child was allowed to select a small piece of colored construction paper and a sticker as a reward before being escorted back to the classroom.

The PLS-3 and hearing screening test results were analyzed. All the children performed within normal limits. Only one child failed the hearing screening. This child was not included as a subject in the study. Letters were sent to parents informing them of the screening results(see Appendices F and G).

Assignment of Subjects to Treatment Conditions

Once the initial screening was completed, the investigator identified subjects for the study. Children were excluded if they did not meet the age or ethnic criteria, refused to participate, or were too shy to do the screening. A total of 32 male children from the original list met the screening criteria and were chosen as subjects for the study.

The 32 children were placed in pairs. Subjects closest in age were paired. The largest age gap between subjects in a pair was three months. Once the matched pairs were determined, each child was randomly given either an odd or even subject number, ranging from one to 32. For example, if the first member of the pair was given the number five, his partner was given the number six. A random numbers table was used to assign the children in each pair to either the audio or audiovisual experimental condition. The first number in the pair that occurred in the table was placed in the audio condition, and his partner was placed in the audiovisual modality condition. For example, if the number six was found first in the random numbers table, then this subject was placed in the audio condition, and subject five, his partner, was put in the audiovisual group. The final subject pool consisted of 16 subjects each in the audio and audiovisual conditions (see Table 1).

Note that only 29 of the 32 children who met all the screening criteria were actually given the experimental tasks. This is because one child from each modality condition refused to participate (subjects 19 and 32), and a third child was out of town at the time of the retelling task (subject 20). Therefore, the audiovisual modality condition ended up having one more language sample than the audio only modality condition.

Description of the Experimental Procedures

Construction of the Story

The subjects were exposed to a single story in either an audio only or audiovisual condition. The story was composed by the investigator (see Appendix I). An original story prevented all the children from knowing the story line before the study began. The story was designed following Stein and Glenn's (1979) story grammar. This required the story to have six story grammar components in it--setting, initiating event, internal responses, attempts, direct consequences, and reactions. Telling the story required approximately seven minutes.

Development of Videotaped Stimuli

The video input for the story was made using moving puppets as the characters engaged in the actions. The use of dynamic pictures in the story was critical to the audiovisual version. Dynamic action presentations were expected to provide a more realistic representation of story events and experiences in real time. Static pictures offer less realistic representation of events because objects do not move. The child would have to use more of his imagination to translate the "action" seen in a non-moving picture to a dynamic picture (Stockman, personal communication, 1996).

The puppets were animated to portray human characteristics. The children were expected to identify best with actions being performed by human characters. Stories having animals or inanimate objects performing human-like tasks require children, especially those who do not see visual images, to imagine something foreign to them. For example, cows

talking are not a part of their everyday world experiences. Therefore, to make sense of the story, the children would have to be very imaginative. That is, they need more mental images to match these fictional and unrealistic characters/actions. Even when watching videos that provide these visual pictures, having surreal stories may cause some children to be confused when an object or animal performs atypical actions. As a result, it could be very difficult for a child to put into words what is viewed.

A graphic arts designer created the puppet characters used in the story. Four individuals provided the story narration/sound effects. The investigator was the narrator, and three other individuals impersonated the three characters in the story (Timmy, Timmy's mom, and Timmy's friend, Amy). However, they were not professional artists. Their voices had the regional dialect typical of a middle-class individual from lower Michigan. The narrator attempted to say words either before or after a character spoke or performed an action. This was done so as not to distract the listener too much from the story events.

The puppets were manually manipulated, to act out the story line (see Appendix I). The story actions were filmed using a Sony High 8 video camera. The puppets' actions were performed using props and fishing line to imitate talking and other movements such as waving and walking. Sequences were videotaped at different angles to create the action of the story (i.e. showing the ball rolling in the mud and having the camera man walk in the mud after the ball, like the character Timmy would have done). The story was videotaped without sound included. After all of the scenes were completed, they were edited by cutting and pasting them together for a smooth flow of events. An editing machine which, allowed for fade outs/ins, was used.

Once the visual condition was completed, the voices were recorded and synchronized with the videotaped pictures. The synchronized audiovisual story product was copied from the High Video 8 machine to a regular VHS for story presentation. The audio alone videotape was made in a similar way. The audiovisual version of the story was sent to the VCR but without the video input cable attached.

Data Collection and Procedures

Each child received an individual subject number. Once they received the number, the child was referred to as this subject number in the data collection. Thus, all names were eliminated in order to ensure confidentiality, and guard against any unwanted bias in handling data.

A television monitor with a VCR was used to present the children the story. The children who received the audiovisual version of the story listened to and viewed the story from the television. The same equipment was used to deliver the audio only version of the story. The television monitor was covered by a blanket to minimize distraction. As a technical precaution, every session was audio recorded on separate backup equipment.

Testing of Modality Conditions

Order of testing. The testing of the modality conditions began approximately two weeks after all of the children had been screened. The order of testing in each modality was randomized.

<u>Testing site</u>. The child was accompanied to the test site by the investigator and/or the

graduate assistant. The room contained a small table on which a television set was placed.

The VCR was on a metal shelf beside the television. The same Sony High 8 video camera

was also set up in the corner of the room to record the child's words, as well as a tape

recorder on a chair just behind the child to be used for back-up purposes. No reference was

made to the video camera or the tape recorder so that the children would not be distracted by

them.

Testing Procedures: Story Retelling

Once the child reached the testing site, the investigator said to the child,

"_____, *this is my friend* (pointing to the assistant who stayed in the room with the
children during each story presentation). *You may remember her from earlier. She brought
a story especially for you that I want you to pay close attention to. I haven't seen/heard it
before. I have to leave for a minute, but will be right back. When I come back, maybe you
can tell me a little bit about the story.*"

It was assumed that the children would be less likely to omit parts of the story when

communicating with someone unfamiliar with it (Liles, 1993). The children were directed

to sit on a focal spot on the floor marked by "X." This location controlled for the distance

that the children sat from the monitor, and also placed the child within the video camera's

scope of view. As the investigator left the room, she discretely turned on the tape recorder.

The graduate assistant also turned on the video camera without the child's

knowledge. She then turned on the VCR, and played the story in the specific modality

designated for that child according to his random assignment. The assistant did not distract the child unless he needed to be redirected to pay attention to the story.

At the conclusion of the story presentation, the investigator returned to the room. The graduate assistant turned off the television and VCR, said goodbye to the child, and left the room. The investigator then said to the child, *"can you tell me about the story you just saw/heard. I missed it."* For most children, that was the only prompt needed to initiate a story retelling. For others, the statement had to be repeated or the following additional prompt was used, *"I heard the story was about a boy named Timmy. What happened to Timmy?"* At this time, most of the children attempted to retell the story to the investigator.

The responses given to the child during the story retelling took the form of head nods, facial expressions and occasional *"oh," "oh my goodness,"* and *"I see"* affirmations. No other verbal responses occurred with one exception. If a child mumbled under his breath or turned away from the camera so that his words were not audible for recording, then the investigator repeated the child's words. If the child finished speaking but did not indicate that he had completed telling the story, the investigator asked, *"is that all?"* or *"anything else?"* After the child completed the story retelling, he was thanked for telling the story. The story retelling task was immediately followed by a direct questioning task.

Testing Procedures: Direct Questioning

The pilot sessions suggested that the story retelling samples may not provide enough language to analyze for every child. Therefore, direct questioning about the story was added

as a post hoc procedure in order to elicit more language from the children. A standard set of nine questions was created. The questions were asked of every child in the same sequence shown in Appendix J. The children's responses were included in the analysis regardless of its semantic accuracy relative to the story content. The answers to the last question, which asked the child if he had ever gotten his own shoes muddy, were not used in the analysis. This is because the child's answers need not have been related to the story presented. This same sequence of events occurred with each child.

Recording the Data

After the data were collected, each child's recorded experimental session from the Sony High 8 video camera was copied on to a VHS tape so that the samples could be viewed for transcription. Then the language samples were orthographically transcribed by the investigator and assistant and represented on a standard transcription form (see Appendix K). Every word that the child said was transcribed. The investigator and the same graduate assistant who witnessed the experimental sessions transcribed the language sample together by viewing and listening to the video and audio recorded samples of the children. A transcribed utterance was included for analysis only if both observers agreed on its surface form. When a word was not agreed upon by the two observers, they re-listened to the tape. If the words were still unclear, they were judged unintelligible, and the utterance was counted for the total number of utterances, but not analyzed for any other measure.

Two separate language samples resulted from the study. The first sample was entitled "retelling." The second sample contained the directed questions and answers and was called, "directed questions."

Data Distractions

During the testing session, some children introduced other conversational topics that were not related to the story. For example, they talked about school projects. Utterances that did not contain information about the story were excluded from analysis. In some cases, the investigator repeated what the child said in case the child's words were not clear on the tape recordings. Often the utterances were repeated in an intonation which suggested that a question was being asked of the child. Therefore, many children replied with one word affirmatives. However, because not all subjects were given the opportunity to reply to these "incidental questions," these responses were excluded from the analysis. The goal of this study was to determine how the method of story retelling affected the child's language sample using a uniform method of obtaining these samples.

Defining Utterances

Naturally, the children retold the story using running discourse in which sentence boundaries are not always obvious. Thus, it was necessary to use an utterance identification criterion. The investigator segmented the child's responses into utterances using Nelson's (1993) guidelines (p. 346). The faculty advisor also independently segmented the child's responses into utterances. Then a discussion and resolution of discrepancies between the

investigator and faculty advisor was made. Once the utterances were agreed upon within the samples, they were submitted to a second assistant to enter into the computer for data processing.

Data Processing

Once the orthographic transcriptions were completed, the data were entered verbatim into the computer using the Systematic Analysis of Language Transcripts (SALT) (Miller & Chapman, 1991). A second assistant, a computer science student at Michigan State University, entered the data for two separate language samples on each child, one for the retelling task, and one for the direct questioning task. Once completed, the investigator r reviewed the transcripts, checked for errors, misspellings, and revised them accordingly.

Data Analysis

Data were divided into three categories of dependent variables(see Table 2). The total number of words, Mean Length Utterance, and total number of utterances said by the child were placed under one heading entitled "quantity of language." A second heading titled "lexical quality of language" consisted of the child's total number of different words and Type Token Ratio (TTR). The third heading, "syntactic quality of language" was established. It consisted of the remaining syntactic information (percentage of complete sentences, elaborated sentences, simple sentences, elliptic simple sentences, complex sentences, and elliptic complex sentences).

Table 2. Overview of Dependent Variables Compared for Each Story Retelling and Direct Questioning Modality Condition.

A. Quantity of Language
      1. Total number of utterances
      2. Total number of words
      3. Mean Length Utterance

B. Lexical Quality of Language
      1. Type Token Ratio
      2. Total number of different words

C. Syntactic Quality of Language
      1. Percentage of elaborated sentences
      2. Percentage of complete sentences
      3. Percentage of simple sentences
      4. Percentage of elliptic simple sentences
      5. Percentage of complex sentences
      6. Percentage of elliptic complex sentences

Quantitative Data Analysis

The SALT program (Miller & Chapman, 1991) separately totaled the number of words and number of utterances produced and computed the Mean Length Utterance (MLU) for each child in both language samples. The MLU averaged the number of morphemes per utterance using an adaptation of Brown's rules (Brown, 1973).

Qualitative Lexical Data Analysis

The SALT program (Miller & Chapman, 1991) totaled the number of different words used in a sample and computed the Type token Ratio (TTR)for every child in both language samples. TTR is the ratio of different words related to the total number of words used in a sample.

Syntactic Qualitative Analysis

Syntactic structure was determined by observing the types of sentences produced. See the classification scheme in Figure 2. Sentences were identified as incomplete, complete, elaborated, complex, and so on. Children were not penalized for incorrect semantic responses made during the story retelling or directed questioning about the story. Strict guidelines (see Appendix N) were developed and followed for the syntactic analysis to insure consistency of category assignment across different observers.

When scoring the syntactic component, the investigator and her faculty advisor independently completed the syntax analysis form (see Appendix O) according to the type of sentence that the child used. This task was completed without either person being aware of the modality condition to which the child had been assigned. Sentences were judged as complete or incomplete. Then sentences in each category were differentiated according to grammatical features of ellipses, complexity, and elaboration. The investigator and her faculty advisor met together and compared their syntactic analyses. The independent analyses were reviewed and a 100% agreement was made on the syntactic qualities of each utterance. The combined analysis was then placed on the forms found in Appendix O.
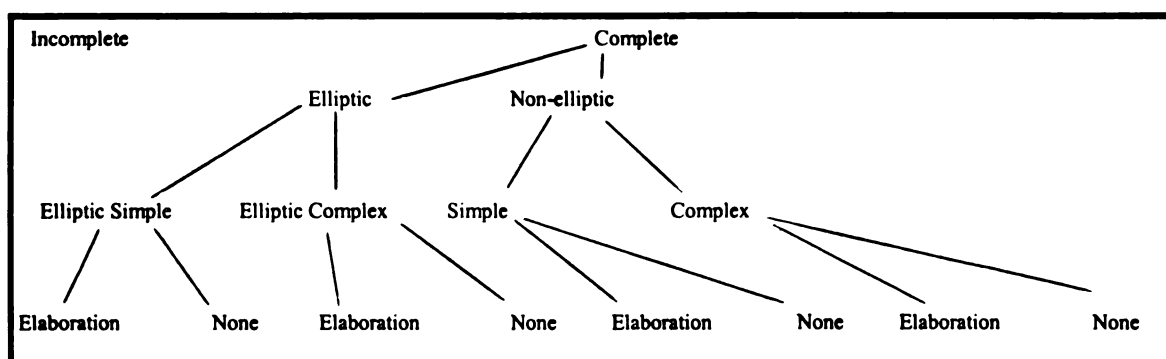
Figure 1. Categories of Syntactic Expressions.

Reliability. A second year graduate student at Michigan State University's Audiology and Speech Sciences department performed the same sentence structure analysis. This was done to check for the reliability of the investigator and faculty advisor's syntactic evaluation. A point-to-point comparison of all data across subjects on the audio only condition yielded 97% and 95% agreement for the retelling and direct questioning task, respectively. The reliability for the audiovisual group was 93% for the retelling and 97% for the directed questioning task, respectively.

Data processing. Once the data forms were completed for each child, they were computer processed using Excel Software. Scores were computed for each syntactic category based on the total number of utterances in each sample. These scores were entered on the data form as shown in Appendix M.

Statistical Analysis of Data

Separate analyses were done for the direct questioning and retelling tasks for each child. Multiple analysis print outs were provided, as shown in Appendix L. The numerical data were consolidated and represented on a single sheet as shown in Appendix M.

The student Minitab (Schaefer, R.L., & Anderson, R.B., (1987)Software was used to do the statistical analysis. The Minitab program provided basic measures of central tendency and the tests of differences between the two treatment groups along with the Type One error probability. Although the data were suited to multi variate statistical analysis, it was not undertaken here because of the limitations of the Minitab program. Follow-up analysis involving average sine transformations of the data will be pursued for future dissemination of the work.

Because the study involved a comparison of two independent groups, comparisons between the two modality treatment groups could be made using a two sample t-test for each dependent variable. The two treatment conditions, audio only and audiovisual, were compared on three sets of dependent quality and quantity variables for the retelling task. The same analysis was applied separately to the oral language samples elicited from the direct questioning task.

Chapter Three

RESULTS

In this study, subjects were presented a story in either an audiovisual or audio only condition. Spontaneous nonverbal and verbal responses were observed during the story presentation. Those who saw and heard the story sat very still, watching the monitor intently. There was little or no movement or talking. Children who only heard the story reacted differently. A few subjects wandered around the room. Others played with their shoes, nametags, clothes, and so on while listening. Some looked around the room, facing away from the monitor. These observations suggested that the children exposed to the audio only condition would have a more difficult time retelling the story. However, the following results countered this expectation.

Responses to the Story Retelling Task

Children were exposed to either an audiovisual or audio only story presentation. Data were collected for the global language aspects studied. The areas of quantity of language, lexical quality of language, and syntactic quality of language were measured.

Modality Group Comparisons in Quantity of Language

Story retelling responses for the two modality conditions were compared on number

of utterances, number of words, and mean length utterance (MLU). The results are shown

in Table 3.

Table 3. The Number of Utterances, Words, and MLU Generated for the Retelling Task.

N_{AV} = 15 N_A = 14	Mean No. of Utterances	SD	Median	Range Low High	t Score
Audiovisual	8.60	5.28	8.00	1 - 21	
Audio Only	7.79	3.02	7.50	3 - 13	
					0.51 p > 0.05
	Mean No. of Words	SD	Median	Range	t Score
Audiovisual	54.70	33.60	48	3 - 144	
Audio Only	57.50	34.10	44	12 - 124	
			Median	Range	-0.23 P > 0.05
	Mean MLU	SD			t Score
Audiovisual	7.57	1.81	7.20	5.00 - 11.00	
Audio Only	8.15	2.58	8.23	3.20 - 12.11	
					-0.69 P > 0.05

An analysis compared the two groups on each of three dependent variables: the

number of utterances, number of words, and utterance length. The means for each dependent

variable were close. For example, the means for MLU were 54.7 and 57.5 for the

audiovisual and audio only modalities, respectively. The means were not consistently higher

for one modality than the other across the measures observed. For example, the mean for the

audio only condition was highest for MLU, but lowest for total number of utterances. The

t test of differences between group means revealed no statistically significant difference on

any of the quantity measures (see Table 3).

Modality Group Comparisons in Lexical Quality of Language

For this analysis, story retelling responses in the two modality conditions were

compared on type token ratio (TTR) and number of different words (see Table 4).

Table 4. The Number of Different Words (NDW) and Type Token Ratio (TTR) Generated
for the Retelling Task.

$N_{AV} = 15$ $N_A = 14$	Mean TTR	SD	Median	Range Low High	t Score
Audiovisual	0.65	0.13	0.66	0.47 - 1.00	
Audio Only	0.61	0.13	0.62	0.38 - 0.77	
					0.83 P > 0.05
	Mean NDW	SD	Median	Range	t Score
Audiovisual	32.60	17.40	31.00	3 - 81	
Audio Only	32.90	15.60	28.50	5 - 63	
					-0.04 P > 0.05

The numerical closeness of the means was undeniable. For example, the TTR means

were 0.65 and 0.61 for the audiovisual and audio only modalities, respectively. The means

were not consistently higher for one modality than another. The modality conditions did not

differ significantly for neither the number of different words nor the type token ratio (see

Table 4).

Modality Group Comparisons in Syntactic Quality of Language

Language used in story retelling was analyzed for its syntactic quality on six

dependent variables as shown in Table 5.

Table 5. The Syntactic Structure of Language Generated for the Retelling Task.

$N_{AV} = 15$ $N_A = 14$	Mean % of Complete Sentences	SD	Median	Range Low High	t Score
Audiovisual	87.80	12.00	90.91	62.50 - 100.00	
Audio Only	88.70	14.10	91.99	50.00 - 100.00	
					-0.17 P> 0.05
	Mean % of Elaborated Sentences	SD	Median	Range	t Score
Audiovisual	86.50	14.90	90.91	62.50 - 100.00	
Audio Only	87.10	13.20	88.89	30.00 - 100.00	
					-0.11 P> 0.05
	Mean % of Simple Sentences	SD	Median	Range	t Score
Audiovisual	45.80	22.90	42.86	16.67 - 100.00	
Audio Only	47.50	22.40	43.65	0.00 - 77.78	
					-0.20 P> 0.05
	Mean % of Complex Sentences	SD	Median	Range	t Score
Audiovisual	33.40	19.80	28.57	0.00 - 60.00	
Audio Only	37.10	26.60	38.89	0.00 - 100.00	
					-0.42 P> 0.05
	Mean % of Elliptic Simple Sentences	SD	Median	Range	t Score
Audiovisual	4.26	7.46	0.00	0.00 - 25.00	
Audio Only	0.79	2.97	0.00	0.00 - 11.11	
					1.67 P> 0.05
	Mean % of Elliptic Complex Sentences	SD	Median	Range	t Score
Audiovisual	5.29	8.16	0.00	0.00 - 20.00	
Audio Only	3.22	5.99	0.00	0.00 - 20.00	
					0.78 P> 0.05

A consistent trend for the means to be higher for one modality than another across all measures was not observed. For example, the mean for the audio only condition was higher for the percentage of simple sentences, but lower for the percentage of elliptic simple sentences. The means for the two presentation modalities did not differ significantly on any of the six syntactic variables. Table 5 shows that both story presentation conditions yielded language samples that were predominated by complete and elaborated sentences, and more simple than complex sentences. Elliptic structures accounted for the smallest percentage of the syntactic characteristics in both conditions (see Table 5).

Responses to the Direct Questioning Task

Linguistic responses to direct questions about the story were analyzed separately. The analyses paralleled those used for the story retelling.

Modality Group Comparisons in Quantity of Language

The audiovisual and audio only conditions were compared on three dependent quantity variables. These comparisons for number of utterances, number of words used, and mean length utterance are shown in Table 6.

Table 6. The Number of Utterances, Words, and Mean Length Utterance Generated for the Direct Questioning Task.

$N_{AV} = 15$ $N_A = 14$	Mean No. of Utterances	SD	Median	Range Low High	t Score
Audiovisual	12.00	3.25	11.00	8 - 20	
Audio Only	12.00	3.98	11.00	8 - 23	
					0.00 P > 0.05
	Mean No. of Words	SD	Median	Range	t Score
Audiovisual	68.40	28.80	62.00	33 - 122	
Audio Only	73.40	41.80	64.50	27 - 182	
					-0.37 P > 0.05
	Mean MLU	SD	Median	Range	t Score
Audiovisual	6.60	1.70	6.36	4.00 - 10.17	
Audio Only	6.61	1.79	6.35	3.78 - 9.46	
					-0.01 P > 0.05

The analysis revealed that the group means for each dependent variable were close. For example, the MLU means were 6.60 and 6.61, respectively for the audiovisual and audio only modalities. The t test of differences between the group means revealed no statistically significant difference on any of the quantity measures (see Table 6).

Modality Group Comparisons in Lexical Quality of Language

The two story presentations were compared on the lexical quality of language using number of different words and Type Toke Ratio (TTR), as shown in Table 7.

Table 7. The Number of Different Words (NDW) and Type Token Ratio (TTR) Generated for the Direct Questioning Task.

$N_{AV} = 15$ $N_A = 14$	Mean TTR	SD	Median	Range Low High	t Score
Audiovisual	0.61	0.11	0.60	0.44 - 0.79	
Audio Only	0.61	0.12	0.62	0.45 - 0.85	
					-0.13 P > 0.05
	Mean NDW	SD	Median	Range	t Score
Audiovisual	38.90	10.60	37	24 - 54	
Audio Only	41.60	17.70	40	20 - 86	
					-0.49 P > 0.05

The means for TTR were identical and the standard deviations were extremely close. For example, the means for the audiovisual and audio only conditions were 0.61, with standard deviations of 0.11 and 0.12, respectively. The means for the number of different words also were close at 38.9 and 41.6 for the audiovisual and audio only conditions, respectively. The audio only condition had the largest range of different words, but only one child used more than 58 different words. However, none of the differences between the means for the two presentation modalities were statistically significant in the lexical quality of the language produced (see Table 7).

Modality Group Comparisons in Syntactic Quality of Language

Language used in the direct questioning task was analyzed for its syntactic quality using six dependent variables as shown in Table 8.

Table 8. The Syntactic Structure of Language Generated for the Direct Questioning Task.

N_{AV} = 15 N_A = 14	Mean % of Complete Sentences	SD	Median	Range Low High	t Score
Audiovisual	81.40	7.52	81.82	70.00 - 91.67	
Audio Only	77.50	12.90	81.82	55.56 - 92.31	
					0.98 P > 0.05
	Mean % of Elaborated Sentences	SD	Median	Range	t Score
Audiovisual	81.40	7.52	81.82	70.00 - 91.67	
Audio Only	78.40	11.10	81.82	50.00 - 92.31	
					0.83 P > 0.05
	Mean % of Simple Sentences	SD	Median	Range	t Score
Audiovisual	45.20	19.70	44.44	5.00 - 90.00	
Audio Only	44.92	9.83	43.65	35.71 - 57.14	
					0.04 P > 0.05
	Mean % of Complex Sentences	SD	Median	Range	t Score
Audiovisual	20.10	17.40	20.00	0.00 - 53.33	
Audio Only	20.60	16.70	21.83	0.00 - 43.48	
					-0.09 P > 0.05
	Mean % of Elliptic Simple Sentences	SD	Median	Range	t Score
Audiovisual	6.24	8.48	5.00	0.00 - 30.00	
Audio Only	4.39	7.80	0.00	0.00 - 22.22	
					0.61 P > 0.05
	Mean % of Elliptic Complex Sentences	SD	Median	Range	t Score
Audiovisual	6.91	6.16	6.67	0.00 - 18.18	
Audio Only	8.50	4.70	9.09	0.00 - 15.38	
					-0.78 P > 0.05

For each syntactic category, none of the differences between the means of the two presentation modalities were statistically significant for any of the six syntactic structures compared (see Table 8).

Comparative Analysis of the Retelling and Direct Questioning Tasks

The language produced in the retelling and direct questioning tasks was compared separately for each presentation condition. The analyses paralleled the focus of the two preceding analysis on the quantity and quality of language produced.

Quantity of Language

Data for the quantity variables are shown in Tables 9A and 9B for the audiovisual and audio only conditions, respectively. The results showed that the direct questioning task generated consistently more utterances and words than did the retelling task in both modalities.

Table 9A. Comparative Quantitative Analysis of Number of Utterances, Words, and Mean Length Utterance Generated for the Retelling and Direct Questioning Tasks in the Audiovisual Modality.

N = 15	Mean No. of Utterances	SD	Median	Range Low High	t Score
Retelling	8.60	5.28	8.00	1 - 21	
Direct Questioning	12.00	3.25	11.00	8 - 20	
					-2.12* p < 0.05
	Mean No. of Words	SD	Median	Range	t Score
Retelling	54.70	33.60	48	3 - 144	
Direct Questioning	68.40	28.80	62	33 - 122	
					-1.20 P > 0.05
	Mean MLU	SD	Median	Range	t Score
Retelling	7.57	1.81	7.20	5.00 - 11.00	
Direct Questioning	6.60	1.70	6.36	4.00 - 10.17	
					1.52 P > 0.05

* Statistically Significant

Table 9B. Comparative Quantitative Analysis of Number of Utterances, Words, and Mean Length Utterances Generated for the Retelling and Direct Questioning Tasks in the Audio Only Modality.

N = 14	Mean No. of Utterances	SD	Median	Range Low High	t Score
Retelling	7.79	3.02	7.50	3 - 13	
Direct Questioning	12.00	3.98	11.00	8 - 23	
					-3.16* p < 0.05
	Mean No. of Words	SD	Median	Range	t Score
Retelling	57.50	34.10	44.00	12 - 124	
Direct Questioning	73.40	41.80	64.50	27 - 182	
					-1.10 P > 0.05
	Mean MLU	SD	Median	Range	t Score
Retelling	8.15	2.58	8.23	3.20 - 12.11	
Direct Questioning	6.61	1.79	6.35	3.78 - 9.46	
					1.84 P > 0.05

* Statistically Significant

However the differences between tasks were statistically significant for only the number of utterances in each modality condition but not for the number of words or mean length utterance. This outcome can be explained by the fact that each child responded to a standard number of questions. The direct questioning task guaranteed that at least eight utterances would be produced. The story retelling task yielded more variable output among the children-- some retold long stories with as many as 21 utterances while others did not.

In each modality condition, some children produced as few as one utterance. Therefore, the mean number of utterances was reduced for the story retelling samples relative to those obtained from the direct questioning task.

With respect to mean length utterance (MLU), the story retelling task generated longer utterances on the average than did the direct questioning task in both conditions. However, the difference between group means was not significant for neither the audiovisual nor the audio only conditions. The consistency of shorter MLU's for both conditions in the direct questioning task was likely due to the greater use of elliptic utterances during the direct questioning than story retelling task.

Lexical Quality of Language

Data for the lexical quality variables are shown in Tables 10A and 10B for the audiovisual and audio only conditions, respectively. The results showed that the direct questioning task generated consistently more different words than did the retelling task in each modality conditions. But the difference between the tasks were not statistically significant.

Table 10A. Comparative Lexical Qualitative Analysis of Number of Different Words (NDW) and Type Token Ratio (TTR) Generated for the Retelling and Direct Questioning Tasks in the Audiovisual Modality.

N = 15	Mean TTR	SD	Median	Range Low High	t score
Retelling	0.65	0.13	0.66	0.47 - 1.00	
Direct Questioning	0.61	0.11	0.62	0.44 - 0.85	1.00 P > 0.05
	Mean NDW	SD	Median	Range	t Score
Retelling	32.60	17.4	37	24 - 54	
Direct Questioning	38.90	10.6	40	20 - 86	
					-1.19 P > 0.05

Table 10B. Comparative Lexical Qualitative Analysis of Number of Words and Type Token Ratio Generated for the Retelling and Direct Questioning Tasks in the Audio Only Modality.

N = 14	Mean TTR	SD	Median	Range Low High	t score
Retelling	0.61	0.13	0.62	0.38 - 0.77	
Direct Questioning	0.61	0.12	0.62	0.45 - 0.85	
					-0.05 P > 0.05
	Mean No. of Different Words	SD	Median	Range	t Score
Retelling	32.90	15.60	28.50	5 - 63	
Direct Questioning	41.60	17.70	40.00	20 - 86	
					-1.38 P > 0.05

With respect to type token ratio (TTR), the means were nearly identical for the samples generated by the story retelling and direct questioning tasks in both conditions. For example, the means for the audio only modality were identical (.61) for both the retelling and direct questioning tasks. The TTR means for the audiovisual modality were .65 and .61 for the retelling and direct questioning tasks, respectively.

The number of different words spoken by the children was also larger for the direct questioning than the story retelling task in each modality. This trend was most likely due to the to the larger number of utterances produced by the children. More words were said, and a larger variety of vocabulary words were therefore produced. However, none of the differences between the two means for the tasks were statistically significant on any of the lexical quality variables in either modality.

Syntactic Quality of Language

Data for the syntactic quality variables are shown in Tables 11A and 11B for the audiovisual and audio only conditions, respectively. The results showed that the story retelling task generated consistently more complete and elaborated sentences than did the direct questioning task in both modalities. However, the direct questioning task generated more elliptic sentence structures than the retelling task did. But differences between the two tasks in the total number of complete sentences was statistically significant only for the audio only condition.

Table 11A. Comparative Syntactic Structure Analysis Generated for Retelling and Direct Questioning Tasks in the AV Modality.

N = 15	% of Complete Sentences	SD	Median	Range Low High	t Score
Retelling	87.80	12.00	90.91	62.50 - 100.00	
Direct Questioning	81.40	7.52	81.82	70.00 - 91.67	
					1.77 p> 0.05
	% of Elaborated Sentences	SD	Median	Range	t Score
Retelling	86.50	14.90	90.91	62.50 - 100.00	
Direct Questioning	81.40	7.52	81.82	70.00 - 91.67	
					1.19 P> 0.05
	% of Simple Sentences	SD	Median	Range	t score
Retelling	45.80	22.90	42.86	16.67 - 100.00	
Direct Questioning	45.20	19.70	44.44	5.00 - 90.00	
					0.09 P> 0.05
	% of Complex Sentences	SD	Median	Range	t score
Retelling	33.40	19.80	28.57	0.00 - 60.00	
Direct Questioning	20.10	17.40	20.00	0.00 - 53.33	
					1.96 P> 0.05
	% of Elliptic Simple Sentences	SD	Median	Range	t score
Retelling	4.26	7.46	0.00	0.00 - 25.00	
Direct Questioning	6.24	8.48	5.00	0.00 - 30.00	
					-0.68 P> 0.05
	% of Elliptic Complex Sentences	SD	Median	Range	t score
Retelling	5.29	8.16	0.00	0.00 - 20.00	
Direct Questioning	6.91	6.16	6.67	0.00 - 18.18	
					-0.62 P> 0.05

Table 11B. Comparative Syntactic Structure Analysis Generated for Retelling and Direct Questioning Tasks in the Audio Only Modality.

N = 14	% of Complete Sentences	SD	Median	Range Low High	t Score
Retelling	88.70	14.10	91.99	50.00 - 100.00	
Direct Questioning	77.50	12.90	81.82	55.56 - 92.31	
					2.19* P < 0.05
	% of Elaborated Sentences	SD	Median	Range	t Score
Retelling	87.10	13.20	88.89	30.00 - 100.00	
Direct Questioning	78.40	11.10	81.82	50.00 - 92.31	1.87 P > 0.05
	% of Simple Sentences	SD	Median	Range	t score
Retelling	47.50	22.90	43.65	0.00 - 77.78	
Direct Questioning	44.92	9.83	43.65	35.71 - 57.14	
					0.40 P > 0.05
	% of Complex Sentences	SD	Median	Range	t score
Retelling	37.10	26.60	38.89	0.00 - 100.00	
Direct Questioning	20.60	16.70	21.83	0.00 - 43.48	
					1.96 P > 0.05
	% of Elliptic Simple Sentences	SD	Median	Range	t score
Retelling	0.79	2.97	0.00	0.00 - 11.11	
Direct Questioning	4.39	7.80	0.00	0.00 - 22.22	
					-1.61 P > 0.05
	% of Elliptic Complex Sentences	SD	Median	Range	t score
Retelling	3.22	5.99	0.00	0.00 - 20.00	
Direct Questioning	8.50	4.70	9.09	0.00 - 15.38	
					-2.59* P< 0.05

* Statistically Significant

For both modality conditions, the retelling task produced a larger percentage of complete and elaborated sentences than did the direct questioning task. This most likely occurred because the response to directed questioning did not require the children to answer them in complete sentences, according to the syntactic rules used in this study (see Appendix N). In fact, a larger percentage of elliptic responses was generated in the direct questioning than in the story retelling task, in both modalities. But, the difference in mean percentage of elliptic responses between the two tasks was significant for the audio only condition but not the audiovisual condition.

Conclusions

The results of this study showed that there were no statistically significant differences between the modality conditions for story presentation on any of the linguistic measures analyzed. This means that both the audiovisual and audio only conditions yielded story retelling samples equivalent in:

1.   Quantity of language (Number of utterances, Number of words, and Mean Length Utterance (MLU)).

2.   Lexical quality of language (Type Token Ratio (TTR) and Number of different words (NDW))

3.   Syntactic quality of language (complete, elaborated, simple complex, elliptic simple, and elliptic complex sentence structure).

Since no significant differences were found (except for a larger number of utterances in the

direct questioning task than in the story retelling and direct questioning tasks), the children

also produced language samples that were equivalent across tasks as well.

Chapter Four

DISCUSSION

This study aimed to determine whether one story presentation condition (audiovisual or audio only) elicited a larger amount and complexity of language in the story retellings of 4 - 5 year old normally developing children than the other. Twenty-nine normally developing males at Michigan State University's Child Developmental Laboratories served as subjects in an independent group design. They were randomly assigned to one of two groups. Each group was presented the same story in either an audiovisual or audio only modality condition. The children then retold the same story and answered a standard set of questions about it. Their story retelling was analyzed for the quantity, lexical quality, and syntactic quality of language produced. Results revealed no statistically significant differences between presentation modalities for any of the language areas measured in the story retelling and direct questioning tasks.

It was concluded that the added visual input did not make a difference in the length or complexity of language produced by a child during the story retelling or direct questioning tasks. Only one child made a comment that could have been attributed directly to having seen the video. He commented on the color of mud, calling it "brown" instead of using the actual word. No other comments suggested that the addition of dynamic pictures made a difference in the language samples of the children.

Comparisons to Other Studies

This study can be compared directly to Schneider's (1996) research, which examined language use during a story retelling task. Although she focused mainly on how various modality inputs (e.g., oral only presentation, oral presentations with picture accompaniment, etc.) affected a child's narrative abilities, one of the analyses focused on the amount of language produced by subjects. The quantity variables investigated (Mean Length of T-unit in Morphemes, number of words produced by the children, and number of utterances said) were the same as those used in this study. Schneider's analysis revealed no statistically significant differences among modality conditions for story presentation on any of the three quantity measures. This outcome is consistent with the results of this study, in which no modality outcome effects were observed for the quantity of language variables.

However, Schneider (1996) did observe modality differences on other language discourse measures. For example, the audio only presentation produced the largest number of story grammar units, while the visual only story delivery condition yielded the least number of mazes. Thus, while other studies have revealed modality effects, there are two interpretations of an absent modality effect in this study: (1) A modality effect exists but this study was not able to reveal it or (2) No modality effect exists for young normally developing children on the variables measured.

Interpretation of Modality Effects

It is possible that this research study did not reveal a modality bias because it focused on different measures of language performance than did other studies. Global aspects of

language, (e.g., number and length of utterances and morphosyntactic patterns), may be less vulnerable to modality effects than are the measures of narrative discourse typically examined by other studies. For example, the aforementioned outcome of Schneider's (1996) study showed that the audio or oral only modality produced the largest number of story grammar units and most complete stories. But in the same study, no modality bias showed up on the amount of language production.

Second, the type of subjects used in this study may have also created different data outcomes relative to other studies. The subjects in this study were young, normally developing males. In contrast, Schneider's (1996) subjects were older language impaired children. In her study, the language impaired children showed an oral only modality bias for some discourse areas measured. For example, the largest number of story grammar units were provided in the oral only condition. It is not clear whether the audio only bias was due to their language impairment status or older age.

Third, the manner in which the story recall was tested in this study may have been a factor. Children may have preferred the audio only presentation in Schneider's study because still pictures were used in the video condition and still pictures might have been difficult for children to interpret, especially if action events were depicted in the pictures. In this study, however, dynamic pictures were used. These pictures may have been so clear and easy for the children to interpret the context of the picture. The children were able to view the all the actions of the characters, from the initiation to the completion of movements. They did not see a single still frame (as found in static pictures). However, no prompts were used to reveal visual imagery.

Interpretation of No Modality Effects

Although it is reasonable to expect the audiovisual modality to offer more than one

source of input about the story, it is possible that no modality effect exists, at least for the

global type of language measures used in this study. It is also possible that one modality

presentation is actually better than two. When receiving both new audio and visual stimuli,

the children may not be able to process two modality inputs at one time. What this suggests

is that children, when engaged in activities, may have to sacrifice some information input in

order to perform a task. In this study, each child knew he had to recall the story. Therefore,

the task required him to pay close attention to what was happening in the story. It is

possible that the children focused upon just the audio or visual input when presented the

story in both modalities. Focusing on both may have been too much of a challenge for the

subjects at their young age. If so, then the children exposed to the audiovisual condition in

this study may not have taken advantage of the additional information provided to them

because it was too much information for them to process at one time.

Research suggests that multiple sources of information compete for the same limited

cognitive resources. Bloom (1996) proposed the cognitive cost hypothesis. Bloom (1996)

observed children's affective display of negative, positive, or neutral emotion in relation to

when they spoke and/or manipulated toys. In a longitudinal study, children were observed

when first words were emerging, and at the time of the vocabulary spurt. Results showed

that the children in the early vocabulary stage either talked or demonstrated some form of

emotion, but both did not occur at the same time. At older ages, when the children

developed a larger vocabulary, they talked and demonstrated affect together, but not without

some cognitive costs. The words used by the children were familiar and routine. Emotional

expression was either neutral or positive- the valence associated with least cognitive effort.

Bloom (1996) also observed object manipulations and use of language. She reported

that unless the children were accustomed to the object manipulation activity, they talked very

infrequently, if at all. Emotional affect was also practically non-existent when a less familiar

object manipulation task was being performed.

Tomasello (1995) summarized research on verb acquisition in children. In one

study, Tomasello and Kruger (1992) used 48 two year-olds as participants. Each child

played with a parking garage toy. The examiner then introduced the verb "plunk" to the

child, and demonstrated how to "plunk" a doll while using the toy garage. A child heard the

word in one of three conditions. In the impending condition, the child heard the word before

the action occurred. Either the child performed the action after the examiner asked him to,

or the examiner informed him that she was about to "plunk" the doll. In the second

"ongoing" condition either the examiner or child performed the action of "plunking" at the

same time that the word was spoken. In the completed condition, the word "plunk" was

spoken after the clinician or child completed the "plunking" action.

Comprehension of the targeted word's meaning was measured afterwards. The child

was asked to perform the target action "plunk" by manipulating the toys. Distractor actions

were requested as well. The children who were exposed to the impending condition used

the targeted verb more often than those in the ongoing and completed groups. Those in the

ongoing action group used the targeted verb the least. Tomasello and Kruger (1992)

interpreted the results in terms of attentional demands. They suggested that task demands

were increased because the ongoing condition required the child to process information about both the words and the actions at the same time. Consequently, the children could have paid more attention to the action that was occurring than the novel words. Although this study did not involve an action event, attentional principles could apply to its outcome. Given the novelty of the story for the subjects, there may have been some cognitive cost to having to process a story with more than one modality of input.

The contention that added visual input to the auditory condition may not have been used by the children seems supported by Schneider's (1996) study. Schneider (1996) presented stories to children using audio only, visual only, and audio plus visual story presentations. No statistically significant differences among the modalities were observed in the quantity of language used. The audio only produced the same quantity of language as the visual only and audio plus static picture accompaniment during or after the oral portion presentations. This outcome clearly shows that the audiovisual mode was no better than either modality used singly.

Clinical Implications of Story Retelling for Language Sampling

There are advantages to using story retelling as a standardized language elicitation task for global screening purposes. Children produce complex and elaborated sentences, as well as a variety of sentence types (e.g., elliptic and morphological markers).

Adding a direct question task at the end of the retelling also expanded the amount of language spoken in a time efficient manner. In some instances, children did not provide

enough language in their story retelling. They gave as few as one to three utterances in some cases. The eight directed questions guaranteed that at least eight utterances would be spoken by the children. This part of the study also showed that the children could produce syntactic forms (e.g., elliptic forms) that were almost nonexistent in the retelling task.

Other aspects of language that were not the focus of this study, could be monitored as well. For example, the responses could have been analyzed for semantic accuracy. Although an informal observation revealed that the children seemed to understand the story, their answers were not judged on semantic accuracy. Some pragmatic characteristics such as monitoring turn-taking skills could be observed as well.

Another advantage is that the story retelling task took a short amount of time relative to most language sampling tasks. The entire process of story presentation, retelling, and answering the directed questions afterwards lasted approximately fifteen minutes. Seven of the minutes consisted of the story presentation. The length of time needed to get a useful sample is drastically reduced.

Despite the limited number of utterances and words spoken by the children (no more than 23 by one child), the data yielded by MLU and TTR performances were comparable to the norms in the SALT Database (Miller and Chapman, 1991)(see Table 20). Their database included language samples from over 200 children, and were based on 50 utterances.

Table 12. Number of Children in This Study Who Fell Above or Within One Standard Deviation Below the Mean for MLU and TTR Measures According to Miller & Chapman (1991).

	MLU-Retelling	MLU- Direct Questioning	TTR-Retelling	TTR-Direct Questioning
No. Children in This Study Above or Within 1 SD Below the Mean	26	25	27	27
No. Children in This Study Below 1 SD Below the Mean in This Study	3	4	2	2

From 86% to 95% of children in this study fell above or within one standard deviation below the mean, even though none produced fifty utterances combined for the story retelling nor the direct questioning tasks. In addition, two of the children who did not fall within one standard deviation on the direct questioning task for MLU, performed well above the MLU mean on the retelling task. Therefore, those children may not have talked as much during the direct question task because they judged that enough detail had already been provided during the story retelling task. Twenty-five of the 29 subjects in the retelling task had a higher TTR than Miller and Chapman's (1991) study would predict, and 23 subjects had a higher TTR than Miller and Chapman's (1991) norms in the direct questioning task.

When combining the data from the story retelling and direct questioning tasks, results paralleled those found above. The average number of utterances spoken by the children when combining both tasks was 20.21, with a range of 11 - 33. When averaging the MLU's for both tasks, only four of the 29 subjects were more than one standard deviation below the mean. When averaging the TTR's for both tasks, all of the children had TTR's that were

better than the mean given by Miller and Chapman (1991). This suggests that it may not be necessary to elicit 50 utterances to evaluate global language measures.

Research Implications

Types of Questions to be Addressed in Future Research

In this study normally developing white males between the ages of 4;0 and 5;6 years were observed. Although the data outcomes were clear cut for them, more studies need to be done in order to determine how generalizable the outcomes are to other groups. One goal of such a study would be to examine the applicability of the story retelling method cross-culturally. The characters and names in the story could be changed so that they fit the culture of the children who are presented the story. Discovering if the retelling task produces the same outcomes as those from this study would be valuable to developing a standardized procedure.

Another shortcoming associated with the study was the population and school setting used for observation. The children used as subjects all came from the same educational background. They were a very homogenous group with socioeconomic status most likely within the top ten percent of society (Whiren, 1997). The Child Developmental Laboratories provide children with story retelling tasks in its curriculum. This task may have been easy to do for the subjects of this study because they were familiar with it. It is not known whether children who are not from a similar economic background and educational settings would respond to the task in the same manner as these children did. Children who are not

familiar with the story retelling task either in their home life or educational settings may not react to the task like the subjects of this study. In addition, the number of years that the children have been students in the Child Development Laboratories could have affected how well the children retold the story. For example, some children may have been students at the CDL since they were babies. Therefore, they had more story retelling experience than those who became students at the school at the age of four-years-old. Those children with more experience may have provided better language samples during the story retelling task.

Another suggestion for future studies would be to determine how younger language impaired children's responses to the story retelling task are influenced by different modality presentations. It is well known in the literature that younger language impaired children have difficulty with auditory processing. Therefore, these children may actually favor the visual only input modality.

Methodological Issues in Future Research

Several issues surfaced in this study that need to be given attention in future studies of story retelling. First, some of the children produced utterances that did not pertain to the story that they were presented in the investigator's judgment. Difficulties arose when attempting to analyze these unforeseen distractions to data gathering. In the end, it was decided to eliminate all words that did not directly pertain to the story. As a result, the length of the language sample was reduced for some children. It is unknown how much was lost in the language sample analysis because of this decision.

There also were obstacles to the analysis of the syntactic structure. The manner in

which the child's sentence structure was scored needed to be consistent in order to ensure reliability. Therefore, strict guidelines were used to assign utterances to syntactic categories (see Appendix N). In turn, it became more difficult for a child to be credited with a complete sentence, even if his utterance was complete from a semantic point of view. For example, when some children were asked where Timmy and his mom were going, they answered, "to a party." Semantically, that is an accurate response and appropriately complete structurally in terms of pragmatic rules for grammatical ellipses. However, because noun and verb forms were missing from the utterance, it was considered syntactically incomplete. Some observers may score a child's answer to such questions in a different manner. The plan followed in this study allowed the examiner to be very reliable when scoring the syntactic portion of the data, but at the expense of semantic validity. The focus was on sentence structure not the semantic accuracy of what was said. However, this decision no doubt undermined the children's real competence since they were credited with producing fewer complete sentences than they did.

In addition, another methodological issue relates to the types of directed questions asked of the children. The questions asked were about the sequence of the events that took place in the story. Therefore, if a child was familiar with sequencing, these questions would have been fairly easy for him. Asking questions that require children to draw on their visual imagery, such as "what do you think that Timmy's house looked like?" may have provided the investigator with different results. The answer to this question would have been more difficult for children who did not see the story, and therefore, a modality bias could have

resulted. Future research addressing the types of questions asked of the children would be beneficial.

Designing and filming the story were expected to be cost efficient. It was assumed that finding someone to create a dynamic depiction of story events would be a relatively simple task. Instead, it became extremely complex. Costs limited the number of people willing to create the story for the study. In the end, the video that was used was not professionally created. In addition, the characters and narrator were not professional story tellers. There is a possibility that the manner in which the video was made may have caused the lack of modality differences found in the study. A professionally prepared video may have captivated the children's attention enough to make a modality difference in presentation. The video could have not been engaging to the children because of the lack of professionalism (e.g., unskilled character voices, puppets that were not appealing to the eye, etc.). Future studies that have the funding available to produce a story using professionals is strongly encouraged.

Conclusion

In conclusion, the results of this study suggest that the addition of the visual input to the story presentation does not enhance the language used in the story retelling task. No significant differences were observed on any of the dependent quantity and quality variables analyzed, nor did visual input enhance the children's response to the questions asked about the story. Adding the direct questioning task did significantly increase the number of utterances observed, but there were no statistical differences between the two tasks in lexical

or syntactic quality of the language produced. Therefore, combining the data from the two tasks may yield a more robust sample of language.

Results also imply that it is possible to standardize language sampling using the story retelling method. The addition of a direct question task provided the possibility of eliciting even more language from the children in a standard way. Further research needs to be conducted to determine if these results can be generalized to other groups, but based upon this study's outcomes, the future looks promising for using story retelling to standardizing language sampling.

APPENDIX A

APPENDIX A

Teacher Questionnaire

* Please answer the following questions for child:_____

Care Giver/s Education (if known): _____

Is English the primary language spoken at home? : _____

Has he and/or she ever mentioned any concern in language development or hearing for
_____?   YES   NO   NOT SURE

1. Hearing

_____ Good/Normal   _____ Questionable   _____ Poor

2. Social Interaction

_____ Good/Normal   _____ Questionable   _____ Poor

3. Behavior

_____ Good/Normal   _____ Questionable   _____ Poor

4. Problem Solving Skills

_____ Good/Normal   _____ Questionable   _____ Poor

5. Reasoning

_____ Good/Normal   _____ Questionable   _____ Poor

6. Vision

_____ Good/Normal   _____ Questionable   _____ Poor

7. Communication Skills

_____ Good/Normal   _____ Questionable   _____ Poor

8. Overall Rating (Of the above information)

_____ Good/Normal   _____ Questionable   _____ Poor

Thank you for your time and your help on this project. It is very much appreciated.
*(Note that after the subjects have been chosen, the questionnaires for children not chosen for the experiment will be destroyed, and those that will be used will have their names blocked out and a random number assignment will be used in its place)

APPENDIX B

Letter to Parents

February 6, 1997

Dear Parent,

I am requesting for permission for your child to possibly participate in a language research study. Your child will be given a free hearing screening following the American Speech-Hearing-Language Association guidelines to see if your child fits the study. Your child will also be given the Preschool Language Scale-3 (PLS-3), a language test, to see if your child fits the study. You will be notified of the results of these tests. Finally, your child's teacher will be asked to fill out a questionnaire about his language and hearing skills. If your child passes the above tests and his teacher shows no concern about your child's hearing and language, then he could be used in the study.

Your child will be told a story and asked to retell it. The research study will take place during school hours at school, and last approximately twenty minutes. The time that your child will be participating in the study will be arranged carefully in order to not disturb your child's normal schedule as much as possible. Your child will have the choice to participate in the study. The children will be invited to participate, and they can decline. They then will be invited to participate one more time. If your child declines repeatedly, then your child will not be forced to participate in the study. All information about your child's identity will be kept confidential and will not be revealed in the results from this project.

There is a questionnaire for you to fill out if you are allowing your child to participate in the study. Because the study will take place at your child's school during school hours, aside from filling out the questionnaire, there will not be any additional requirements of you. If you have any questions regarding the project, please feel free to call me at 432-2033 (work) or 351-6732 (home), or Dr. Whiren at 355-1900. Attached is a consent form and survey. Please fill out each form and return it to me using the self-addressed envelope no later than February 14, 1997.

Respectfully,

Jamie Gazella, B.A.
Graduate Student
Audiology and Speech Sciences

APPENDIX C

Parent Consent Form

Title of the Project: Children's Story Retelling Under Different Modality Conditions

Investigator:
Jamie Gazella
Michigan State University
Department of Audiology and Speech Sciences
East Lansing, MI. 49924

Consent Form

My child _____ CAN / CANNOT participate in the research project on language sample analysis the Child Development Laboratory.

If consent is given, I understand that my child may refuse to participate or discontinue participation at any time without penalty. I understand further that my child's identity will be kept confidential. Neither I nor my insurance company will incur any expense as a result of my child's participation in this project.

_____   _____

(Signature of parent/guardian)   Date

APPENDIX D

APPENDIX D

Parent Questionnaire

Dear Parent,

Please answer the following questions as accurately as possible if you have consented to have your child participate in this study. All information will be kept confidential. If your child is chosen for the study, names will be blocked out and number assignments will be used in its place. If your child is not a participant, this form will be destroyed. If you have any questions, please feel free to call me at 351-6732. Thank you for you time and help.

1. Is your child bilingual?   YES   NO

2. How would you describe your child's language development?

_____ Good/Normal   _____ Questionable   _____ Poor

Comments:_____

_____

_____

_____

3. How would you describe your child's hearing?

_____ Good/Normal   _____ Questionable   _____ Poor

Comments:_____

_____

_____

4. Has your child had a large number of ear infections? _____ If so, when?

_____

_____

Thank you for taking the time to fill out this form.

APPENDIX E

APPENDIX E

Criteria Reference Form

(+ signifies passed, - signifies fail)

1. Hearing
   _____ Teacher assessment
   _____ Care giver assessment
   _____ Hearing screening
   Right ear   Left ear
   ____ 250Hz   ____ 250Hz
   ____ 500Hz   ____ 500Hz
   ____ 1000Hz   ____ 1000Hz
   ____ 2000Hz   ____ 2000Hz
   ____ 4000Hz   ____ 4000Hz

2. Care giver concerns   YES   NO

3. Level of education: _____

4. Bilingual   YES   NO

5. Teacher questionnaire overall score: _____

Comments:_____

_____

_____

6. Care giver consent formed signed YES   NO

7. Care givers concerned about language development?   YES   NO

8. PLS-3 score:
   _____ Normal   _____ Other

9. Ear Infections/Comments:

_____

_____

Passed all criteria: YES   NO

APPENDIX F

Letter with Results to Parents

March 23, 1997

Dear Parent:

Thank you again for your assistance with my research project. It was a pleasure working with your son. Enclosed are the results of the hearing screening and language screening for:

_____

Hearing screening:

_____ Passed

_____ Failed

Comments: _____

_____

_____

Language Screening (Using the Preschool Language Scale-3):

_____

_____

_____

Again, I would like to thank you and your son for your help. I couldn't have done this project without you. The next part of my study will begin within a week. If your child participates in the next part of the study, he will be told a story and then asked to retell it to me.

If you have any questions regarding this information or about my project, please feel free to call me at 432-2033 (work) or 351-6732 (home).

Sincerely,

Jamie C. Gazella
B.A. Speech-Language Pathology

APPENDIX G

APPENDIX G

Letter to Parents When Child Didn't Participate

<div align="right">April 7, 1997</div>

Dear Parent:

Thank you again for your permission for _____ to participate in my language study. When your son was asked if he wanted to join me, he indicated that he was not interested. Therefore, hearing and language screenings were not obtained.

I would like to thank you though for your support. Without willing parents like yourself, I could never have been able to do this research study. If you have any questions regarding this information or about my project, please feel free to call me at 432-2033 (work) or 351-6732 (home).

Sincerely,

Jamie C. Gazella
B.A. Speech-Language Pathology

APPENDIX H

HUMAN SUBJECTS APPROVAL FORM

MICHIGAN STATE
U N I V E R S I T Y

January 15, 1997

TO: Ida Stockman
       378 Communication Arts & Science

RE: IRB#:   96-803
       TITLE: CHILDREN'S STORY RETELLING UNDER DIFFERENT
                                    MODALITY CONDITIONS
       REVISION REQUESTED: N/A
       CATEGORY: 2-I
       APPROVAL DATE: 01/15/97

The University Committee on Research Involving Human Subjects' (UCRIHS)
review of this project is complete. I am pleased to advise that the
rights and welfare of the human subjects appear to be adequately
protected and methods to obtain informed consent are appropriate.
Therefore, the UCRIHS approved this project and any revisions listed
above.

RENEWAL: UCRIHS approval is valid for one calendar year, beginning with
             the approval date shown above. Investigators planning to
             continue a project beyond one year must use the green renewal
             form (enclosed with the original approval letter or when a
             project is renewed) to seek updated certification. There is a
             maximum of four such expedited renewals possible. Investigators
             wishing to continue a project beyond that time need to submit it
             again for complete review.

REVISIONS: UCRIHS must review any changes in procedures involving human
             subjects, prior to initiation of the change. If this is done at
             the time of renewal, please use the green renewal form. To
             revise an approved protocol at any other time during the year,
             send your written request to the UCRIHS Chair, requesting revised
             approval and referencing the project's IRB # and title. Include
             in your request a description of the change and any revised
             instruments, consent forms or advertisements that are applicable.

PROBLEMS/
CHANGES: Should either of the following arise during the course of the
             work, investigators must notify UCRIHS promptly: (1) problems
             (unexpected side effects, complaints, etc.) involving human
             subjects or (2) changes in the research environment or new
             information indicating greater risk to the human subjects than
             existed when the protocol was previously reviewed and approved.

If we can be of any future help, please do not hesitate to contact us
at (517)355-2180 or FAX (517)432-1171.

Sincerely,

David E. Wright, Ph.D.
UCRIHS Chair

DEW:bed

cc: Jamie Gazella

OFFICE OF
RESEARCH
AND
GRADUATE
STUDIES

University Committee on
Research Involving
Human Subjects
(UCRIHS)

Michigan State University
246 Administration Building
East Lansing, Michigan
48824-1046

517/355-2180
FAX: 517/432-1171

The Michigan State University
IDEA is Institutional Diversity:
Excellence in Action

MSU is an affirmative-action,
equal-opportunity institution

APPENDIX I

Story Sample

Story Example: (narrator in normal script, dialogue in bold)

Once upon a time, in a small town in Michigan, there lived a a young boy named Timmy.   Timmy lived in a big white house with pretty flowers around it.

Today was a special day for Timmy because he and his mom were going to a party.
"Hi, my name is Timmy."
Timmy was already dressed up in his best party clothes. He was so excited for the party. So, he skipped into the house hoping his mother was ready to go to the party because he loved parties!
"Not yet," she said.
"Can I go outside and play?" Timmy asked her.
"Ok, but whatever you do, don't get dirty!" she warned.
"Ok, mom," Timmy said as he closed the door.
Timmy walked outside. He saw his best friend Amy sitting on a rock in her backyard, playing with her new basketball.
"Hi Tim, do you want to play with my new ball?" Amy asked.
"Sure Amy, throw it to me," Tim said and walked over to Amy. He was very excited. Amy slid off the rock she was on to get the ball.
"Throw it to me." Timmy said
"Ok, here goes," Amy said.
"Oh wow, this is fun!" Tim said after he caught the ball.
"Your turn," he said as he threw the ball back to Amy.
Amy and Tim were having a great time playing catch with Amy's new basketball. (Amy and Tim are heard laughing).
"Ha, ha, ha," Amy laughed, **"this is fun,"** she said, **"here catch."** She threw the ball to Tim. It rolled past him into some mud.
"I am sorry Tim!" Amy yelled as the ball kept rolling in the mud. Tim went to get the ball.
(Noise of Tim chasing the ball in the mud)

"Oh no," Tim said as he looked down at his shoes. They were all muddy.
"Don't worry Timmy. We'll think of something," Amy said. **" I know, we have some white paint at home. You can paint your shoes white and make them look like new."**
Amy went home to get some white paint so Tim could paint his shoes to make them look like new.

"Here's some white paint Tim. Good luck, my mom says I have to go home and eat." Amy said and then left.

Tim looked at his muddy shoes and started to apint them. He painted them very carefully. He didn't want to miss a spot. He spent a lot of time painting his shoes. He finally thought they looked just like new.

When he was finished, he skipped into the house to see if his mom was ready to go to the party. He walked up the stairs but forgot that the paint on his shoes was still wet. He left a trail of white footprints all over the stairs.
Tim's mother came to the head of the stairs and looked down. She saw the paint marks.

"Oh," she cried, "Tim, what did you do?" she asked.
Tim came to the head of the stairs and looked down too.
"Uh oh," Tim said, seeing the white footprints on the steps.
"I am sorry mom," he apologized. " I got my shoes muddy. I painted them like new so you wouldn't be mad."
She went to the door and Tim was scared that his mom was mad at him.
"Tim, I told you to stay clean. Now, I want you to stay right here and clean up your shoes and the stairs. We won't have time for the party. I am going next door to tell them we can't go," Tim's mom said as she walked outside and closed the door.
"Ohhh," Tim sighed. He was upset that he couldn't go to the party. He really wanted to go.

Tim's mom walked down the street to her neighbor's house to tell them that Tim and she couldn't go to the party. But, just like Tim she did not look where she was going, and, just like Tim, she stepped in mud too. Tim's mom got her shoes very very muddy.

Tim's mom walked back into the house. She opened the door and called to Tim, "Tim, guess what," she yelled to him, I got my shoes muddy too. Come on," she said, "let's both change our shoes and clean up this mess. If we work together, then I am sure we will make it to the party."

"Yahoo!" Timmy said. He was happy because he was going to the party.
"I love you Tim/mom very much," they said. They were happy and gave each other a big hug. Then, they cleaned up the paint, changed their shoes, and went of to the party. They had a great time together.

THE END

APPENDIX J

APPENDIX J

Comprehension Questions

1. Where did Tim and his mom want to go?

2. What happened to Tim's shoes?

3. How did Tim get his shoes muddy?

4. Who helped Tim fix his shoes?

5. How did Tim's best friend Amy help him with his shoes?

6. Why was Tim's mom upset?

7. What happened to Tim's mom?

8. When did Tim and his mom go to the party?

9. Did you ever get your shoes muddy?

APPENDIX K

APPENDIX K

Utterance Form

Transcriptions

Number:_____

Modality: _____

Page: _____

Utterance Number: Utterance:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX L

"SAMPLE SALT FORMS"

$ Child, Exami
+ ID:23
+ NAME:
+ SEX:
+ DOE:
+ DOB:
+ CA:4;6
+ E:
+ LOC:
+ CONTEXT:NAR
+ DOT:
+ T:
+ [EO]: Overgeneralization error (word level)
+ [EP]: Pronoun error (word level)
+ [EW]: Error at the word level
+ [EU]: Error at the utterance level
+ [P] : Prompt that does not interfere with discourse
- 0:00
C It about Timmy.
E Oh wow.
E Can you tell me about it?
E I/m sorry.
E I miss/ed it.
C No.
E What happen/ed to Timmy?
C He got his shoe/s mud/dy and it got paint all over the stair/s
E [laughs] Oh.
E What else happen/ed?
C paint was all over the stair/s and he got his shoe/s mud/dy.
C and his mom got his shoe/s mud/dy too [laugh].
C and her dress mud/dy [laughs].
E Anything else?
C No.
C They went to the party.

TRANSCRIPT SUMMARY

	Child	
	number	per cent
Total Utterances	8	
Statements (.)	8	100.00
Exclamations (!)	0	---
Questions (?)	0	---
Intonation Prompts (~)	0	---
Abandoned Utterances (>)	0	---
Interrupted Utterances (^)	0	--
Nonverbal Utterances	0	---
Unintelligible Utterances	0	---
Responses to Questions	3	37.50
Yes/No Responses to Questions	1	12.50
Responses to Intonation Prompts	0	---
Imitations	0	---
One-word Utterances	2	25.00
Utterances with Mazes	0	---
Utterances with Pauses	0	---
Utterances with Omissions	0	---
Utterances with Overlapping Speech	0	---
Utterances with Word Codes	0	---
Utterances with Utterance Codes	3	37.50
Analysis Set (C&I Verbal Utts)	8	
Statements (.)	8	100.00
Exclamations (!)	0	---
Questions (?)	0	---
Intonation Prompts (~)	0	---
Responses to Questions	3	37.50
Yes/No Responses to Questions	1	12.50
Responses to Intonation Prompts	0	---
Imitations	0	---
One-word Utterances	2	25.00
Utterances with Mazes	0	---
Utterances with Pauses	0	---
Utterances with Omissions	0	---
Utterances with Overlapping Speech	0	---
Utterances with Word Codes	0	---
Utterances with Utterance Codes	3	37.50

Other
  Between-Utterance Pauses: 0

Analysis Set: C&I Verbal Utts

WORD AND MORPHEME SUMMARY

	Child	
	Analysis Set	Total Utterances
MLU in Words	5.88	5.88
MLU in Morphemes	7.00	7.00
Brown's Stage	Post V	Post V
Expected Age Range (mos.)	41 - --	41 - --
TTR	0.51	0.51
No. Diff. Word Roots	24	24
Total Main Body Words	47	47
Total Maze Words	0	0
No. Omitted Words	0	0

MLU note: expected age ranges are the values within one standard deviation of predicted values for that linguistic stage, based on a linear fit of a sample of 123 upper-middle class children (17-59 months of age) from Madison, Wisconsin (Miller and Chapman, JSHR, 24, 1981, 154-161). They are irrelevant for adults and for transcripts without bound morpheme coding.

WORD ROOT TABLE
Table Expanded by Bound Morphemes and Codes
C&I Verbal Utts
Main Body
1st Speaker

	Child		Exami	
	Total	Expanded	Total	Expanded
ABOUT	1		1	
ALL	2		0	
AND	4		0	
DRESS	1		0	
GOT	4		0	
HE	2		0	
HER	1		0	
HIS	4		0	
IT	2		2	
MOM	1		0	
MUD	4		0	
MUD/DY		4		0
NO	2		0	
OVER	2		0	
PAINT	2		0	
PARTY	1		0	
SHOE	3		0	
SHOE/S		3		0
STAIR	2		0	
STAIR/S		2		0
THE	3		0	
THEY	1		0	
TIMMY	1		0	
TO	1		1	
TOO	1		1	
WAS	1		0	
WENT	1		0	

```
$ Child, Exami
+ ID:23
+ NAME:
+ SEX:
+ DOE:
+ DOB:
+ CA:4;6
+ E:
+ LOC:
+ CONTEXT:CON
+ DOT:
+ T:
+ [EO]:
+ [EP]: Pronoun error (word level)
+ [EW]: Error at the word level
+ [EU]: Error at the utterance level
+ [P] : Prompt that does not interfere with discourse
- 0:00
E Oh they went to the party.
E [name] I just want to ask you a couple quick question/s
  you just told me cause you told me a lot.
E Where did Tim and his mom go?
C to a party.
E What happen/ed to Tim/s shoe/s?
C they got all mud/dy [layeddown].
C they got all paint and they were still wet.
E Oh my goodness.
C and they got (all over the stair/s) all over the stair/s.
C they got on all of the step/s and mom look/ed down.
C and they saw (footprint/s foot track/s) footprint/s.
E I see.
C Then his mom got angry.
E Ohh.
C and then she stepp/ed.
C and she didn/t know where she was go/ing.
C and she stepp/ed in mud just like Timmy did [laugh].
E She did.  Oh my goodness.
C and she got her dress all mud/dy [laugh].
E How did Tim get his shoe/s mud/dy?
C by walk/ing in mud.
E by walk/ing in mud.
E Who help/ed him fix his shoe/s [name]?
C I don/t know.
E You don/t know.
E Hey [name] why don/t you come back here for one second
  over there.
E I have a couple more quick question/s.
E How did Tim/s friend help him fix his shoe/s?
C paint.
E paint.  Ooh.
C and they got on and I don/t know.
C got paint on.
E Ok.  A couple more quick question/s.
```

E Oh. I see. What happen/ed to Tim/s mom?
C She step in mud too.
E Oh. That/s right. You told me.
E When did they go to the party?
C after they clean/ed up the stair/s and chang/ed their shoe/s.
C then they went to the party.

TRANSCRIPT SUMMARY

	Child	
	number	per cent
Total Utterances	20	
Statements (.)	20	100.00
Exclamations (!)	0	---
Questions (?)	0	---
Intonation Prompts (~)	0	---
Abandoned Utterances (>)	0	---
Interrupted Utterances (^)	0	---
Nonverbal Utterances	0	---
Unintelligible Utterances	0	---
Responses to Questions	8	40.00
Yes/No Responses to Questions	0	---
Responses to Intonation Prompts	0	---
Imitations	0	---
One-word Utterances	1	5.00
Utterances with Mazes	2	10.00
Utterances with Pauses	0	---
Utterances with Omissions	0	---
Utterances with Overlapping Speech	0	---
Utterances with Word Codes	0	---
Utterances with Utterance Codes	3	15.00
Analysis Set (C&I Verbal Utts)	20	
Statements (.)	20	100.00
Exclamations (!)	0	---
Questions (?)	0	---
Intonation Prompts (~)	0	---
Responses to Questions	8	40.00
Yes/No Responses to Questions	0	---
Responses to Intonation Prompts	0	---
Imitations	0	---
One-word Utterances	1	5.00
Utterances with Mazes	2	10.00
Utterances with Pauses	0	---
Utterances with Omissions	0	---
Utterances with Overlapping Speech	0	---
Utterances with Word Codes	0	---
Utterances with Utterance Codes	3	15.00

Other
  Between-Utterance Pauses: 0

Analysis Set: C&I Verbal Utts

WORD AND MORPHEME SUMMARY

Child

	Analysis Set	Total Utterances
MLU in Words	5.80	5.80
MLU in Morphemes	6.65	6.65
Brown's Stage	Post V	Post V
Expected Age Range (mos.)	41 - --	41 - --
TTR	0.46	0.46
No. Diff. Word Roots	53	53
Total Main Body Words	116	116
Total Maze Words	7	7
No. Omitted Words	0	0

MLU note: expected age ranges are the values within one standard deviation of predicted values for that linguistic stage, based on a linear fit of a sample of 123 upper-middle class children (17-59 months of age) from Madison, Wisconsin (Miller and Chapman, JSHR, 24, 1981, 154-161). They are irrelevant for adults and for transcripts without bound morpheme coding.

WORD ROOT TABLE
Table Expanded by Bound Morphemes and Codes
C&I Verbal Utts
Main Body
1st Speaker

	Child		Exami	
	Total	Expanded	Total	Expanded
A	1		4	
AFTER	1		0	
ALL	5		0	
AND	11		2	
ANGRY	1		0	
BECAUSE	1		0	
BY	1		1	
CHANG	1		0	
CHANG/ED		1		0
CLEAN	1		0	
CLEAN/ED		1		0
DID	1		4	
DIDN	1		0	
DIDN/T		1		0
DON	2		2	
DON/T		2		2
DOWN	1		0	
DRESS	1		0	
FOOTPRINT	1		0	
FOOTPRINT/S		1		0
GO	1		2	
GO/ING		1		0
GOT	8		0	
HER	1		0	
HIS	1		4	
I	2		6	
IN	4		1	
JUST	1		3	
KNOW	3		1	
LIKE	1		0	
LOOK	1		1	
LOOK/ED		1		0
MOM	2		3	
MUD	6		2	
MUD		4		1
MUD/DY		2		1
OF	1		0	
ON	3		0	
OVER	1		1	
PAINT	3		0	
PARTY	2		2	
SAW	1		0	
SHE	6		1	
SHOE	1		4	
SHOE/S		1		4

STAIR/S		2		0
STEP	3		0	
STEP		2		0
STEP/S		1		0
STEPP	2		0	
STEPP/ED		2		0
STILL	1		0	
THE	4		2	
THEIR	1		0	
THEN	3		1	
THEY	9		2	
TIMMY	2		0	
TO	2		6	
TOO	1		0	
UP	1		0	
WALK	1		1	
WALK/ING		1		1
WAS	1		1	
WENT	1		1	
WERE	1		1	
WET	1		0	
WHERE	1		1	

APPENDIX M

Data Form

Subject number: _____
Retelling:

- **Number of words:** _____

- **Number of different words:** _____

- **Type Token Ratio (TTR):** _____

- **Mean Length Utterance (MLU):** _____

- **Number of Utterances:** _____

- **Syntactic Complexity: (Ratios)**

    - Incomplete sentences: _____
    - Complete sentences: _____
    - Simple sentences: _____
    - Simple Elliptic Sentences: _____
    - Complex sentences: _____
    - Complex Elliptic Sentences: _____
    - Elaborated sentences: _____

Comprehension:

- **Number of words:** _____

- **Number of different words:** _____

- **Type Token Ratio (TTR):** _____

- **Mean Length Utterance (MLU):** _____

- **Number of Utterances:** _____

- **Syntactic Complexity: (Ratios)**

    - Incomplete Sentences: _____
    - Complete sentences: _____
    - Simple sentences: _____
    - Simple Elliptic Sentences: _____
    - Complex sentences: _____
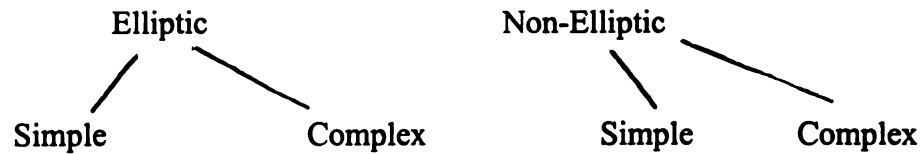   - Complex Elliptic Sentences: _____
    - Elaborated sentences: _____

APPENDIX N

APPENDIX N

Syntax Rules

INCOMPLETE   COMPLETE (any can be elaborated)

Elliptic   Non-Elliptic

Simple   Complex   Simple   Complex

Rules Regarding Syntax:

All utterances are looked at for structure only. The inappropriate responses that a child may give to the retelling or comprehension tasks are ignored. Only the syntactic structure will be analyzed.

Complete Sentences:

Simple Sentences:

~ Simple sentences contain a subject and a verb. They are   considered complete. Some examples of simple sentences are:
  • "he go to the party," "I forget," "You should have stayed."
~ A special case occurs when the child produces what appears to be a complex utterance, but is missing both noun and verb forms in the first part of the utterance. If neither noun or verb form is present in the first portion of the clause, but a complete sentence is found in the second part of the utterance, consider this utterance to be a simple complete sentence. This is true even if the words following the first part of the utterance appear to be a complex sentence. An example of this would be, Examiner: "Where was Timmy go/ing?" Child: "party, and they go right now." The child produces an incomplete utterance by saying party (both noun and verb forms are absent), but continues with a simple complete sentence following it. Therefore, score this as a complete simple sentence.

Complex Sentences:

~ Complex sentences contain at least two verb forms and are considered complete. It can consist of two independent clauses joined by a conjunction. Examples of conjunctions are:
  • after, and, as, because, but, if, or, since, so, then, until, while
  • An example of this is, "he go to the store and he eat vegetables."

95

~ Infinitive forms of verbs automatically make the utterance a complex one. An example of this is "He had to go bed." This is a complex complete sentence.

<u>Elliptic Sentences:</u>

~ Elliptic sentences contain at least one noun form or one verb form. Therefore, either the subject is present in the utterance, or the predicate is present. Whichever part of speech that is missing should be clearly stated in the utterance immediately preceding the elliptic utterance.

~ Elliptic sentences are considered complete.

~ Elliptic sentences have part of the answer or topic found in the utterance immediately preceding it. For example, the examiner may ask, "Where was Tim go/ing?" If the child responds, "go to a party," this is considered a simple elliptic sentence. The subject Tim has been clearly stated in the examiner's utterance right before the child's response, and the child has already stated a verb form. Therefore, the child has at least one part of speech (noun or verb-subject or predicate) found in his utterance. If the child only stated "to a party," this would not be considered a complete sentence because he has not said a verb form or noun form. Both are missing, causing the sentence to be incomplete. Another example may be the child saying, "he brush his shoes and comb his hair." In this sentence, the child had omitted the subject in the second part of the utterance. The subject is clearly stated in the first part of the utterance though as he. Therefore, this would be another example of an elliptic sentence (complex- for rules governing simple and complex, read below).

~ For elliptic sentences that are missing the predicate form and rely on the preceding utterance, the complexity of the elliptic form is based upon whether the implied verb is simple or complex from the preceding utterance. For example: Examiner: "Who help/ed Tim to fix his shoe/s?" Child: "Amy" This is a complex complete elliptic sentence. The child states the noun form only, making his reply an elliptic one. The verb form in the preceding utterance clearly is complex (because of the infinitive form), making this a complex elliptic sentence.

Incomplete Utterances:

~ If a sentence is incomplete, do not bother to determine if they are elaborated or not. Just mark them as incomplete and continue to the next sentence.

~ Answers to comprehension questions or utterances not containing noun or verb forms are incomplete. Therefore, a child saying, "mud/dy" or "yeah" would not have said a complete sentence, even if his reply made sense semantically.

Elaborated Sentences:

~ Elaborated sentences contain bound morphemes, adjectives, lexical markers, and conjunctions. An example of this is, "and I did," because the child used a conjunction in his utterance. Another example would be, "He got shoe/s mud/dy." In this sentence the bound morpheme on shoes and muddy elaborate the sentence, as well as the adjective muddy.

APPENDIX O

SYNTAX FORMS

Subject # 23	Utterance	Incomplete	Complete	Fully Simple	Elliptic Simple	Fully Complex	Elliptic Complex	Elaborated
Retelling	1	1						
	2	1						
	3		1			1		1
	4		1			1		1
	5		1					1
	6		1	1				1
	7		1	1				1
	8	1			1			
	9							
	10							
	11							
	12							
	13							
	14							
	15							
	16							
	17							
	18							
	19							
	20							
	21							
	22							
	23							
	24							
	25							
		Incomplete	Complete	Fully Simple	Elliptic Simple	Fully Complex	Elliptic Complex	Elaborated
		37.50%	62.50%	25.00%	12.50%	25.00%	0.00%	62.50%

SECOND PERSON RELIABILITY CHECK FORM

Subject # 23

Retelling

Utterance	Incomplete	Complete	Fully Simple	Elliptic Simple	Fully Complex	Elliptic Complex	Elaborated
1							
2							
3	✓						
4							
5		✓					
6		✓	✓				✓
7	✓	✓	✓				✓
8		✓	✓		✓		✓
9			✓		✓		✓
10							
11							
12							
13							
14							
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							

Incomplete   Complete   Fully Simple   Elliptic Simple   Fully Complex   Elliptic Complex   Elaborated

Subject # 23

Comprehension

Utterance	Incomplete	Complete	Fully Simple	Elliptic Simple	Fully Complex	Elliptic Complex	Elaborated
1	1						
2		1	1				1
3		1	1				1
4		1			1		1
5		1			1		1
6		1	1				1
7		1	1				1
8		1	1				1
9		1			1		1
10		1			1		1
11		1			1		1
12	1						
13	1						
14		1	1				1
15		1		1			1
16		1	1				1
17		1	1				1
18		1	1				1
19		1	1				1
20		1				1	1
21							
22							
23							
24							
25							
	Incomplete 15.00%	Complete 85.00%	Fully Simple 50.00%	Elliptic Simple 5.00%	Fully Complex 25.00%	Elliptic Complex 5.00%	Elaborated 85.00%

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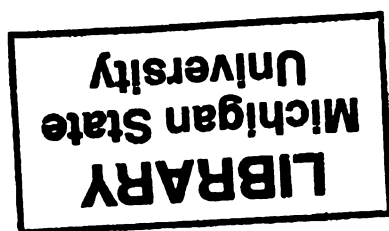
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