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Art Narration as a Language Sampling Context

Leah Margaret Gearhart Horst
University of Nebraska at Omaha

ART NARRATION AS A LANGUAGE SAMPLING CONTEXT

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Leah Margaret Gearhart Horst

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ProQuest LLC.
789 East Eisenhower Parkway
P.O. Box 1346
Ann Arbor, MI 48106 - 1346

THESIS ACCEPTANCE

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Committee

Kathy L. Coufal, Ph.D. Special Ed & Comm Disorders/College of Ed

James M. Wood, Ph.D. Special Ed & Comm Disorders/College of Ed

Joanne E. Sowell, Ph.D. Art and Art History/College of Fine Arts

Frances E. Thurber, Ph.D. Art and Art History/College of Fine Arts

Chairperson Kathy L Coufal

Date 7.18.96

Abstract

The differences in language constructs elicited in a video narration language sampling context and an art narration language sampling context were investigated. A quasi-experimental counterbalanced design was utilized to assess the effects of the language sampling contexts on the language constructs elicited. The subjects were six boys and six girls, ages four and a half to six years, with normally developing language. Age-matched pairs were randomly placed in one of two groups. Group A was exposed to the video narration context followed by the art narration context. Group B was exposed to the art narration context followed by the video narration context. Language samples were taken in both the art narration context and the video narration context. The language constructs examined included: mean length of utterance, type-token ratio, range in utterance length, semantic roles, fourteen grammatical morphemes, negation, noun phrase elaboration, verb phrase elaboration, sentence types and clause structure. Mean length of utterance, range in utterance length, and type-token ratio were statistically analyzed using two-tailed t-tests. A statistically significant difference was not found between the two conditions for mean length of utterance, type-token ratio, or range in utterance length. The final eight language constructs examined were descriptively analyzed. Differences were found in certain aspects of each of these constructs. Analysis also revealed that the final context subjects were exposed to generally elicited a greater frequency of occurrence of the language constructs examined, regardless of the order of the conditions. These findings suggest that art narration is a valid means for sampling language and that the more a child is familiarized with a stimulus the greater the narrative elaboration of the story.

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CHAPTER 1

Introduction

Like most things, the field of speech-language pathology has grown and changed with time. This change is evidenced in the methods used for child language assessment. The evaluation of a child's language skills has progressed from assessment based entirely on standardized tests to the combination of such tests with language sample analysis.

Many contexts in which to obtain language samples for analysis are available clinically. Conversation, interviews, observation, structured play, parent/child interactions, and video narration are some examples. Depending on the type of information the clinician is looking for, various contexts can be used. Balancing occurs between the degree of naturalness and the amount of content stability when choosing a context. For example, if a clinician wants to know about a child's language performance with peers a language sample from the playground would be an acceptable context; however, if information about the child's use of past tense is needed, a structured conversation may be used.

The search for more effective means of eliciting representative language samples is ongoing. A child's narration during and following the production of an artistic representation of the video, as opposed to verbal narration of a silent video, may provide a richer and more representative language sample. This language sampling context is proposed because it couples the verbal modality with the visuo-motor modality, which may promote internalization of the context in a manner that positively affects the child's language production. Language production is defined as the speaker's use of particular linguistic constructs, including: mean length of utterance (MLU), type-token ratio (TTR), range in utterance length, the fourteen grammatical morphemes, negation, semantic roles, noun phrase elaboration, verb phrase elaboration, sentence complexity, and sentence types.

The purpose of this study was to determine if there was a significant difference between the language constructs elicited through the art narration language sampling context, and those language constructs elicited through a silent video narration language sampling context. Silent video narration is

defined as narration following the first segment of a silent video, that will require the child to predict the outcome or completion of the story depicted. Art narration is defined as narration during and following the production of a drawing that the child produces to represent ideas related to the outcome or completion of the story depicted in the video sequence (as noted in the silent video narration definition).

Several assumptions are made in this study. The investigator is assuming: a) that the children in this study will be capable of understanding what is expected of them, and that they will be cooperative, b) that the performance abilities of boys and girls will be the same, and c) that the language measures used to analyze children's language samples will depict an accurate picture of the subject's language skills. The delimitations of this study are that the information gained from the study cannot have broad generalization to the population, due to the limited number of subjects and the population from which they were drawn. The sample included twelve children, age four and a half to six years, from the Omaha, Nebraska metropolitan area. Generalization to other age groups or those with language impairments is cautioned against.

CHAPTER 2

Review of Literature

Language

Communication Forms

Often when thinking of language, verbal communication comes to mind. It is the ability to communicate our ideas, needs, and desires verbally that sets humans apart from the rest of the animal kingdom. Lahey (1988) defines language as a " . . . code whereby ideas about the world are expressed through a conventional system of arbitrary signals for communication" (p. 2). Through the years it has been demonstrated that verbal communication is not the only way to use language. Writing is another form of communication which is just as valid as the oral form. Sign language has long been an accepted way to effectively communicate. These forms of communication tend to be abstract, with symbols that represent the referents of the communicative intent. The meaning resides in the speakers of a common language. Yet another way to communicate is through art. A drawing can be interpreted as a mode of expression through the visual modality, represented in a way that is more individual in style, form and content, than the arbitrary codes of verbal and written language. It has been said many times that a picture is worth a thousand words. This can be especially true for someone who has been unable to communicate through verbal, written or gestural language.

Language Development

Gaddes (1985), points out, "because the acquisition of language involves visual and auditory perception, verbal abstraction, understanding, imitation, and motor-speech expression in a correct sequence, all of the brain parts subserving these various behavior processes will need to be functioning normally for the child to learn to listen, to talk, to read, and to write," (p. 254-255). When children are developing language they begin by understanding the intended meaning before they understand the actual words. For example, children begin to understand that it is bed time, by the actions and events that constitute the bedtime routine, before they understand the actual words "it is bed time". Comprehension of

spoken language also precedes production of language. A child will then understand "it is bed time" but will not be able to verbally tell another individual that it is. Generally by age one children begin to speak. Their words refer to the people, events and objects in their environment and their utterances are generally one word in length (Berko-Gleason, 1993). Objects that move are more likely to be a part of their vocabulary than those that do not. Two word utterances begin to appear around age two. Verb phrases and noun phrases are elaborated and become increasingly complex (Berko-Gleason, 1993). A child will, by five years old, have the skills to use most of the English language grammar. [See Table I, p. 10, for the progression of language development.] It is during the schooling years and beyond that an individual's language skills are further developed and perfected (Shames & Wiig, 1990).

To understand language and the difficulties children may have in language comprehension and expression it is helpful to be familiar with the parts of language. Language is generally divided into language use and language structure. Language use is the pragmatic aspect of language. Pragmatics deal with the rules for language use in social contexts and conversation (Berko-Gleason, 1993). Language structure can be divided into the following categories: phonology, syntax and semantics. Phonology (Klee, 1985) has segmental and non-segmental components. Segmental phonology deals with the units of sound and the relationship between these units. Non-segmental phonology deals with the prosodic aspects of speech. Syntax is divided into morphology, word order and grammatical rules (Nation & Aram, 1991). Morphology is concerned with form and structure in words. Grammatical rules govern how words, phrases and sentences are constructed. Finally, the semantic aspect is divided into referential semantics and relational semantics. Referential semantics deal with the meaning of the individual words. Relational semantics are concerned with the meaning in the relationship between these words (Nation & Aram, 1991). Children with language disorders may have problems in one or many of these areas.

Disordered Language

There are a great number of children in the United States with language difficulties. A language disorder is ". . . any disruption in the learning or use of one's native language as evidenced by language

behaviors that are different from, but not superior to, those expected given a child's chronological age" (Lahey, 1988, p. 21). Disordered language can be caused by neurological, sensory, emotional and intellectual problems (Nation & Aram, 1991). Some children exhibit a type of language disorder that has no known cause. It is typically called specific language impairment (SLI). Children with SLI have language skills that have not developed, that are slow to develop, that manifest aberrant linguistic patterns, or the course of development is different than the expected sequence of development. This diagnosis is usually given when no other causal explanation is found in a child with language difficulties. Watkins and Rice (1994) list the following exclusion criteria for determining if a child has a SLI, "1) hearing thresholds above 25 dB HL, 2) parent or teacher report of significant emotional or behavior problems, 3) performance IQ = -1.00 standard deviation or below, 4) evidence of frank neurological deficits, and 5) severe articulation/phonological deficits." (p. 2). General characteristics of children with SLI extend beyond their language difficulties. Problems are seen in auditory perception, emotional lability, perseveration, intellectual inefficiencies, inconsistent responses, and mental imagery (Lahey, 1988). While these difficulties are sometimes noted in children with SLI, rarely are they considered significant or consistent enough to warrant concern. The presence of these in children with SLI varies between individuals and does not appear to be a set of characteristics common to all children with SLI.

The etiology of specific language impairment is unknown. However, a number of hypotheses have been developed regarding the cause of this language difficulty. The cognitive/representational hypothesis suggests mental representational difficulties are seen in children with SLI (Watkins & Rice, 1994). A second theory postulates children with SLI have auditory perception abilities that appear lower than their same-age peers. Yet another is that the linguistic environment of children with SLI is lacking in some respect. Another hypothesis is that like individuals who are not talented in music or athletics, children with SLI are not as talented in language (Watkins & Rice). Minimal brain dysfunction was once the accepted label for children with SLI, suggesting that brain functioning was in some respect deficient,

but undetectable. All of these hypotheses have their merits and limitations. It has been suggested that a combination of these theories may in all probability be the cause of SLI and vary with the child.

While minimal brain dysfunction is no longer an accepted label for children with SLI, it is still a plausible theory for the etiology of the disorder. The speculation that children with SLI have some sort of unidentifiable brain functioning deficit may have implications in language testing and remediation. The brain has two hemispheres, the right and left. Language functions, sequential and analytical thought processes, logic, time dependent processing, mathematics, science and intellect are considered for most individuals the processing characteristics of the left hemisphere. Visuo-spatial skills, nonsegmental and time independent processing, holistic processing, creativity, art, music, and dance are considered the processing characteristics associated with the right hemisphere (Haynes, 1994; Love & Webb, 1992; Silver, 1989). Together, each hemisphere plays a role in the complete processing of language production and expression (Haynes). Damage to the left hemisphere of the brain may result in verbal learning deficits as well as deficits in math skills and logic. Damage to the right hemisphere may result in problems with visuo-spatial learning, prosodic and pragmatic processing of language, holistic processing, intuition, manipulation of objects and art production skills (Dawson, Finley, Phillips & Lewy, 1989; Love & Webb; Silver). Several have postulated that if the left hemisphere is damaged the right hemisphere may take over some of its functions, either by relearning lost functions or the emergent use of skills already in the right hemisphere (Dawson et al., 1989; Perecman, 1983; Love & Webb). Children with SLI have no known brain lesions, however, there has been speculation that undetectable lesions may be present in the brains of children with SLI. The possibility of the right hemisphere becoming dominant for language has implications for language facilitation. Using the inherent strengths of the right hemisphere may help strengthen language functions now relegated to that hemisphere. However, due to the general function of the right hemisphere (in that it is not specialized for language function), formulation and expression of language may still be difficult (Kläger, 1992), thus explaining why language skills are not at the level expected for age and cognitive development.

The hemispheres of the brain are connected with association fibers. It is through these fibers that information is shared and integrated. New information and patterns of activation are sent through these fibers to association areas for further integration of information and activation. The use of art while speaking may provide a link or new association path between the two hemispheres to create more effective oral communication. Silver (1989) suggests, ". . . it may be that art experience can establish activation patterns for language to follow, or reinforce patterns set by language" (p. 11).

Art

The Meaning of Art

At one point in history art was defined as a learned skill, (Cohen, 1976). One interpretation of art is the, ". . . conscious effort of human beings to arrange colors, shapes, lines, sounds, movements and other sensory phenomena to express their ideas and feelings about themselves and their world" (p. 7). The American Heritage Dictionary (1985) defines art as the "Human effort to imitate, supplement, alter, or counteract the work of nature," (p. 129-130). Art is important in all cultures for a variety of reasons. It is a means of self expression in a visual form. In illiterate cultures it functions as a form of communication. Children (even in literate cultures) may use it to transmit information they do not wish to or cannot express verbally.

Art is an emotionally powerful form of self expression that for some cannot be portrayed in verbal language (Cohen, 1976). The meaning of art for children may be very different than that for adults. Lowenfeld and Brittain (1982) describe the meaning of art for children as ". . . a means of learning, through the development of concepts which take visible form, through the making of symbols which capture and are an abstraction of the environment, and through the organization and positioning of these symbols together in one configuration," (p. 3). While art for many adults and children may involve the creation of symbols that represent the their environment, children may also use this form of expression as a way of visually exploring and learning about their environment. These are experiences that adults generally possess.

Art and Cognition

Gardner's (1993) theory of multiple intelligences has been proposed as an alternative to the theory that intelligence is based on cognitive functioning as a single unit. The multiple intelligences theory proposes that each individual possesses seven intelligences that, while separate, work together to form a single working system. The seven intelligences defined by Gardner include the following: musical, bodily kinesthetic, logical mathematical, linguistic, spatial, interpersonal, and intrapersonal. These intelligences are represented differently in each individual. Some are represented as obvious strengths while others are not as dominant, or are considered weaknesses. Gardner proposed that strengths may facilitate the development of weaknesses in the different intelligences to create a more complete and whole intelligence. An example of this would be to use an individual strength, such as bodily kinesthetic intelligence to facilitate the development of an area of weakness in spatial intelligence. Another possibility would be to capitalize on strengths in spatial intelligence, which encompass art skills, to facilitate the development of linguistic skills (Gardner). It has been found that children with language disorders typically have high visuo-spatial skills, moderate conceptual skills and low sequential skills (Silver, 1989). Adequate sequential skills are thought to be very important in the formulation of verbal language. Visuo-spatial skills are needed in the production of drawings, sculpture and other art mediums. Conceptual skills are needed for both language and art performance. The use of art in developing conceptual skills may also help in the facilitation of skills in language. Capitalizing on a child's visuo-spatial abilities, as a strength, through art expression, may enhance language performance. As Silver points out, "if an organism is prevented from reaching its norm or goal in the ordinary way, it will be resourceful and try another way" (p. 18). Silver calls this idea transfer of learning; if a child is having difficulty learning language in the typical way they may try another way by using the strengths they have, which may include expression through the visual arts. Art can be used as a means of learning. It is ". . . through the development of concepts which take visible form, through the making of symbols which capture and are an abstraction of

the environment," (Lowenfeld & Brittain, 1982 p. 3), that children learn. Art can be used as a means to bring elements in the environment together to create a more cohesive expression of thoughts and ideas.

Children's Art and Language

There are a variety of ways to describe how children develop the ability to produce art. One of those ways is to describe art as a parallel to cognition and language development (Table I). Lowenfeld and Brittain (1982), have described art development in children in this way. Scribbling is the first stage of art development, generally taking place between the ages of two and four. The markings are random, vary in length and direction and do not portray the environment in any conventional way. It is the motor act involved in drawing that is enjoyable to the child. This first phase is known as disordered scribbling. Controlled scribbling is the next phase. A connection is made between the motor act and what is on the paper. Children are aware that they have control over what is depicted on the paper. Naming of the scribble is the final phase in the scribbling stage. Scribbles are named, but quite often do not look like their label to an adult observer.

The next stage is the Preschematic, which is reported to be emergent between the ages of four and seven. In this stage the first attempts at representation are seen (particularly of people). Abstraction and schema for a large variety of complex stimuli become evident. Children in this stage are forming new concepts and their schema are changing and not yet completely formed. Children's drawings at this stage generally are not influenced by what is in the real world; they do not notice the differences between their art and what they have portrayed. Between the ages of seven and nine, children are generally in the Schematic stage. A definite form concept is developed and the child attempts to symbolize the environment in the art work. The final stage is the stage of Drawing Realism. Drawings in this stage include the use of symbolism, more detail, and objects that are smaller in size. Children in this stage are not as eager to explain their art.

Table I. Description of cognitive, language and art development (Berko-Gleason (1993, Lowenfeld & Brittain (1982), and Westby (1994)).

Cognitive Development	Language Development	Art Development
Birth to 12 months Sensorimotor Stage (I-IV) --movement develops from reflexive to goal oriented -- developing object permanence -- uses familiar means to achieve novel ends	--Startles to sound, turns to sound, reacts to human voice, responds to tone of voice, cry, reflexive vocalizations, no word comprehension yet, imitates on-going action, looks where parent looks, differentiated cries, syllabic babbling	
12 months to 18 months Sensorimotor Stage (V) --invention of new means to achieve familiar ends	--Hi/bye routines, first words, words used as "performatives" (to manipulate environment)	
18-24 months Sensorimotor Stage (VI) --begin symbolic thinking	--Novel one-word utterances, asks "What's that" --Onset of 2-word utterances	
2-3 1/2 years Preoperational -thought is preconceptual -inference is sometimes but not always correct	--Two-word utterances, basic sentences develop, morphological markers develop --The first signs of narrative ability emerge	Scribbling Stage-experiences body motion, visual-motor control, naming of the scribble (this stage lasts until approximately age four)
3 1/2 to 7 years Preoperational -intuitive thought begins -problem solving by trial & error (not always correct)	--Uses compound and complex sentences, uses language to relate to experiences, talks about remote experiences, adequate voice, articulation and fluency --Narratives develop in the form of: description, action sequences; objects, events and characters become linked due to perceptual association, eventually they are linked logically although there is no plot or theme --In the later part of this stage: awareness of cause-effect relationships is seen in narratives as well as psychological causality, perspective of character emerge, the plot and ending tend to be weak, episodes are goal directed	(age 4 to 7) Pre-Schematic Stage-first representational attempts, drawing of man, schema are developing,
7 to 12 years Concrete Operational -classifies on 2 characteristics	--More clauses per sentence, uses language to converse, persuade, tease --Narratives: ability to perceive change, growth; differences between literal and figurative are understood, considered "true narratives" with central theme	Schematic Stage-- (age 7 to 9) form concept is developed, attempts to symbolize the environment Drawing Realism--symbolism seen, more detail, smaller, not eager to talk about their art

Ideas typically expressed through verbal language can be encoded using a visual modality such as sign language, writing and even art. Art provides a means for self-expression and representation of a child's environment. "A child is a dynamic being; art becomes for him a language of thought, and as he grows his expression changes" (Lowenfeld & Brittain, 1982, p. 8). It has been noted that at times, when engaged in pretend play, children will produce drawings related to their play and will narrate episodes related to these drawings (Patterson & Westby, 1994). Using art as a means of communication for children with SLI may provide an additional channel for conveying thoughts and feelings. These thoughts and feelings extend beyond verbal expression and may be represented through a visual form. This type of expression has been used frequently for emotionally disturbed and abused children; providing a means of expressing feelings too difficult to express in words (Kläger, 1992; Silver, 1989).

Drawing in combination with spoken language may facilitate effective communication. McGuire (1984) noted that fantasy, in which thought and language are used symbolically and abstractly, as well as imagery, composed of symbols and perceptions, may be considered a variant of cognition. Fantasy and imagery often play a large part in the art process and the use of these cognitive skills (which are also needed for language) in art may help in the facilitation of language skills (McGuire). "The visual arts have been relied on throughout history to communicate across languages and cultures, across distance and time" (Silver, 1989, p. 51). Art may be a bridge that can help to enhance verbal communication.

Language Assessment

Assessment of children's language once consisted of a battery of standardized tests measuring each component of language. Over time it was recognized that while these tests may provide useful assessment and treatment information they are not comprehensive. Language is more than several parts that can be analyzed separately, it is a system of parts interacting. To get an accurate picture of language functioning, the system as a whole needs to be analyzed. One means of analyzing this system is through language sample analysis. Language sampling is a process in which language behaviors are recorded either manually, or mechanically. Sampling occurs in contexts that are thought to evoke language that is

representative of the language a child uses regularly (Retherford, 1993). Sampling can also occur in contexts that will elicit language skills that are available but not habitually used. Language sampling is a means of obtaining a representative example of a child's language as a whole system whose parts and their interactions can be analyzed. Because of the comprehensive nature of a language sample analysis it has become an integral part of language assessment, enabling the clinician to look at the child's language as a whole (Retherford).

Language Sampling Contexts

There are many different situations in which a language sample can be obtained. These contexts have different effects on language production. Language sampling contexts range from low to high structure, all eliciting various aspects of language. Low structure contexts will reveal a representative sample of a child's language, but will have little influence over that language. Increased structure has the opposite effect. The most effective language elicitation will include a combination of both high and low structural techniques (Hubbell, 1988).

The least structured context in which a child's speech is sampled is free play (or free speech). This context can be very informative with respect to how the child typically uses language, although it often does not represent all the language skills available to the child. Free play is the least intrusive of all the language sampling techniques. In this context the clinician observes and samples a child's language, very often when the child is playing with the mother or another clinician (Barrie-Blackley, Ramsey & Rogister, 1978). This context is particularly effective with younger children because they are not aware they are being recorded and thus do not change their behavior for the benefit of the listeners (Barrie-Blackley, et al.). Greater structure can be added to the free play context if the clinician wants a greater degree of control over the language in the sample. To do this a child is offered certain toys or situations that may require the use of specific types of language. Doll houses, a toy gas station, army sets all encourage pretend play and role playing (Lahey, 1988). The child still has a fair amount of freedom in this situation while the clinician has introduced a degree of control over the language expected to be elicited

(Barrie-Blackley, et al.). Both play situations are less threatening and more concrete than storytelling or conversation contexts. The free play and structured play contexts are cognitively and linguistically more concrete because they are more perceptually obvious (Patterson & Westby, 1994), and may therefore encourage children to talk. If the toys or situation become too interesting it can be a disadvantage because the child may not verbalize at all. Decreased speech may appear as decreased skill. This factor should always be considered when assessing a child's language.

Toy or picture description is another method of language sampling, and is more structured than free play. The aspects of language elicited are dependent on the type of object, picture or toy used. In a study looking at description of toys, colored photos of toys and a twenty second film of toys, it was found that the film elicited greater length and more complex utterances. The colored photos of toys elicited a larger number of words and a greater number of different words than did the film (Barrie-Blackley, et al., 1978). As in free play toy description may be difficult if the child becomes too interested in the toy and does not talk. The possibility exists that the type of description requested will lead to a sampling bias with a disproportionate number of noun phrases (physical description) or verb phrases (functional description) (Barrie-Blackley, et al.).

Process questions (i.e. how to make a peanut butter and jelly sandwich) are also used to elicit language. It has been found that process questions decrease the amount of talking a child does in language sampling but increases the amount of elaboration done (Hubbell, 1989). Children often display verb usage skills with little representation of noun usage in answers to process questions.

Conversation is a type of nonstandardized elicitation technique in which the observer takes an active role in manipulating the context to elicit or observe a set of particular responses from a child (Lahey, 1988). Of all the contexts it provides the greatest amount of structure. Conversation is useful because the clinician can prompt specific language features. However, it is time consuming, and the complexity of topics as well as the ability of the interviewer to meet the conversational needs of the subject are highly variable (Dollaghan, Campbell, & Tomlin, 1990). This can make it difficult to compare the performance

across subjects and across repeated measures. Further, the clinician cannot assume a representative sample of a child's language abilities has been obtained (Lahey, 1988).

All of these methods of sampling language are appropriate for different purposes. Due to the ease of setting up a context and familiarity with the process of obtaining language from a particular context, some methods are more popular and used more frequently than others. While all the mentioned contexts can be excellent means of eliciting language from children. An additional method of language elicitation; narration appears to have the correct balance of structure and freedom (Lahey, 1988). Narraion will be described in greater detail in the following section.

Narration as a Context

Narration is one of the many ways in which to share information. For children it provides a means of controlling the linguistic environment according to their needs (Wellhousen, 1993). Campbell (1994) describes the four different types of narratives: recount, eventcast, account and stories. A recount is an explanation of an event in the past that the speaker either observed, read or heard about. A recount is rarely volunteered by a child. An eventcast is a verbal replay or description of a currently ongoing activity or event. An account is derived from experience and the topic is generated by the speaker. This narration form is often the earliest seen in children's narratives (Campbell). A story is a narrative that consists of fictionalized aspects that require the use of language not used in everyday activities. Skill in these forms of narration becomes an important aspect needed for success in school. They are often integrated into nearly all academic areas as a means of learning and evaluation of learning.

According to Norris (1994), the structure of the narrative in Western culture has many aspects. It begins with the setting, in which the character is described in appearance, action, location and state of mind. The initiating event follows, and is the point at which something happens to change the events of daily life for the character. The response state and response plan are then provided. At this point, the character's emotional response to change, and the goals set as a response to the change, are expressed. Next, several attempts may be given in which the character attempts to reach the goals, and consequences

are given for those attempts. Finally, there is the resolution (the final act) and the ending in which a moral or conclusion is given. While all of these are important aspects of a narrative, the following are considered essential to narration: the reference to motivation or purpose for behavior, obvious action to meet goal, and attainment/nonattainment of the goal (Norris).

When children begin to speak they do not automatically have the skills to produce narratives. Although, there are signs that as early as two and a half years children are able to respond to requests to produce them (Norris, 1994). Nelson (1993) and Westby (1994) give descriptions of the process of narrative development in children. [See Table I for development of narratives and a comparison of language, cognition, and art.] During the preschool years children begin to develop noticeable narrative abilities. They have the ability to describe activities and events, although description is isolated and interrelationships are not given (Westby). Narrative organization is a result of what attracts the attention of the child (Nelson). This is called the heaps stage. The stages of sequences and primitive narratives occur next (Nelson). The idea that animate beings act and inanimate objects are acted upon becomes evident and a sequence to actions are seen in narratives. However, actions are based on perceptions and are not always temporally based. Interrelationships still do not exist between characters and events, they are depicted together because they are perceptually associated (Westby; Nelson). The stage of unfocused chains follows. Events and characters are linked logically, but a plot or story theme are not evident (Nelson). Children begin to show an awareness of physical cause-effect relationships. Chaining, the final stage in preschool narrative development, involves activities or events that cause changes, however, there is no evidence of planning for these changes (Westby). Children are generally entering the early elementary school years following these stages.

The next stage of narrative development is the considered the focused chain (Nelson, 1993). There is not a strong plot and little or no ending in these narratives. Children have an awareness of the psychological causality for primary emotions. They produce situations in their narration that are considered causes of the psychological states. They are able to take the perspective of the character. There

is also evidence of goal directed episodes although planning of these goals is inferred (Westby, 1994). As children progress through these years there is further development of psychological causality and perspective taking (Westby, 1994). In late elementary school true narratives occur (Westby; Nelson). Children have the ability to perceive change and growth. They learn about multiple meanings for words and understand the difference between literal and figurative language. They will have elaborated narratives with at least one of the following: multiple episodes, complex episodes or embedded episodes (Westby). In the true narrative stage there is integrated chaining of events and characters, and a developed central core or focus for the narrative (Nelson).

While this development appears to be fairly consistent it will vary across cultures. Different cultures will approach narratives differently. According to Berko-Gleason (1993), African Americans tend to do more topic associating in which thematically related ideas are used to make a point indirectly. Japanese narratives are very structured and succinct with sets of three episodes in each story (Berko-Gleason). An important skill needed to effectively narrate in all cultures is the ability to take the listener's perspective and develop an idea regarding the audience's way of thinking (Campbell, 1994).

Children know about stories long before they enter school. They are influenced by the structures of stories read and told, and include these structures in their own stories (Nelson, 1993). Because children hear stories about their infancy, family, experiences of others, and so on, the task is familiar to them. The use of this familiar task may decrease anxiety on the part of the child and likewise increase language output. Narration as a sampling context may allow for a degree of freedom in content not available through other sampling techniques. Not only does the speaker have knowledge about stories but the listener does as well. This helps to create a common ground and understanding between the listener and speaker. In reference to a child having difficulty interacting and communicating with her classmates, Paley (1994) points out, "her confusing behavior finds logical expression in her stories and we, the audience, bring to them an emotional background and linguistic context that often fails us elsewhere,"(p. 17).

Singer (1990) proposed that our thoughts are somewhat like scripts of our experiences. A script is the term used to describe how knowledge of familiar situations are organized. These scripts include the characters, events, props and environment associated with situations and events that make up the familiar situations and events in an individual's experience. The elicitation of language in a form similar to the thought structure may produce a stronger, more representative sample of language skill (Sutton-Smith, 1986). One means of conveying the information in a particular script is through narration. There are many ways to use narration as a language sampling technique. A child can tell a story about a past experience, retell a familiar story, or create a fantasy story. Narration can occur from a picture or set of comic strips without words, or from a silent video. It is very similar to everyday language, with the exception of the style of introduction and conclusion used, and the inclusion of sequenced events that lead to the closure of the narrative (Nelson, 1993). Narration helps to eliminate the stress of having to talk with someone unfamiliar and creates a sample that consists primarily of the child's utterances.

Narration may have some advantages over other types of language sampling contexts. As Paley (1994) points out we are all "born to be storytellers". By the age of 5 or 6 years children can begin to produce structurally complete fantasy narratives in oral story telling, . . ." (Nelson, 1993, p. 429-431). By the preschool years children will engage in make believe play with narrators and will use distinct voices for their characters (Berko-Gleason, 1993), in effect, telling a story. By six years old they have adopted the conventional structure of setting, identities and shifts in time or place (a western culture convention). The use of connectives to indicate relationships are used as well as increasing pragmatic skills (Berko-Gleason, 1993). Narration or story retelling can give insight into the child's comprehension of the original event and their pragmatic skills in relation to the listener perspective (Lund & Duncan, 1988).

There are some weaknesses in the use of narration as a language sampling context. Narrative style will vary greatly with culture (Nelson, 1993). They will often elicit routines, especially if familiar stories are used (Miller, 1981). This context is often cognitively demanding for children and requires high levels of processing. These demands can be decreased if necessary, by using familiar topics and providing cues

while the child is telling the story (Hubbell, 1988). As mentioned earlier, different stimulus materials will elicit many different types and levels of language. A fairly new method of narration that can help to eliminate some of these weaknesses is video narration.

Video narration as a sampling context. Video narration has been suggested as a new approach to language sampling (Dollaghan, Campbell, & Tomlin, 1990). It is a process in which a silent cartoon video is shown to a child two times. In the first showing neither the speech-language pathologist (SLP) or child say anything. The second time the video is shown the child is asked to narrate while watching the video. The language sample is taken during the second narration. This context creates a more standardized way of eliciting language. The vocabulary and events are fixed for each sample and 100% of the utterances in the sample are produced by the child. If desired the video can be manipulated to facilitate the production of certain elements the clinician wishes to evaluate. For example, more characters can be added, changes can be made in props or situations in the video, all of which will have an effect on the type of language elicited in language sampling. There are other advantages to video narration as a sampling context, such as content stability, high interest value for the child, and high processing demands.

There are some problems with video narration as well. The interest factor may be too great for children under five years old, making it hard to get a sample if they are so engrossed in the cartoon that they do not speak. The high processing demands, including the element of time for simultaneous vidwing, processing and narration, are also greater than that of conversation and may produce a picture of functioning lower than in everyday communication. Dollaghan et al., (1990), stated that video narration does not tap pragmatic skills. However, it should be noted that the use of narratives can be used to examine pragmatic skills, because, a child's ability to take into account the listener's perspective and reaction is one aspect, among others, of pragmatic ability (Lund & Duncan, 1988).

Art Sample Narration as a Language Sampling Context

While video narration may provide more structure to the narration task, a more concrete activity may promote the elicitation of language. A greater number and variety of utterances can be elicited when a child is involved in concrete activities such as art projects or play with toys (Lahey, 1988). Thus, conversation during and following the production of a visual representation of a scene from the video may offer a way to elicit language. According to Silver, ". . . drawing and painting pictures about experiences can serve to integrate new information and demonstrate what has been learned" (1989, p. 19). There has been evidence of children representing concepts in drawings that were not displayed in language. In Silver's (1989) experimental art classes written words were often added to a drawing by language disordered children. This may have been due to the fact that language is an ever present problem for these children. It may also lie in the desire humans have to name things, and that it is gratifying to be able to label objects and experiences. The combination of art and language production may provide more clues about a child's language ability than other elicitation tasks in that the use of art gives the child a chance to create a reference for language while internalizing that reference. This form may help a child narrate more effectively by providing a visual cue to what will be expressed verbally.

Many of the advantages of video narration potentially exist in art sample narration. The context is controlled and for most children interest levels will be high. It constitutes the child narrating during and following a drawing activity that is related to the video seen. The narration will be centered around the drawing. Language samples will also be taken following the completion of the drawing in order to obtain more information about the drawing. Art sample narration may be a more concrete and relaxed way of communicating for children, because it is related to something they have personally produced. This form of elicitation, coupled with video narration may provide a rich sample of a child's language skills and performance.

Language Sample Analysis

Language sampling as a means of assessing language development is fairly useless without some form of analysis to describe the sample in detail. There are a great number of tools and methods used to analyze a language sample. Tools are procedures and protocols that have been developed to standardize and organize language sample analysis and often give stages that relate to level of development. Methods are the means to analyze specific aspects of language and are often incorporated into tools for language sample analysis.

The analysis of all aspects of language (pragmatics, phonology, syntax and semantics) is important in creating a holistic view of a child's language. While phonology and pragmatics are important they will not be analyzed in this investigation for two reasons. Phonology is unlikely to be affected by variations in language sampling contexts and thus may not be a critical factor in determining if there is a difference between the video narration and art sample narration contexts. The analysis of pragmatic skills, while it may be affected by the two proposed contexts, will not be included due to the lack of normative data on the development of these skills (Retherford, 1993). Analysis of syntactic and semantic skills will be performed to determine if there is a significant difference in the language structure and content elicited in the contexts of video narration and art sample narration.

Tools and Methods for Analyzing Syntax

There are a variety of tools and methods to analyze syntactic skills and development. The following are examples of tools used: Developmental Sentence Scoring (Lee, 1974), Language Assessment, Remediation, and Screening Procedure (Crystal, D., Fletcher, P., & Garman, M., 1976), Assigning Structural Stage (Miller, 1981) and the Systematic Analysis of Language Transcripts (Klee, 1985). Computing the mean length of utterance (MLU) is an example of a method that is often incorporated into tools used to analyze language samples. Table II provides a summary of features of the four tools commonly used in language sample analysis.

Developmental Sentence Scoring (Lee, 1974), is a standardized procedure for analysis of syntax. Specifically, it examines subject-verb relations. It is currently the only norm referenced tool for language sample analysis (Miller, 1981). The DSS is useful in establishing a baseline measure of syntactic ability and can be used as a reference point in treatment (Klee, 1985). It analyzes indefinite pronouns, noun modifiers, personal pronouns, main verbs, secondary verbs, negatives, conjunctions, interrogative reversals and wh- questions (Lee). A developmental description is available at both the constituent and overall level (Miller). The DSS is appropriate to use with children age three to seven years of age.

The Language Assessment, Remediation and Screening Procedure (LARSP) (Crystal, Fletcher, & Garman, 1976) is a tool used for the analysis of syntax. It is criterion referenced and is based on the structure of an adult reference grammar (Klee, 1985). Developmental scores are given for the constituent level only (Miller, 1981). The LARSP analyzes coordination, subordination, clause and phrase structure as well as word structure, and the fourteen grammatical morphemes. It is appropriate for children ages 9 months to four and a half years old (Klee, 1985).

Assigning Structural Stage (ASS) is a criterion referenced tool that is appropriate for children 18 months to seven years of age (Miller, 1981). The ASS analyzes the development of the fourteen grammatical morphemes, noun phrase and verb phrase elaboration, questions and negation. Stages of development are given at the constituent and overall level (Miller).

The Systematic Analysis of Language Transcripts (SALT) is an automated tool used for syntactical analysis. It computes the type-token ratio, the number of utterances per speaking turn, and the number of complete and intelligible utterances. It also lists word roots and bound morphemes (Klee, 1985). The SALT does not give a developmental stage or score for analyzed constituents or for overall development.

Table II. Description of tools used for grammatical analysis.

	DSS	LARSP	ASS	SALT
Syntax	Yes	Yes	Yes	Yes
Semantics	No	Can be adapted	Can be adapted	Can be adapted
Sample Size	50 complete utterances	100-200 utterances	50 utterances-in two contexts	100 utterances
Age	3-7 years	9 months- 4 1/2 years	18 months to 7 years	not set
Prescribed Analysis Procedure	Yes	Yes	Yes	Yes
Summary Worksheet	Yes	Yes	No	Yes
Ease	With experience	No	Yes	Yes
Criterion Referenced	Yes	Yes	Yes	No
Norm Referenced	Yes	No	No	No
Automated	No	No	No	Yes
Developmental Description/ Stage	Yes Constituent and Overall level	Yes Constituent level only	Yes Constituent and Overall level	No
Level of Analysis	Phrase	Sentence, clause, phrase, word	Phrase, word	Phrase, word
Structures Analyzed & Methods Included	MLU, indefinite pronouns, noun modifiers, negation, personal pronouns, main and secondary verbs, conjunctions, interrogative reversals and wh-questions	MLU, grammatical morphemes, coordination, subordination, constructional types, clause and phrase structure	MLU, TTR, grammatical morphemes, noun and verb phrase elaboration, questions, negation	gives the following: MLU, TTR, word roots, number of utterances/ turn, number of complete and intelligible utterances, bound morphemes, list of form words
Reference	Lee, L. (1974)	Klee, T. (1985)	Miller, J. (1981)	Klee, T. (1985)

Retherford (1993), described methods that can be used in grammatical analysis which are often included as features of the tools discussed above. These methods are mean length of utterance, analyzing variations in utterance length, analyzing use of grammatical morphemes, complexity of negation,

complexity of noun and verb phrases, and sentence complexity. All of these can be given stage assignments when using the ASS, as well as many of the other tools described. These methods can also be examined by describing the features of each that are found in the language sample.

Mean length of utterance (MLU) in morphemes (Brown, 1973) is a means of analyzing development in language structure by looking at utterance length and its changes with age. The mean length of utterance in morphemes is computed by counting the number of morphemes in a set of 100 utterances and dividing that number by 100. Brown (1973) provides rules for calculating MLU. According to Haynes, Pindzola and Emerick, (1992), there are two reasons that MLU is an important part of language sample analysis. First, a correlation is seen between MLU and chronological age (up to age four). This correlation can be used to indicate language development in children up to age four. Second, Brown has described five stages of language development that correspond to MLU. These stages enable a clinician to further examine a child's language in comparison to these stages as well as compare children with the same MLU and the language skills they display. MLU is used as a measure of syntactic skill based on the idea that as a child's utterances increase in length greater complexity in syntactic structures will be seen (Brown).

A means of analyzing variations (or range) in utterance length (in morphemes) is to tally the utterance lengths in the sample (Retherford, 1993). This method provides a range of utterance length, displaying the upper and lower lengths as well as the median length found in the language sample. The tally can be compared with MLU to determine if there is appropriate variation in utterance length around the mean. There should be a fairly proportionate number of larger and smaller utterance lengths around the mean. Upper bound length can be compared to MLU, it should be considerably larger than the MLU. For example, a child with a MLU of 2.25 should have an upper bound length of 7 (Retherford, 1993). It should be noted that language sampling contexts such as narration may lead to large MLU's with little variation (Retherford).

The fourteen grammatical morphemes are analyzed by determining mastery of each, which is based on correct use of each morpheme 90% of the time (Retherford, 1993). These morphemes were first identified by Brown (1973), and are examined because they appear frequently in the English language and are easily identified in obligatory contexts (Berko-Gleason, 1993). Obligatory contexts and the instances of correct use are examined. The mastery of this constituent can be applied to Brown's stages of linguistic development to obtain a stage assignment.

The complexity of negation is determined by identifying the elements of negation in a language sample, and comparing them to developmental norms for negation skills (Retherford, 1993). Stage assignment is based on emergence of a skill. Examples of negation are "no", as a response to a yes/no question and "Billy not go". The most frequently occurring and most advanced stages are determined and interpreted in relation to stage levels for other structures.

The complexity of noun and verb phrases can be indicators of the current stage of linguistic development. The stage assignment for noun phrase complexity reflects the type and amount of elaboration of the noun phrase and the noun phrase position within the utterance. The complexity of the verb phrase is somewhat dependent on the use and mastery of the grammatical morphemes. The range of complexity in noun and verb phrases is examined. Based on verb phrase complexity, complex sentences are often examined.

When analyzing language samples the speech-language pathologist (SLP) must decide what type of analysis method or tool to use. All of those discussed are useful for analyzing language samples. The choice between them is dependent on the information being sought, the ease of use, the time needed for analysis, and the age of the child. While the DSS, LARSP, ASS, and SALT can be very useful in analyzing language transcripts, and providing organized and structured procedures for carrying out analysis, they also have some disadvantages. The ability to use any of these measures with children over seven years old is limited. They often take extensive practice and time to master and may require computer assistance. Comparison between children is limited to the structures analyzed in the tool, and also to

comparison of stage assignment for each structure analyzed. All of the methods described by Retherford (1993), are found in some form in the tools described. The use of the methods separately without the organization and structure of the tools described may allow for a greater degree of freedom in the analysis and description of language samples.

Methods for Analyzing Semantics

The variety of methods used to analyze semantic development in language samples is not as large as that in syntactic analysis. There have been several methods proposed but none have been adapted for clinical use as tools for semantic analysis (Miller, 1981). Therefore only methods for analyzing semantic development are described.

Analyzing vocabulary diversity is an important part of analyzing the semantic skills of a child. When examining the diversity of a child's vocabulary it is referential semantics that are explored (Retherford, 1993). Computing the Type-Token Ratio (TTR) is a method used to analyze vocabulary diversity. The type is the number of different words used and the token is the total number of words used. The ratio is found by dividing the type by the token. The TTR can be compared to Templin's (1957) data regarding age and expected TTR ratios. In addition to comparing the ratio the total number of words and total number of different words should also be examined (Retherford, 1993). Templin, also has data for comparison of them separately. These methods can be valuable in analyzing a child's semantic abilities, but they do not present the whole picture of semantic skill.

Retherford (1993), provides a method of analyzing both referential semantics (individual word meaning) and relational semantics (meaning in relationship between words). Referential semantic skills are analyzed by coding the semantic roles and grammatical categories found in the language sample (e.g. agent, object, nominal). The frequency of each is tallied. From this the SLP can determine the percent of each role used by the child and the percent of total utterances that were codeable. Semantic relation skills are analyzed by identifying the occurrence of Brown's eight prevalent semantic relations (e.g. agent-action) and expansions of these. It should be noted that determination of relational skill above Brown's Stage III

(1973) (age 27-42 months, MLU 2.5-3.0 , sentence form develops) cannot be done due to a lack of developmental data (Retherford, 1993).

Summary

A great variety of language sampling contexts and analysis procedures exist which often meet the needs of the speech-language pathologist. Narration is often a familiar context for children, as opposed to process questions or conversations with strangers. Narration also has greater structure than free play contexts. While language sampling provides a more complete picture of a child's language skills, the child as a whole is often not addressed. The use of children's strengths, linguistic or other, may facilitate more complete language samples. It seems logical that while in the process of evaluating a child's language, all the strengths the child may possess should be utilized to obtain a picture of the child's highest level of linguistic functioning. The use of drawing, a common activity for preschool children especially, in the narration context may be a means of utilizing a child's strengths. The purpose of this study was to examine if there was a significant difference in specific language features (i.e. MLU, TTR, semantic roles, negation, sentence complexity, sentence type, noun and verb phrase elaboration and range in utterance length) elicited in the art narration language sampling context and the same language features elicited in the video narration sampling context. The language of children with no known language difficulties will be explored as the foundation for future studies involving children with language disorders.

CHAPTER 3

Methods

The purpose of this study was to determine if the use of an art narration language sampling context would elicit language features different from language features elicited in a video narration language sampling context. Further, the effect of the order of stimulus presentation/context on language elicited from subjects was examined.

The methods chapter contains seven major sections. The first two include subject selection and the setting. The third describes the experimental design and the rationale for this design. The fourth section is a detailed description of the dependent and independent variables. Section five describes data collection and recording procedures. Reliability procedures are described in the sixth section, followed by data analysis procedures in the final section.

Subjects

The subjects included 12 normally developing children ages 4:6 to 6:0, enrolled in the University of Nebraska at Omaha (UNO) Child Care Center, or in a private preschool, in Omaha, Nebraska. With the cooperation of staff from the Child Care Center and private preschool, parental permission was obtained for children to participate in screenings to identify candidates for the study. Subject candidates were screened for sensory, cognitive and communicative abilities to determine eligibility for inclusion. Hearing was screened according to ANSI 1969 standards at 20 dB HL at 500, 1000, 2000, and 4000 Hz. Information regarding vision, cognition, and motor skills were obtained through parental reporting. Language and articulation were screened with the Preschool Language Scale-3 (Zimmerman, Steiner, & Pond, 1992) and The Patterned Elicitation Syntax Screening Test (Young & Perachio, 1981). Any children that did not perform at age appropriate levels on the screenings were excluded from consideration. A sample of six males and six females, matched by chronological age, and naive to the purpose of the study, served as subjects in this study. Subject pairs were randomly placed into one of two experimental groups; Group A or Group B.

Setting

Testing at the UNO Child Care Center took place in the staff break room. The room was approximately 9 x 15 feet with carpeting. The room contained two twelve inch chairs, a small table, book shelves, a couch and fluorescent ceiling lighting. Testing in the private preschool took place in a classroom. The room was approximately 30 x 25 feet with carpeting. The room contained four twelve inch chairs, two small tables, small toys, book shelves and fluorescent ceiling lighting. A General Electric 13" color television set model 8-1910 and General Electric VCR, model VG 2011, were used for playing the video taped stimulus. The TV was set at the child's eye level and 4 feet away from the child. Supplies for drawing included one piece of paper (17" X 12") per child, six wide and six narrow tipped Crayola markers, colors: red, blue, green, yellow, brown, and black.

Experimental Design

Rationale

A quasi-experimental design was utilized to assess the effects of the language sampling contexts. Specifically, a counterbalanced design was used (Borg & Gall, 1979). A counterbalanced design involves the administration of all experimental conditions to all subjects. Borg & Gall report that the counterbalanced design has a major advantage in that each subject will be exposed to all experimental conditions. They also cite a disadvantage; this design can be used only when exposure to each treatment will not have an effect on results of subsequent treatments in the study.

The counterbalanced design was selected to determine if there is a difference in the language elicited in the art narration context compared to the video narration context. In addition, it was selected to determine if differences resulted from variation in the order of presentation of narration contexts. While exposure to one experimental condition may have an effect on the results of the subsequent condition, such information can be useful clinically, in determining if a combination of video and art narration may be effective in eliciting language samples. For example, if the language features examined occur more frequently when art narration if followed by video narration it would be useful to use this same model

when sampling a child's language. This design allowed for examination of the effects of the order of presentation as well as exposure to all conditions for each subject.

Dependent and Independent Variables

There are eleven dependent variables. Each are described in this section.

Dependent variable 1: Mean Length of Utterance in Morphemes. This is defined as the number of morphemes in a set of 100 utterances divided by 100 (Brown, 1973). Calculation of MLU will be based on Brown's rules.

Dependent variable 2: Variation in utterance length in morphemes. This is the range of utterance lengths in the language sample, displaying the upper, and lower length for each subject. This is compared to the subject's MLU to determine the variance around the MLU. This measure is calculated using Brown's (1973) and Retherford's (1993) procedures.

Dependent variable 3: The fourteen developmental grammatical morphemes. These are analyzed because they have been identified as the major grammatical morphemes appearing frequently in the English language, and are readily identified in obligatory contexts. The morphemes identified by Brown (1973) are as follows: present progressive, the prepositions in and on, plural, irregular past tense, possessive, copula (uncontractible), articles, regular past tense, third person present tense (regular), third person present tense (irregular), auxiliary (uncontractible), copula (contractible), and auxiliary (contractible) (Berko-Gleason, 1993). These are listed in the order of approximate developmental emergence. Use of these will be determined using the procedures outlined by Shipley & McAfee (1992), and Retherford (1993).

Dependent variable 4: Negation. This is defined as the use of negative elements in a child's language sample (Retherford, 1993). "No" used as a negative utterance and "No + verb element", such as "no go", are examples of negation. The types of negation used will be determined using Retherford's procedures.

Dependent variable 5: Noun phrase elaboration. This is defined as the determination of type of noun phrase elaboration in each utterance as well as the placement of the noun phrase within the utterance (Retherford, 1993; Shipley & McAfee, 1992). An example of noun phrase elaboration is "pretty doll"; where "doll" is the noun and "pretty" is the modifier of the noun.

Dependent variable 6: Verb phrase elaboration. This is defined as the complexity of the verb phrase, which is dependent on the mastery of grammatical morphemes (Retherford, 1993). "Can jump" is an example of verb phrase elaboration in which "can" is the auxiliary verb and "jump" the main verb in the utterance is elaborated upon.

Dependent variable 7: Type-token ratio. This is defined as the number of different words used in a 100 utterance sample divided by the total number of words in the 100 utterance sample (Retherford, 1993; Shipley & McAfee, 1992).

Dependent variable 8: Semantic roles. The semantic role deals with the meaning of individual words and is measured by looking at the frequency of occurrence of individual semantic roles in each language sampling context (Retherford, 1993). An example of a semantic role is the agent. An agent is the performer of an action in an utterance, (e.g. "the girl hit the ball", the agent is "the girl").

Dependent variable 9: Semantic relations. The semantic relation deals with the meaning relationship between words and is measured by examining the frequency of occurrence of different semantic relations, in each language sampling context (Retherford, 1993). An example of a semantic relation is agent + action (e.g. "she hit"; in which "she" is the agent and "hit" is the action).

Dependent variable 10: Clause Structures. Clause structures are the parts of the utterance that always contain a noun and a verb. There are seven different types of clauses (Shipley & McAfee, 1992). They are: independent, dependent, complex verb phrase, adverbial, subject, relative, and compound. Clauses add complexity to the sentence. These are measured by examining the frequency of occurance of the different clause types within each utterance (Shipley & McAfee).

Dependent variable 11: Sentence Type. Each sentence can be classified as a declarative (statement), imperative (command), interrogative (question), and negative. The sentence type is measured by examining the frequency of occurance of each sentence type within a language sample.

Independent Variables

The independent variables are: the video narration language sampling context and the art narration language sampling context. The video narration context (Condition X) was chosen because of its structure in the language sampling process. The art narration context (Condition Y) was chosen based on the idea that the use of a concrete activity, such as drawing, would create a concrete reference on which to elaborate during language sampling.

Condition sequence. Each subject was exposed to two conditions. The first, Condition X, is video narration language sampling. The second, Condition Y, is art narration language sampling. The sequence for Group A was Condition X followed by Condition Y. The sequence for Group B was Condition Y followed by Condition X. The number of days for each condition was one, with a period of at least seven days between each condition. This was done to control for rehearsal effects and subject fatigue. It also created a context in which the examiner is regarded as a naive listener.

Data Collection

Collection Instruments

The instruments used to collect data for this study included the following: a Sony cassette recorder (model RC-Q50) to tape the video and art sample narrations; on-line transcription during sampling; procedures for collection described by Retherford (1993) for language sample analysis; and audio tapes that were used to confirm on-line transcription for reliability measures. These procedures describe how to calculate the MLU, variations in utterance length, and TTR as well as determining the occurrence of the grammatical morphemes, noun and verb phrase elaboration, sentence complexity, sentence types, negation, semantic roles and semantic relations. The examiner recorded a language sample

for each child's video narration and art sample narration using on-line transcription and audio tape. Each context (with at least 100 utterances) was transcribed for later analysis.

Data Collection Procedures

Research Question 1: Dependent Variables 1-11

Group A. Masterson and Kamhi, (1991), Liles, (1985), and others have reported that children produce more complete narrations when the listener is naive to the story being told. Therefore, during all viewings of the video, the examiner was seated to the side and slightly behind the television set to create the illusion that the examiner was naive to the events and characters in the cartoon.

The silent cartoon, a 1940's black and white cartoon in which a fish is being chased by a crab and a shark, was shown to the subject two times. The first time, the subject was asked to just watch. The cartoon was stopped at a predetermined point, before the ending, to give the subject a chance to bring an individual perspective to the narration by creating an end for the story. At this point the subjects did not narrate. The cartoon was shown to the subject a second time, and stopped at the same point. Following the second viewing the subject was asked to describe to the examiner what happened in the portion of the cartoon viewed, and then to describe what the subject thought would happen in the end. The specific instructions to each subject was read by the examiner (see Appendix A for instructions). Language sample recording took place during this narration. This language sample constituted the first sample collected; a second language sample was collected during the second condition (Condition Y).

During the second Condition (Y), the subject watched the cartoon a third time, also stopped at the same point as before. The subject was asked to draw what he/she thought would happen at the end of the video (see Appendix A for instructions). While the subject was drawing, language sample recording began if the child voluntarily narrated. When the child was done drawing, the examiner asked the child to describe what happened in the video and what the subject thought would happen in the end (see Appendix A for instructions). A language sample was recorded during all narration, constituting the second language sample taken for Group A.

Group B. The subjects in Group B were asked to watch the video once to familiarize them with the content, as did Group A. The video was stopped at the same point as for Group A. Following the second viewing of the cartoon the subject was asked to draw what he/she thought happened at the end of the cartoon (See Appendix A for instructions). While the subject was drawing, language sample recording took place if the subject voluntarily narrated. Following the completion of the drawing the child was asked to tell the examiner what happened in the cartoon and what the subject thought would happen at the end (See Appendix A for instructions). The first language sample for Group B was taken during this condition (Condition Y), the second language sample was taken during Condition X.

During the second Condition (X), the subject was asked to watch the cartoon a third time. Following the third viewing the subject was asked to tell the examiner what happened in the cartoon and what he/she thought would happen in the end (See Appendix A for instructions). A language sample was recorded for all narration the subject produced, constituting the second language sample taken for Group B.

Groups A & B Following completion of the experimental sequence (Conditions X and Y) the subjects were allowed to view the cartoon in its entirety to see how the author of the cartoon thought it would end.

Data Recording

All subject's narrations were audio taped. During narration the examiner also transcribed on-line (Retherford, 1993), with non-verbal contexts and activities noted. The tapes were transcribed by the examiner and an independent transcriber, in standard English orthography, supplemented by phonetic transcription. The first 100 utterances from each sample were analyzed. This size is recommended by Retherford (1993) and others as a representative sampling size of a child's language. All unintelligible utterances were excluded from the analysis (Brown, 1973). Each language sample was analyzed to determine the MLU, TTR, and variance in utterance length. The mean for each of these was determined for the art and video narration contexts, and for Group A and B in each narration context. The occurrence

of each of the following was also derived: a) the fourteen developmental grammatical morphemes; b) negation types; c) noun phrase elaboration types; d) verb phrase elaboration types; e) clause structure; f) sentence type; g)semantic roles; and h) semantic relations. The occurrence of variables a-f was listed for each subject for both the art and video narration contexts.

Reliability Procedures

Training Transcribers

Two graduate students in speech-language pathology and the examiner served as transcribers in this study. The graduate students trained to use Retherford's (1993) procedures for language transcription and analysis, served as independent transcribers.

Calculation of Transcription Reliability Coefficients

In order to obtain transcription reliability the independent transcriber transcribed and analyzed a random selection of 20 utterances from each 100 utterance sample. The transcription and analysis were compared to that done by the examiner to establish agreement reliability. The reliability criterion of .80 for agreement on utterance transcription was used. The point-to-point reliability was calculated using the following formula (ref):

$$\frac{\text{total number of agreements on occurrence}}{\text{total number of agreements and disagreements on occurrence}} \times 100 = \%\ \text{occurrence}$$

For any sample in which the criterion was not reached the sample in question was transcribed completely (all 100 utterances) by the independent transcriber. Following transcription, the examiner and independent transcriber jointly reviewed the audio tape to reach consensus for transcription on all utterances on which disagreement occurred initially.

Data Analysis

Composite scores for each Group on the two screening measures were compared to rule out significant between group differences. In this way, variance in performance between Group A and B under the experimental conditions could not be attributed to apriori group differences. Post hoc comparison of

individual scores with composite scores for the respective groups were examined to determine systematic variance in subjects (analyses 7-11 below).

A two tailed t-test was used to determine if there were significant differences in MLU, TTR, and range in utterance length between art narration and video narration. A .05 level of significance was set for this study. Composite data for each of the two cohort groups was compared to determine if differences in the quality of the language samples occurred when the context was varied. Composite means for MLU, TTR, and utterance range were compared in the following ways:

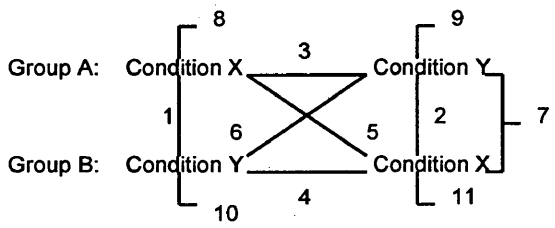

Figure 1 Visual presentation of comparisons made for MLU, TTR, and range in utterance length.

The following are comparisons that were made to examine for differences between condition sequence, condition type, and individual scores.

1. Between Group comparison: Condition X to Y to examine for effects of condition sequence.
2. Between Group comparison: Condition Y to X to examine for effects of condition sequence.
3. Within Group comparison: Condition X to Y, Group A, to examine for effects of condition type.
4. Within Group comparison: Condition Y to X, Group B, to examine for effects of condition type.
5. Between Group comparison: Condition X to X, to examine for effects of condition sequence.
6. Between Group comparison: Condition Y to Y, to examine for effects of condition sequence.
7. Compare the grand mean for each of the three measures for Group A to grand mean for each of the three measures for Group B, to examine for effects of condition type.
8. Compare the grand mean for Group A, Condition X to each individual's mean in Condition X, to examine for outliers in Group A.

9. Compare the grand mean for Group A, Condition Y to each individual's mean in Condition Y, to examine for outliers in Group A.
10. Compare the grand mean for Group B, Condition X to each individual's mean in Condition X, to examine for outliers in Group B.
11. Compare the grand mean for Group B, Condition Y to each individual's mean in Condition Y, to examine for outliers in Group B.

The fourteen grammatical morphemes, noun phrase elaboration, verb phrase elaboration, negation, semantic roles, semantic relations, sentence complexity, and sentence types were descriptively analyzed and graphically displayed. Within and between group comparisons examined for differences in the use of the eight remaining variables to determine if there was a difference in language elicited under the art and video narration contexts.

CHAPTER 4

Results

The results are presented in two sections: The first section contains the statistical and descriptive analyses of the Mean Length of Utterance (MLU), Type-Token Ratio (TTR), and Range in Utterance Length (RUL). The second contains descriptive analysis of the fourteen grammatical morphemes, negation, noun phrase elaboration, verb phrase elaboration, semantic roles, sentence types, and sentence complexity.

Statistical Analysis

Eleven comparisons were made for the MLU, TTR and range in utterance length measures. A two tailed t-test was performed on comparisons 3, 4, & 7, (Figure 2) to determine if there was a difference in subjects' MLU, TTR, and RUL between the art narration condition and the video narration condition. A two tailed t-test was performed on comparisons 1, 2, 5, & 6, (Figure 2) to determine if there was a difference in the subjects' MLU, TTR, and RUL between condition sequences. Comparisons 8-11 examined for differences in the subjects' MLU, TTR, and RUL, comparing individual subjects to the groups in each condition. These comparisons were made in order to determine if the scores of any of the subjects would be considered outliers from the group, thus skewing the mean of the group. Any subjects determined to be outliers in the group would have been rejected for that measure. The following provides a visual key to the comparisons followed by a description of each comparison.

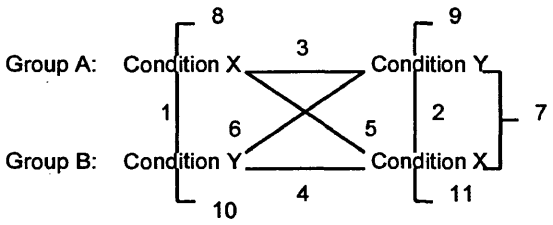

Figure 2. Visual presentation of comparisons made for MLU, TTR, and range in utterance length.

The following are comparisons that were made to examine for differences between condition sequence, condition and individual scores.

1. Between Group comparison: Condition X, Group A to Condition Y, Group B; to examine for effects of condition sequence.
2. Between Group comparison: Condition Y, Group A to Condition X, Group B; to examine for effects of condition sequence.
3. Within Group comparison: Condition X to Y, Group A; to examine for effects of condition type.
4. Within Group comparison: Condition Y to X, Group B; to examine for effects of condition type.
5. Between Group comparison: Condition X to X, to examine for effects of condition sequence.
6. Between Group comparison: Condition Y to Y, to examine for effects of condition sequence.
7. Comparison of the grand mean for each of the three measures for Group A to the grand mean for each of the three measures for Group B, to examine for effects of condition type.
8. Comparison of the grand mean for Group A, Condition X to each individual's composite mean score in Condition X; to examine for outliers in Group A.
9. Comparison of the grand mean for Group A, Condition Y to each individual's composite mean score in Condition Y; to examine for outliers in Group A.
10. Comparison of the grand mean for Group B, Condition X to each individual's composite mean score in Condition X; to examine for outliers in Group B.
11. Comparison of the grand mean for Group B, Condition Y to each individual's composite mean score in Condition Y; to examine for outliers in group B.

Two-tailed t-tests were performed to examine for differences between each condition and for the effects of condition sequence. An alpha level of .05 was set for analyses 1-7. Analyses 8-11 did not warrant use of the t-test as there were no differences between the mean scores for Condition X and Condition Y that exceeded the SD range for MLU, TTR, or RUL.

Table III displays the MLU for each child in each condition. The MLU and standard deviation for each Group under each condition was computed as well as the grand mean for Condition X (Group A and B) and Condition Y (Group A and B). To determine if there were outliers in the MLU measures the grand mean for each group within each condition (i.e. Group A, Condition X) was compared to the subject's individual composite MLU score. Based on Miller & Chapman's (1979) research, the standard deviation of MLU scores derived from language samples have a standard deviation of approximately +/- 1 for children in this age group. The exact SD range reported by Miller (1981) was added to the composite MLU score of any subject who fell outside the group's standard deviation boundaries. If the subject's score still did not fall within the boundaries of the predicted MLU range for their chronological age, they were considered an outlier for that measure and rejected.

Table III

MLU scores for each subject and mean MLU scores for each group, in Condition X and Condition Y.

MLU Group A

Condition X			Condition Y	
Subject #	MLU	Subject CA	Subject #	MLU
1	4.8	4-11(years-months)	1	5.37
2	4.9	5-10	2	5.4
3	3.55	5-0	3	5.17
4	4.21	4-7	4	4.2
5	4.53	4-8	5	5.5
6	6.6	6-0	6	4.59
M	**4.77**			**5.04**
SD	**0.93**			**0.48**

Group A	
M	4.90
SD	0.14

MLU Group B

Condition X			Condition Y	
Subject #	MLU	Subject CA	Subject #	MLU
7	5.08	4-9	7	5.28
8	5.6	5-3	8	5.47
9	4.45	5-5	9	5.09
10	3.99	5-3	10	5.78
11	4.88	4-9	11	4.56
12	4.63	5-3	12	4.56
M	**4.77**			**5.12**
SD	**0.50**			**0.44**

Group B	
M	4.95
SD	0.18

Condition X Grand Mean		Condition Y Grand Mean	
M	4.77	M	5.08
SD	0.75	SD	0.47

Table III displays the MLU for each subject under each condition as well as the MLU for each Group within each condition. The composite MLU (Conditions X + Y) for Group A was 4.90 (SD = .14). The composite MLU for Group B (Conditions X +Y) was 4.95 (SD = .18). The composite MLU for subjects 1-12 within Condition X was 4.77 (SD = .75). The composite MLU for subjects 1-12 within Condition Y was 5.08 (SD = .47).

The MLU of each child in Group A, Conditions X and Y, is listed in Table III. The MLU range for Group A, Condition X, was 3.55 to 6.6. The composite MLU for subjects 1-6, Condition X, was 4.765,

(SD = .93). Comparison of the grand mean for Group A in Condition X to each subject's MLU (analysis #8) revealed that subjects #3 and #6 fell outside the standard deviation for the group mean. However, the predicted MLU +/- 1 standard deviation for a MLU of 3.55 (Subject #3) would include a range of 2.79-4.31 (Miller, 1981). For a MLU of 6.6 (Subject #6), the reported SD range for a MLU of 5.63 was used as this is the uppper bounds of available norms (Miller). Using this, the MLU range for subject #6, +/-1 SD would be 5.41-7.79. If this is taken into account, the MLU scores for subjects #3 and #6 fall within the standard deviation range for the group. Therefore, the MLU scores of subjects #3 and #6 within Condition X did not differ sufficiently to warrant rejection from the t-test analysis. Caution should be exercised in extrapolating conclusions based on subject #6 in Condition X as the MLU exceeded Brown's predicted MLU for this age group.

The composite MLU of subjects 1-6, during Condition Y, was 5.04 (SD = .47) (Table III). The range of individual MLU scores for Group A, during Condition Y, was 4.2 to 5.5. Comparison of the grand mean for Group A during Condition Y, to each subject's MLU (analysis #9), revealed that subjects #4 and #6 fell below the standard deviation for the Group mean. However, using Miller & Chapman's (1979) research and Miller's (1981) procedures, the range of MLU scores +/-1 SD were computed, as reported for subjects #3 and #6 above. If this is taken into account when comparing the MLU scores for subjects #4 and #6, each subject falls within the standard deviation range for Group A in Condition Y. Therefore, the MLU scores of subjects #4 and #6 within Condition Y did not differ sufficiently to warrant rejection from the t-test analysis.

Table III includes the MLU scores for each subject in Group B under conditions X and Y. The range of individual MLU scores for subjects 7-12 in Condition X was 3.99 to 5.6. The composite MLU for Group B in Condition X was 4.77 (SD = 50). Comparison of the grand mean for Group B under Condition X, to each subject's MLU (analysis #10) revealed that subjects #8 and #10, Condition X, attained an MLU that fell outside of the standard deviation boundaries for that condition. Using the predicted SD reported by Miller (1981), as detailed for subjects #3, #4, and #6, it was determined that the MLU scores of subjects

#8 and #10 fell within the standard deviation range of Group B during Condition X. Therefore, the MLU scores of subjects #8 and #10 during Condition X, did not differ sufficiently to warrant rejection from the t-test analysis.

Table III displays the composite MLU scores for subjects 7-12 during Condition Y. The mean MLU for Group B in Condition Y, was 5.12 (SD = .45). The range of individual MLU scores for Group B in Condition Y was 4.56 to 5.78. Comparison of the grand mean for Group B, Condition Y, to each subject's MLU (analysis #11) revealed that the MLU of subjects #11 and #12 fell below the standard deviation for the group mean. Using the predicted SD reported by Miller (1981), as detailed for subjects #3, #4, #6, #8 and #10, it was determined that the MLU scores of subjects #11 and #12 fall within the standard deviation boundary if the +/- 1 standard deviation range of Group B during Condition Y. Therefore, the MLU scores of subjects #8 and #10 during Condition Y, did not differ sufficiently to warrant rejection from the t-test analysis.

The t-test analysis results for the MLU measure for comparisons 1-7 are displayed in Table IV. The difference (D), paired t-value (t), and the probability (p) that there was statistically significant difference between conditions and condition sequences, are listed in the table.

Table IV
Results of t-test analyses on MLU scores

Comparison	D	t	p (2 tailed)
1	-.007	-.016	.9881
2	-.085	-.254	.8095
3	-.273	-.538	.6134
4	-.352	-1.105	.3193
5	.007	.016	.9881
6	-.085	-.254	.8095
7	-.046	-.162	.8745

*$p < .05$

The t-test analysis was applied for each of comparisons 1-7 (Table IV). Comparisons 1 and 2 examined for the effects of condition sequence between groups. No significant differences in composite MLU scores were found. Comparisons 3 and 4 examined for the effects of the two conditions, within the groups. No significant differences in composite MLU scores were found. Comparisons 5 and 6 examined

for the effects of condition sequence between the groups. No significant differences in composite MLU scores were found. Comparison 7 examined for the effects of group differences. No significant differences in composite MLU scores were found. It can be seen that no significant differences existed for subjects' MLU scores between conditions. Further, there was no evidence of sequencing effects when comparing subjects' MLU scores within and between groups.

Table V displays the type-token ratios for each subject under Condition X and Condition Y. The type (total number of different words) and the token (total number of words) are listed, along with the mean and standard deviation for each condition and group.

Table V

Type-Token Ratio's (TTR) for Group A and Group B in Condition X and Y, Mean TTR in Condition X and Condition Y

Group A TTR

	Condition X			Condition Y		
Subject #	TTR	# different	total #	TTR	# different	total #
1	0.51	107	209	0.47	99	209
2	0.44	99	225	0.44	103	233
3	0.48	43	88	0.43	87	198
4	0.49	85	171	0.63	74	117
5	0.54	107	196	0.45	83	184
6	0.41	130	316	0.44	93	211
M	**0.48**	**95.17**	**200.83**	**0.48**	**89.83**	**192.00**
SD	**0.04**	**26.87**	**67.77**	**0.07**	**9.77**	**36.64**

Group A	
M	0.483
SD	0.001

Group B TTR

	Condition X			Condition Y		
Subject #	TTR	# different	total #	TTR	# different	total #
7	.38	98	253	.40	93	227
8	.35	90	256	.43	113	260
9	.53	72	128	.64	67	104
10	.52	86	165	.70	93	131
11	.52	103	198	.40	84	209
12	.48	103	213	.41	107	259
M	**.47**	**92**	**202.17**	**.50**	**92.83**	**198.33**
SD	**.08**	**10.94**	**45.64**	**.12**	**15.02**	**60.35**

Group B	
M	.48
SD	.01

Condition X		**Condition Y**	
M	.47	M	.49
SD	.06	SD	.10

Table V displays the TTR for each subject under each condition as well as a mean TTR for each group in each condition. The mean for Group A, Conditions X and Y, was .473 (SD = .004). The mean for Group B, Conditions X and Y, was .483 (SD = .014). The mean for subjects 1-12, Condition X, was .468 (SD = .07). The mean for subjects 1-12, Condition Y, was .486, (SD = .10).

As displayed in Table V, the TTR range for Group A, Condition X was .44 to .54. The mean TTR for Group A, Condition X, was .48 (SD = .04). Comparison of the grand mean for Group A, Condition X, to each subject's TTR (comparison #8) reveals that subjects #5 and #6 had TTR scores that fell outside of the standard deviation boundaries for the mean TTR scores for Group A, Condition X.

The data in Table V reflect the mean TTR for subjects in Group A, Condition Y, was .48 (SD = .07). The range of individual TTR scores for Group A, Condition Y, was .43 to .63. Comparison of the grand mean for Group A, Condition Y, to each individual subject's TTR (comparison #9) reveals that the TTR for subject # 4 falls above the upper standard deviation boundary for the Group TTR mean.

The range of TTR scores for individual subjects in Group B, Condition X, was .38 to .56 (Table V). The mean TTR for Group B, Condition X, was .47 (SD = .08). Comparison of the grand mean for Group B, Condition X, to each subject's TTR (comparison #10) reveals that TTR scores for subject # 7 and subject # 9 fell outside the standard deviation range for boundaries of the mean TTR.

The TTR range for Group B, Condition Y, was .43 to .63 (Table V). The mean TTR for Group B, Condition Y, was .50 (SD = .07). Comparison of the grand mean for Group A, Condition Y, to each subject's TTR (comparison #11) reveals that the TTR scores for subjects #9 and #10 fell above the upper standard deviation boundary for the group mean. Although the TTR scores for the subjects #4, #5, #6, #7, #9 and #10 fell outside the standard deviation range, using Templin's (1995) data, the individual scores for total number of words and total number of different words for each of these subjects fell within the predicted normative range. No predicted range for TTR is reported in the literature. However, because TTR is based on the number of different words divided by the total number of words, comparing the individual subjects performance on these two indices to the normative data provides an indication of the allowable variance around the mean. All six of these subjects fell within the bounds of the SD variance reported by Templin. Therefore, they were not rejected from the t-test analyses.

The t-test analysis results for comparisons 1-7 for the group mean TTR scores are displayed in Table VI. An alpha level of .05 was set for analyses 1-7. The difference (D), paired t-value (t), and the probability (p) that statistically significant differences existed are included.

Table VI
Results of t-test analyses of TTR scores between groups and conditions

Comparison	D	t	p (2 tailed)
1	-.028	-.493	.6429
2	.008	.202	.8482
3	-.028	-.493	.6429
4	.028	.633	.5545
5	9.035	2.838	1.0
6	-.02	-.467	.6601
7	-.01	-.39	.7037

*$p < .05$

Table VI provides a summary of the comparison results made of the mean TTR scores of Groups A and B, Condition X and Condition Y. Comparisons 1 and 2 demonstrate that there was not a statistically significant difference in the mean TTR when examined for effects of condition sequence between the groups. No statistically significant difference in mean TTR scores was found when examining for differences in TTR within each group, between Conditions X and Y (comparisons 3 and 4). Between group differences of mean TTR for the same condition (comparisons 5 and 6) were not statistically significant. No statistically significant difference between the group means for TTR, Group A, or the group means for TTR, Group B, in both conditions (comparison 7) was found. It can be seen that no significant differences existed for subjects' TTR scores between conditions. Further, there was no evidence of sequencing effects when comparing TTR scores between and within groups.

Table VII displays the upper and lower utterance length boundaries for each child in each condition. The mean upper utterance length and standard deviation for each Group under each condition was computed as well as the grand mean for Condition X (Group A and B) and Condition Y (Group A and B). The lower utterance length for all subjects in both conditions was one morpheme. Thus, no significant difference was found for lower utterance length. It should be noted that for comparisons 8-11 in which the grand mean upper RUL, for each group in each condition, is compared to the individual subject's upper

RUL all subjects were above the minimum standards set by Brown (1973) for upper length in the RUL. The upper bound length set for children in stage four of Brown's developmental stages is 11 and the maximum length established is 13, which is for stage five. There were no subjects whose upper utterance length fell below 11 in any condition. Therefore, any subjects that may fall outside the standard deviation boundaries for their group in either condition are still above the expected upper utterance length expected for their age group. Based on these findings, extrapolation of this measure should be regarded with caution as all identified subjects that fell outside group standard deviation boundaries met or exceeded upper bound limits.

Table VII

Range in utterance length findings for subjects, Group A and Group B within Condition X and Condition Y

	Group A Utterance Lengths			
	Condition X		Condition Y	
Subject #	Upper	Lower	Upper	Lower
1	13	1	13	1
2	22	1	13	1
3	13	1	12	1
4	11	1	13	1
5	16	1	21	1
6	28	1	16	1
M	**17.17**	**1**	**14.67**	**1**
SD	**5.98**	**0**	**3.09**	**0**

Group A Upper Length	
M	15.92
SD	1.25

	Group B Utterance Lengths			
	Condition X		Condition Y	
Subject #	Upper	Lower	Upper	Lower
7	17	1	16	1
8	15	1	15	1
9	16	1	11	1
10	17	1	23	1
11	22	1	18	1
12	13	1	14	1
M	**16.67**	**1**	**16.17**	**1**
SD	**2.75**	**0**	**3.72**	**0**

Group B Utter Length	
M	16.42
SD	0.25

Condition X		**Condition Y**	
M	16.92	M	15.42
SD	4.66	SD	3.50

Table VII displays the upper and lower utterance lengths for each subject under each condition as well as a mean upper and lower utterance length boundary for each group in each condition. The mean for Group A, both conditions, was 15.92 (SD = 1.25). The mean for Group B, both conditions, was 16.42 (SD = .25). The mean for subjects 1-12, Condition X, was 16.92, (SD = 4.66). The mean for subjects 1-12, Condition Y, was 15.42, (SD = 3.5).

The upper length of each subject's RUL in Group A, Conditions X and Y, is displayed in Table 4. The upper length range for Group A, Condition X, was 11-28. The mean score for subjects 1-6, Condition X, was 17.17 (SD = 5.98). Comparison of the grand mean for Group A, Condition X, to each subject's upper length (comparison #8) revealed that the upper lengths of subjects #4 and #6 fell outside the standard deviation boundaries of the group.

The data in Table VII indicate that the mean upper utterance length of Subjects 1-6, Condition Y, was 14.67 (SD = 3.09). The range of individual upper utterance length scores was 13 to 21 for Group A, Condition Y. Comparison of the grand mean for Group A, Condition Y, to each subject's upper utterance length (comparison #9) revealed that the upper utterance length score of subject #5 fell above the standard deviation for the group mean.

The upper utterance length for each subject in Group B, Conditions X and Y, is displayed in Table VII. The upper length range of individual Subjects 7-12, Condition X, was 13 to 22. The mean upper length for Group B, Condition X, was 16.67 (SD = 2.75). Comparison of the grand mean for Group B, Condition X, to each subject's upper length (comparison #10) revealed that Subjects #11 and #12 had upper lengths that fell outside the standard deviation boundaries for that condition.

Table VII displays the mean upper length for Subjects 7-12, Condition Y. The mean upper utterance length for Group B, Condition Y, was 16.17 (SD = 3.72). The range of individual upper utterance lengths for Group B, Condition Y, was 11 to 23. Comparison of the grand mean for Group B, Condition Y, to each subject's upper utterance length (comparison #11) revealed that the upper length of subjects # 9 and #10 fell outside the standard deviation boundaries for the Group mean upper utterance length.

The t-test analysis results for comparisons 1-7, for the group mean of upper utterance lengths, are displayed in Table VIII. An alpha level of .05 was set for analyses 1-7. The difference (D), paired t-value (t), and the probability (p) that there was significant statistically significant difference, is listed in the table.

Table VIII
Results of t-test analyses of range in utterance length comparisons

Comparison	D	t	p (2 tailed)
1	2.8	1.059	.3381
2	-2.0	-1.777	.1357
3	-2.5	-.928	.3958
4	2.3	2.15	.0842
5	-.50	-.142	.8923
6	-.33	-.349	.7412
7	-.50	-.258	.801

*$p < .05$

Table VIII is a summary of the results of the comparisons made of the mean upper utterance lengths of Groups A and B under Condition X and Condition Y. Comparisons 1 and 2, examined for effects of condition sequence between the groups, based on order of presentation of each condition. These comparisons revealed no statistically significant difference in the mean upper length. No statistically significant difference in mean upper length was found, when examining for differences in upper utterance length within each group, between Conditions X and Y (comparisons 3 and 4). Between-group differences, for the same condition, did not reach statistical significance for comparisons 5 and 6. No statistically significant difference was found between the mean scores for the total upper length of Group A, Conditions X and Y, and the total upper utterance length of Group B in both conditions (comparison 7). It can be seen that no significant differences existed for subjects' upper utterance length scores between conditions. Further, there was no evidence of sequencing effects between or within groups.

Descriptive Analysis

Descriptive analysis was used to describe the use of the fourteen grammatical morphemes, noun phrase elaboration, verb phrase elaboration, negation, semantic roles, semantic relations, sentence complexity and sentence types. These features of language were analyzed to determine if there were differences between conditions or condition sequences that were not picked up in statistical analysis of MLU, TTR and RUL. Analysis of these language structures clinically helps to provide a broader and more detailed picture of a child's language skills than MLU, TTR and RUL because they are more descriptive and specific to actual features of language as opposed to providing a numerical indication of a child's level of language development. Occurrence of each of these variables for Group A and Group B during each condition is graphically displayed.

It was found when compiling semantic relation data that all subjects exhibited use of semantic relations of at least four terms with some up to seven terms. It was also noted that a large percentage of utterances were complex and thus not codeable for semantic relations. All subjects were above Brown's (1973) two and three-term relations. Thus, semantic relations were not further analyzed as normative developmental data is not available.

The fourteen grammatical morphemes. This language structure was analyzed to determine the percent use of each morpheme in obligatory contexts for each subject under each condition. The mean percent use for each group under each condition was then determined. The mean percent use of each morpheme is graphically displayed. The display was divided into the first seven morphemes and the last seven morphemes to aid in effective presentation and reading of the information. They will be displayed in this manner throughout this section.

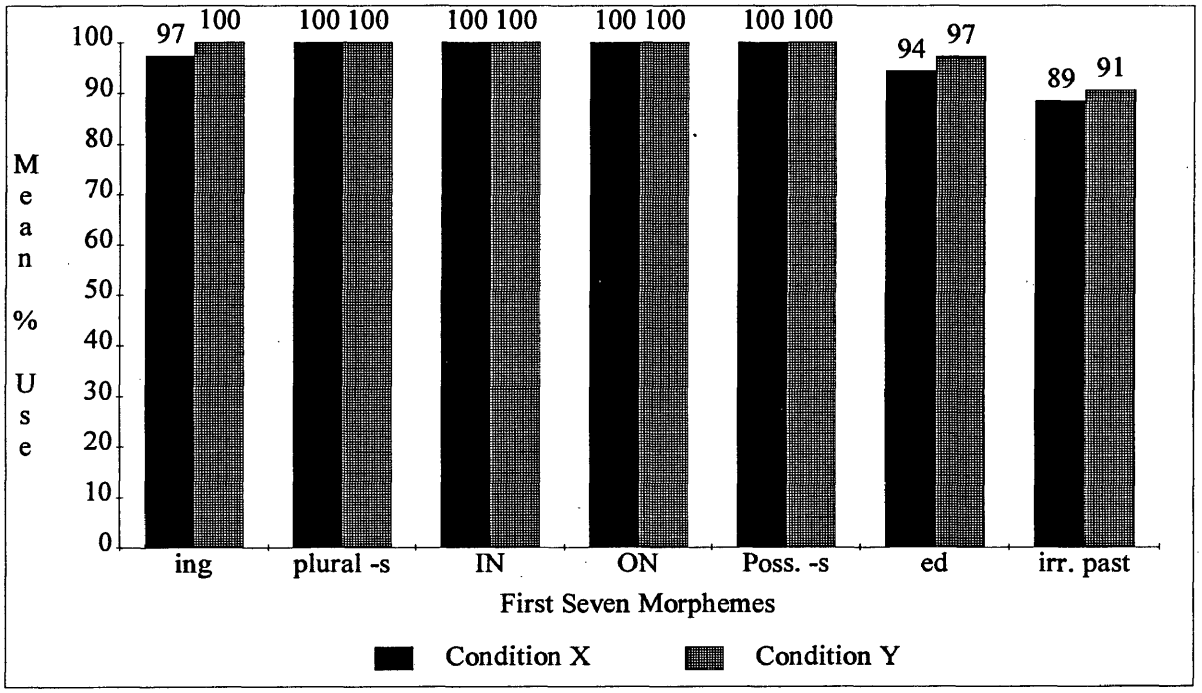

Figure 3. Group A's Mean percent use of the first seven grammatical morphemes in Condition X and Condition Y. The following are explanations for category label abbreviations: poss. -s/possessive -s; and irr. past/irregular past tense.

In Group A the mean percent use of the first seven grammatical morphemes, in obligatory contexts, was greater during Condition Y for the following morphemes: *-ing, regular past tense (-ed), and irregular past tense* (Figure 3). Mean percent use was the same in both conditions for the following morphemes: *plural -s, in, on, and possessive -s.*

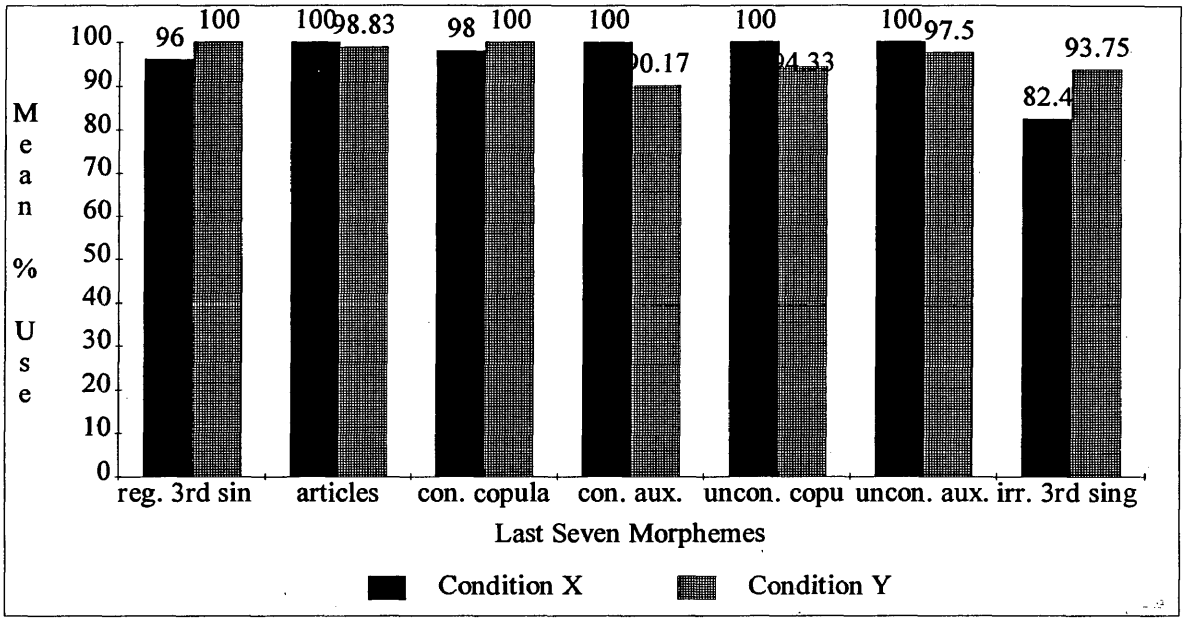

Figure 4. Mean percent use of the last seven grammatical morphemes of Group A, Conditions X and Y. The following are explanations for category label abbreviations: reg. 3rd sing./regular third person singular; con. copula/contractible copula; con. aux./contractible auxiliary; uncon. copula/unconcontractible copula; uncon. auxiliary/uncontractible auxiliary; and irreg. 3rd sing./irregular third person singular.

Figure 4 displays the mean percent use of the last seven grammatical morphemes for Group A. The following grammatical morphemes were used more frequently under Condition X: *articles, contractible auxiliary, uncontractible copula, and uncontractible auxiliary.* The following grammatical morphemes were used more frequently under Condition Y: *regular third person singular, contractible copula, and irregular third person singular.*

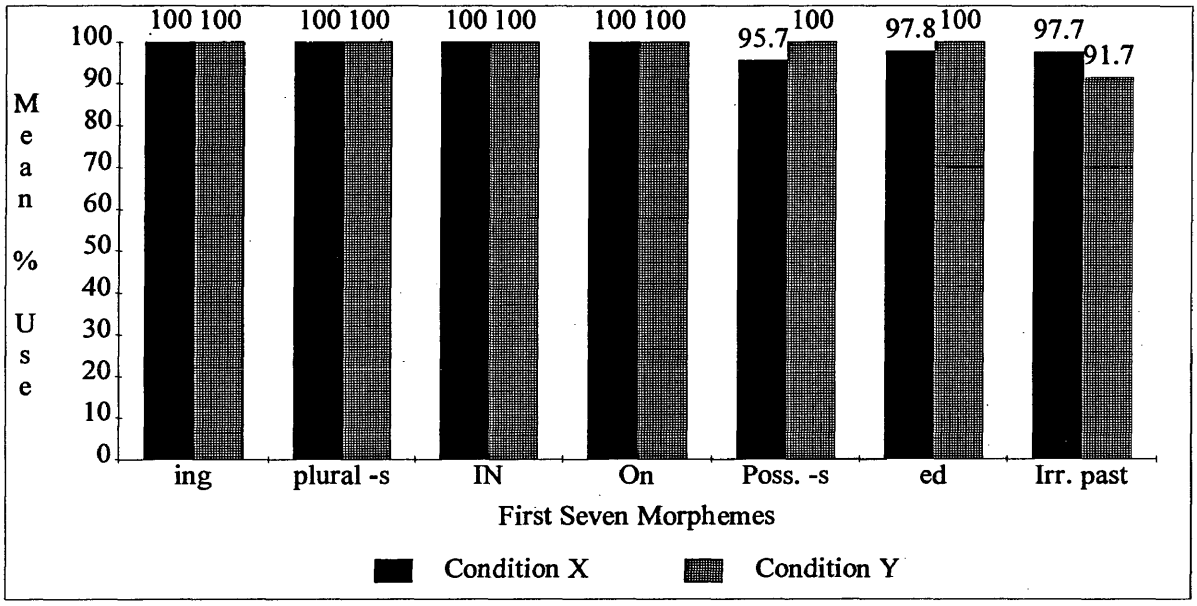

Figure 5. Mean percent use of the first seven grammatical morphemes of Group B, Conditions X and Y. The following are explanations for category label abbreviations: poss. -s/possessive -s; and irr. past/irregular past tense.

The mean percent use of the first seven grammatical morphemes by subjects in Group B is displayed in Figure 5. In Group B the mean percent use of the grammatical morphemes was greater during Condition X for the *irregular past tense* morpheme. The mean percent use of the grammatical morphemes *possessive -s, and regular past tense -ed,* was greater during Condition Y. The mean percent use of grammatical morphemes *-ing, plural -s, in, and on,* was equal during Condition X and Condition Y.

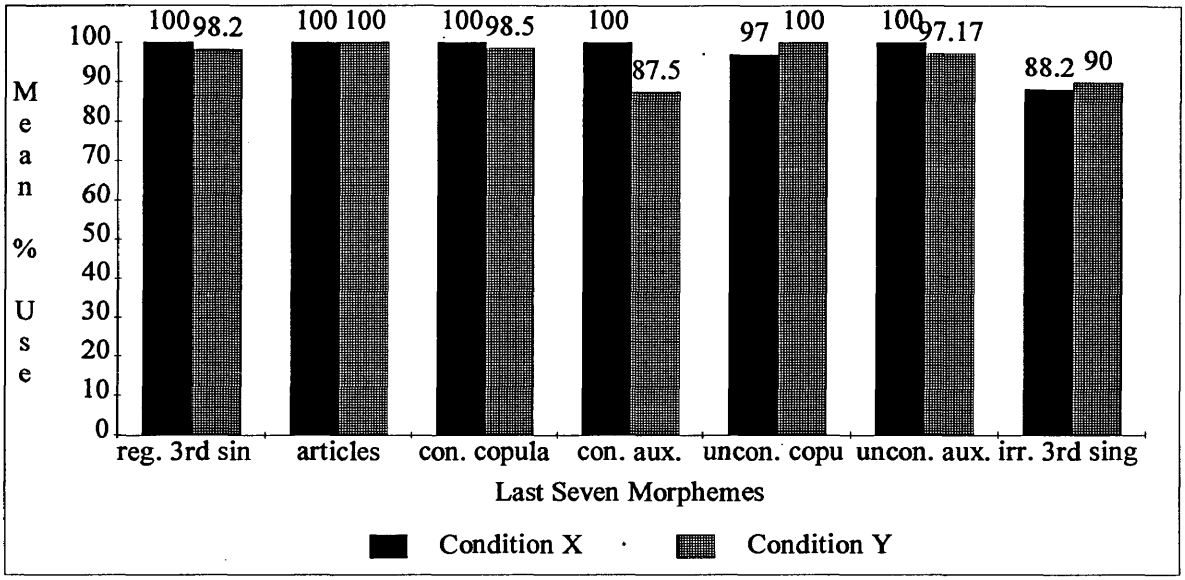

Figure 6. Mean percent use of the last seven grammatical morphemes for Group B, Conditions X and Y. The following are explanations for category label abbreviations: reg. 3rd sing./regular third person singular; con. copula/contractible copula; con. aux./contractible auxiliary; uncon. copula/unconcontractible copula; uncon. auxiliary/uncontractible auxiliary; and irreg. 3rd sing./irregular third person singular.

The mean percent use of the last seven grammatical morphemes for Group B, Conditions X and Y, is displayed in Figure 6. In Group B the mean percent use of the grammatical morphemes *regular third person singular, contractible copula, contractible auxiliary, and uncontractible auxiliary*, was greater during Condition X. The mean percent use of the grammatical morphemes *possessive -s, regular past tense -ed, uncontractible copula, and irregular third person singular,* was greater during Condition Y. The means for percent use of the grammatical morphemes *-ing, plural -s, in, on, and articles*, was equal during Conditions X and Y.

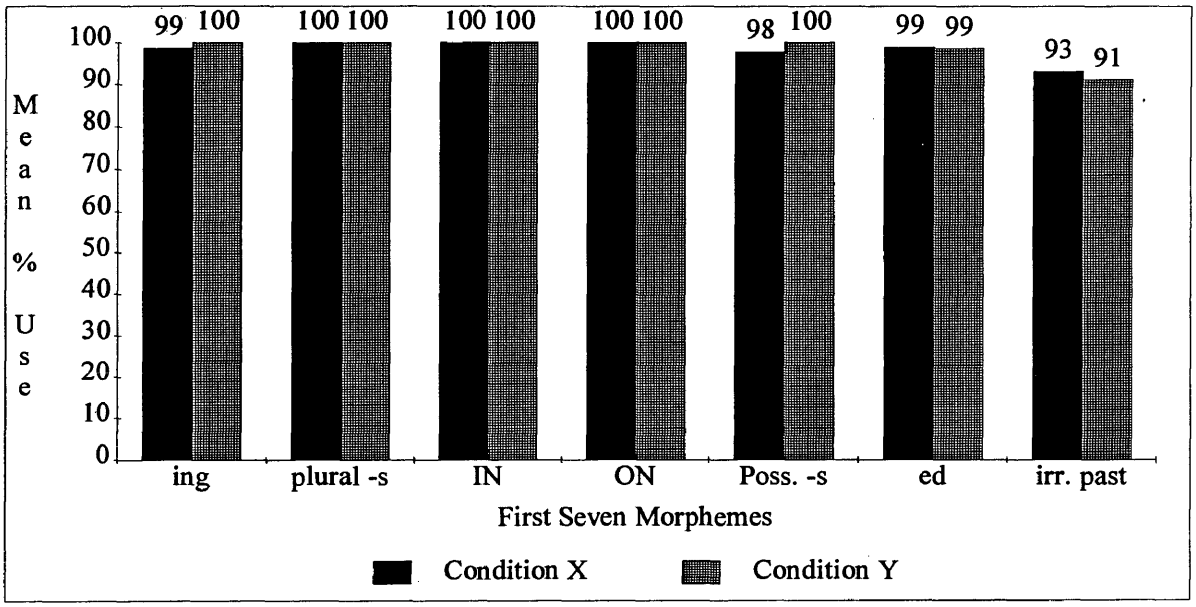

Figure 7. Mean percent use of the first seven grammatical morphemes for groups A and B combined, Condition X and Y. The following are explanations for category label abbreviations: poss. -s/possessive -s; and irr. past/irregular past tense.

The mean percent use for first seven grammatical morphemes for Groups A and B were combined to examine for differences between Conditions X and Y. The data are displayed in Figure 7. The mean percent use of the grammatical morphemes *-ed and irregular past tense*, were greater during Condition X. The mean percent use of grammatical morphemes *-ing, and possessive -s* were greater during Condition Y. The mean percent use of grammatical morphemes *plural -s, in, and on*, were equal during Condition X and Y.

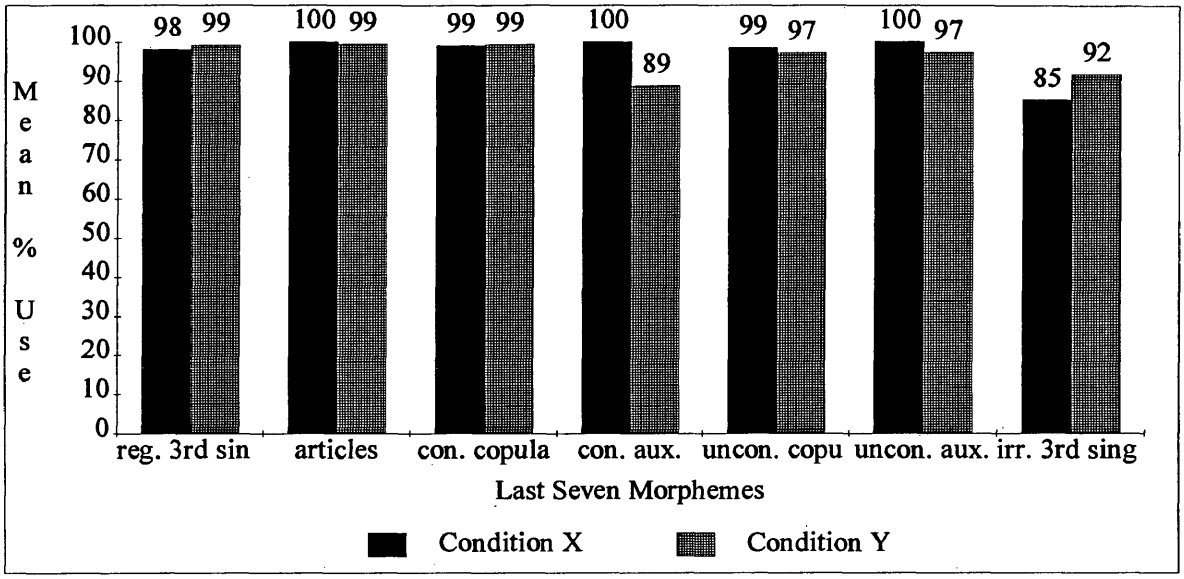

Figure 8. Mean percent use of the last seven grammatical morphemes for Groups A and B combined, Conditions X and Y. The following are explanations for category label abbreviations: reg. 3rd sing./regular third person singular; con. copula/contractible copula; con. aux./contractible auxiliary; uncon. copula/unconcontractible copula; uncon. auxiliary/uncontractible auxiliary; and irreg. 3rd sing./irregular third person singular.

The mean percent use for the last seven grammatical morphemes for Groups A and B combined, Conditions X and Y are displayed in Figure 8. The mean percent use of the following grammatical morphemes: *articles, contractible auxiliary, uncontractible copula, and uncontractible auxiliary,* were greater during Condition X. The mean percent use of the grammatical morphemes *regular third person singular, and irregular third person singular* were greater under Condition Y. The means for percent use of the grammatical morpheme *contractible copula* were equal during Conditions X and Y.

Noun phrase elaboration. The occurrence of noun modifiers is displayed in Figures 9-11. A noun modifier is used to further elaborate on the noun and create greater complexity within the noun phrase. The occurrence of the *initiator, determiner, adjective and post-noun modifier* were tabulated for each subject in Conditions X and Y. The occurrence of the *noun* in the noun phrase was also tabulated to create a more complete picture of noun phrase elaboration during each condition.

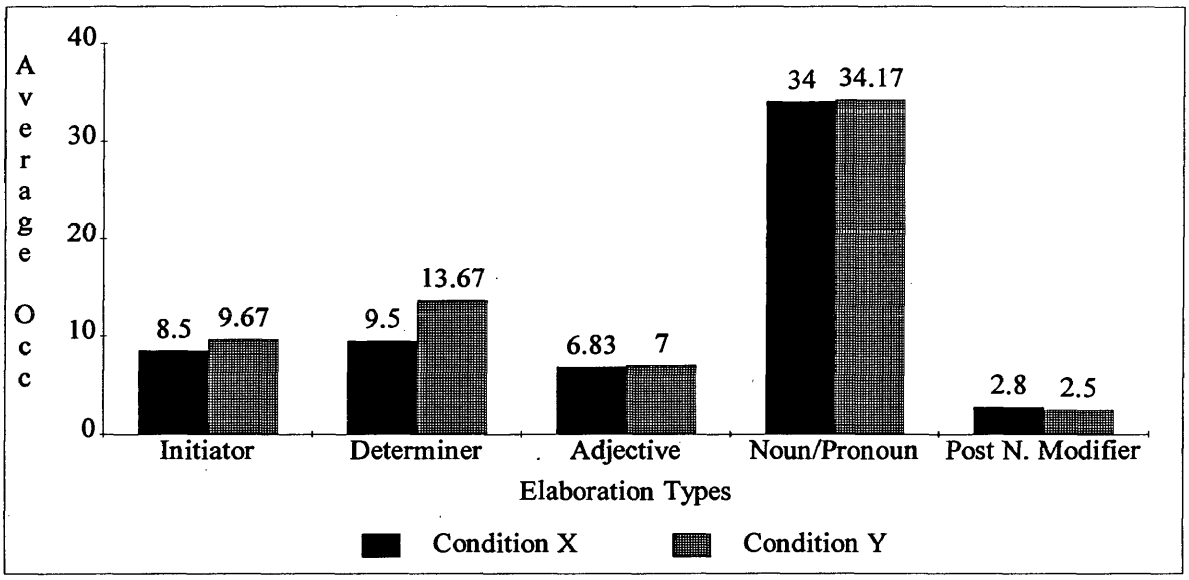

Figure 9. Average occurrence of noun phrase elaboration types for Group A in Condition X and Y. The abbreviation N. in Post N. Modifier stands for noun.

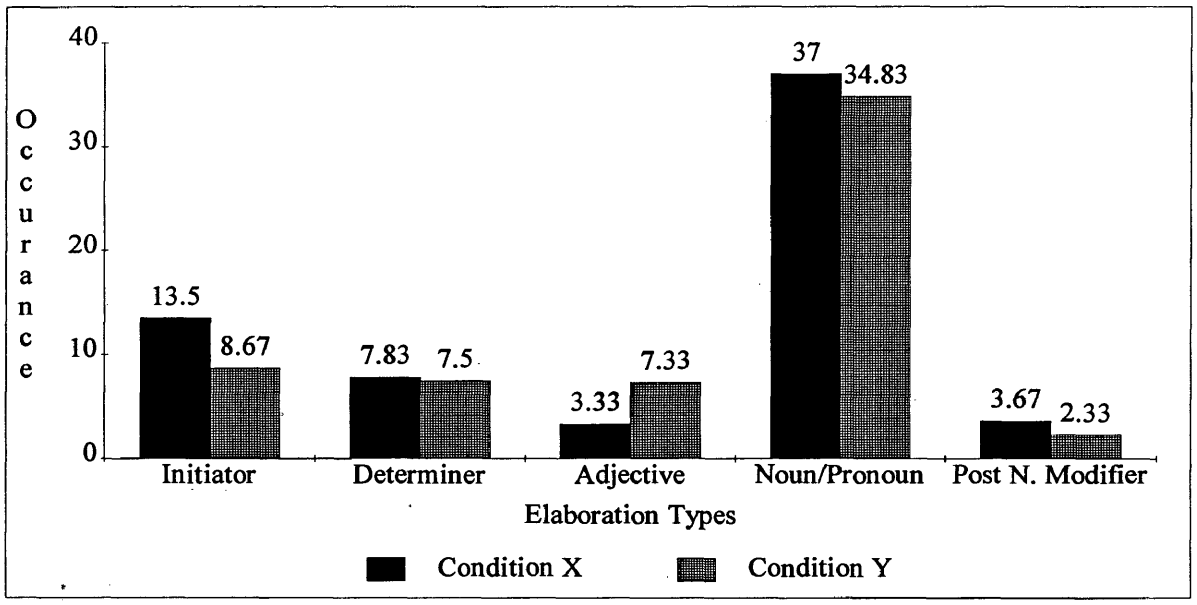

Figure 10. Average occurrence of noun phrase elaboration types for Group B, Conditions X and Y. The abbreviation N. in Post N. Modifier stands for noun.

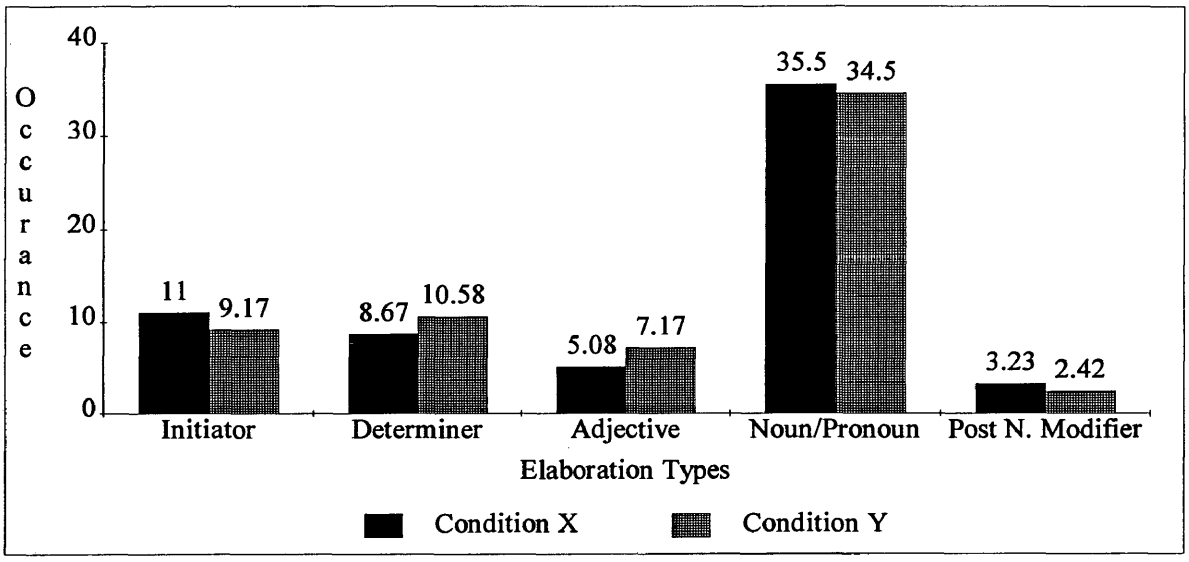

Figure 11. Average occurrence of noun phrase elaboration types for Groups A and B combined, Conditions X and Y. The abbreviation N. in Post N. Modifier stands for noun.

This language structure was analyzed for each group during each condition. In Group A the elaboration types *initiator, adjective and noun/pronoun* occurred more frequently during Condition Y (Figure 9). The *post-noun modifier* occurred more frequently in Group A, Condition X. In Group B, the elaboration types *initiator, determiner, noun/pronoun and post-noun modifier* occurred more frequently in Condition X, and *adjectives* occurred more frequently in Condition Y (Figure 10). When the average occurrence for Groups A and B was combined, *the initiator, noun/pronoun and post-noun modifier* elaboration types occurred more frequently in Condition X, and the *determiner and adjective* occurred more frequently in Condition Y (Figure 11).

Verb phrase elaboration. The elements of the verb phrase were analyzed to determine if there were differences in verb phrase elaboration between conditions and condition sequences. The lexical verb is the main verb in a sentence. The modal auxiliary is a verb that is used with a lexical verb to convey attitudes and intentions (Shipley & McAfee, 1992). The *perfect auxiliary* is a form of the verb "to have" that is used with the lexical verb to indicate the action of the lexical verb has been or will be completed by

a specified time (Shipley & McAfee). Figures 12-14 graphically display the occurrence of verb phrase elaboration types.

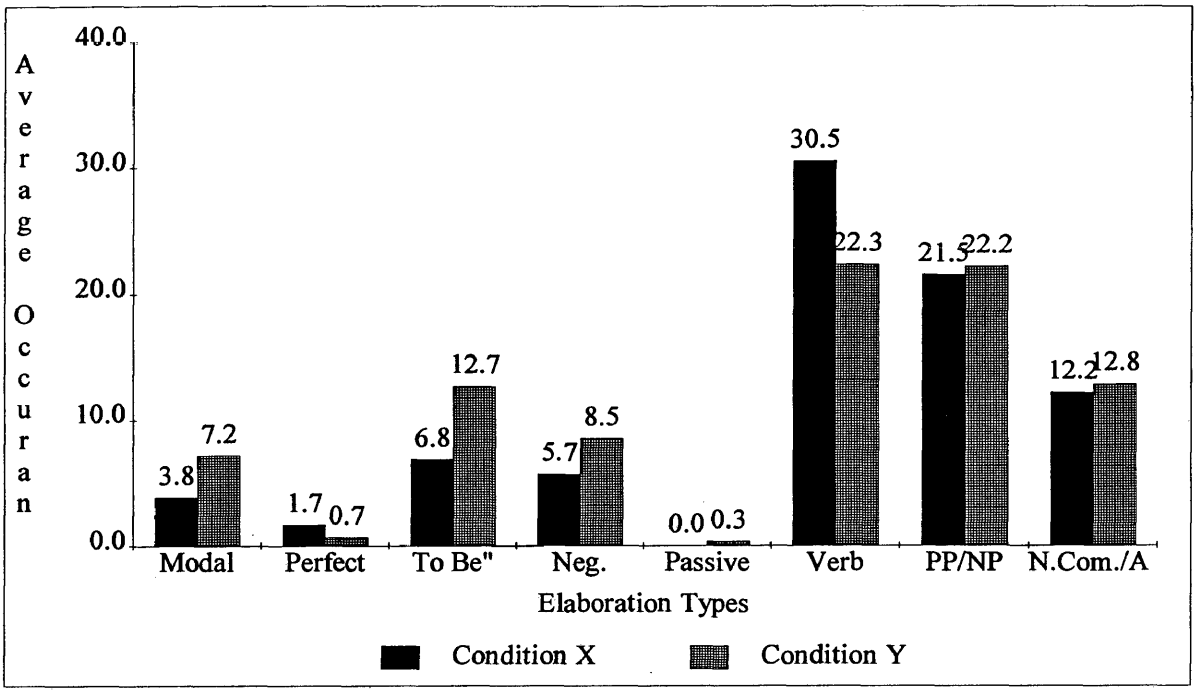

Figure 12. Average occurrence of verb phrase elaboration types for Group A, Conditions X and Y. The following are explanations for abbreviations: modal/modal auxiliary; perfect/perfect auxiliary; "to be"/to be verb; neg./negative; PP/NP/prepositional phrase/noun phrase; N.Com./AP/noun complement/adverbial phrase.

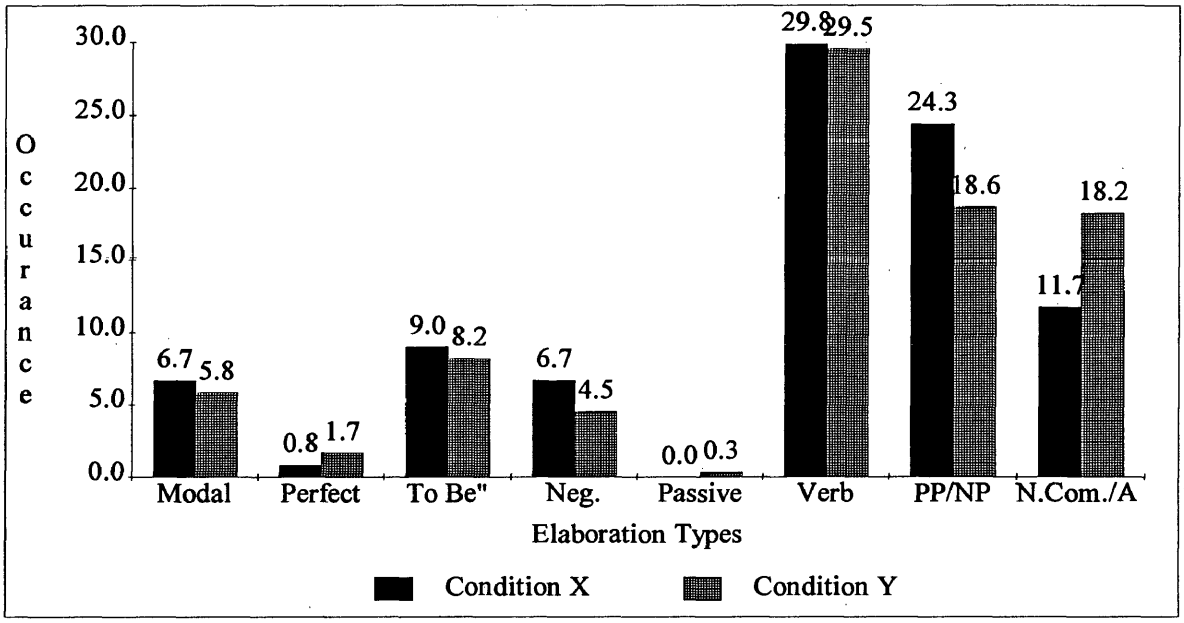

Figure 13. Average occurrence of verb phrase elaboration types for Group B, Conditions X and Y. The following are explanations for abbreviations: modal/modal auxiliary; perfect/perfect auxiliary; "to be"/to be verb; neg./negative; PP/NP/prepositional phrase/noun phrase; N.Com./AP/noun complement/adverbial phrase.

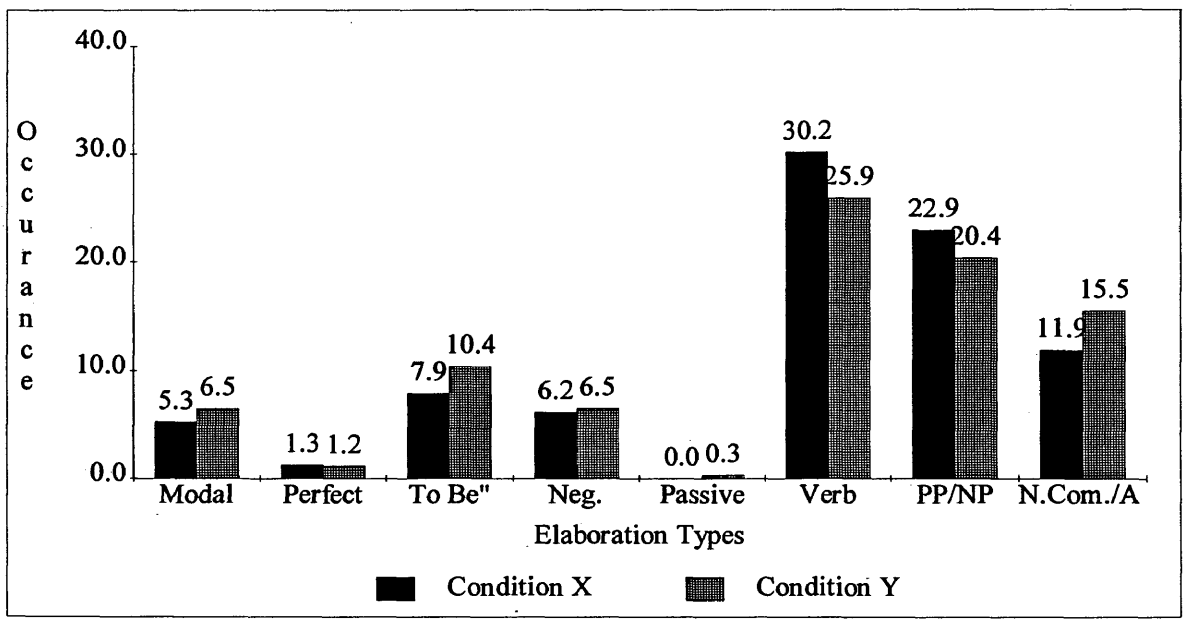

Figure 14. Average occurance of verb phrase elaboration types with Groups A and B combined, Conditions X and Y. The following are explanations for abbreviations: modal/modal auxiliary; perfect/perfect auxiliary; "to be"/to be verb; neg./negative; PP/NP/prepositional phrase/noun phrase; N.Com./AP/noun complement/adverbial phrase.

Verb phrase elaboration was analyzed for each group, within each condition. In Group A the *perfect auxiliary and verb* occurred more frequently in Condition X (Figure 12). *The modal auxiliary, "To Be" verb, negative, passive, prepositional phrase/noun phrase, and noun complement/adverbial phrase* all occurred more frequently in Condition Y for Group A (Figure 12). In Group B *the modal auxiliary, "To Be" verb, negative, verb, and prepositional phrase/noun phrase* all occurred more frequently in Condition X (Figure 13). *The perfect auxiliary, passive, and noun complement/adverbial phrase* occurred more frequently in Condition Y for Group B. When the average occurrence of verb phrase elaboration types for each group was combined it was found that *the perfect auxiliary, verb, and prepositional phrase/noun phrase* had a greater average occurrence in Condition X (Figure 14) than in Condition Y. During Condition Y *the modal auxiliary, "to be" verb, negative, passive and noun complement/adverbial phrase* had a greater average occurrence.

Clause Structures. The occurrence of *complex, adverbial, subject, relative, and compound clauses* were analyzed for each group in both conditions. A clause always contains a noun and a verb and in some way elaborates upon the verb phrase. Figures 15-18 graphically display the occurrence of these structures during Conditions X and Y.

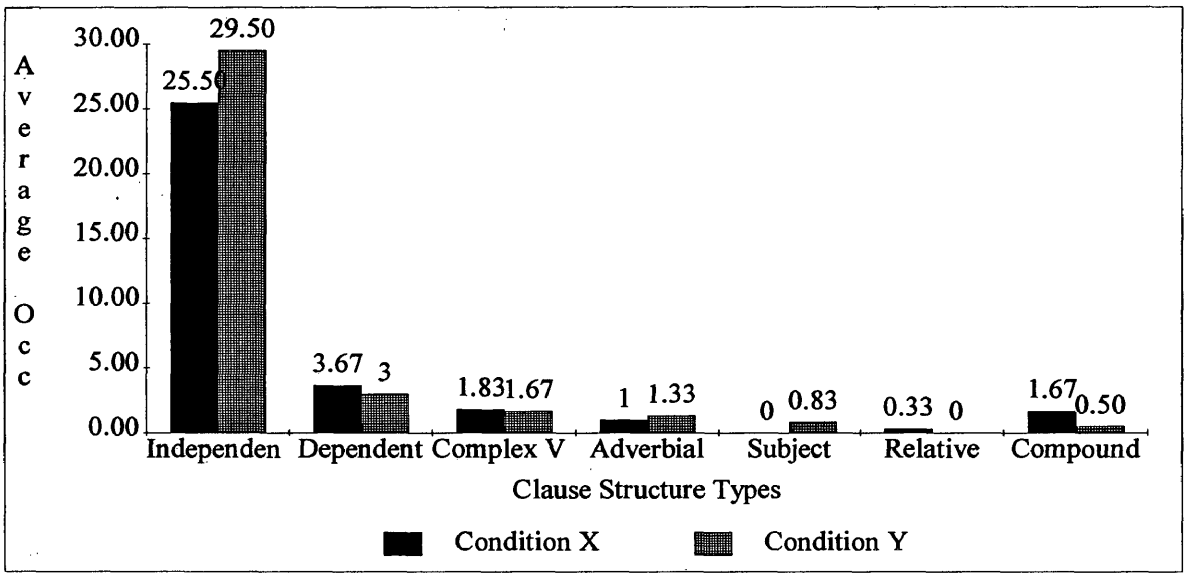

Figure 15. Average occurrence of clause structure types for Group A under Condition X and Condition Y.

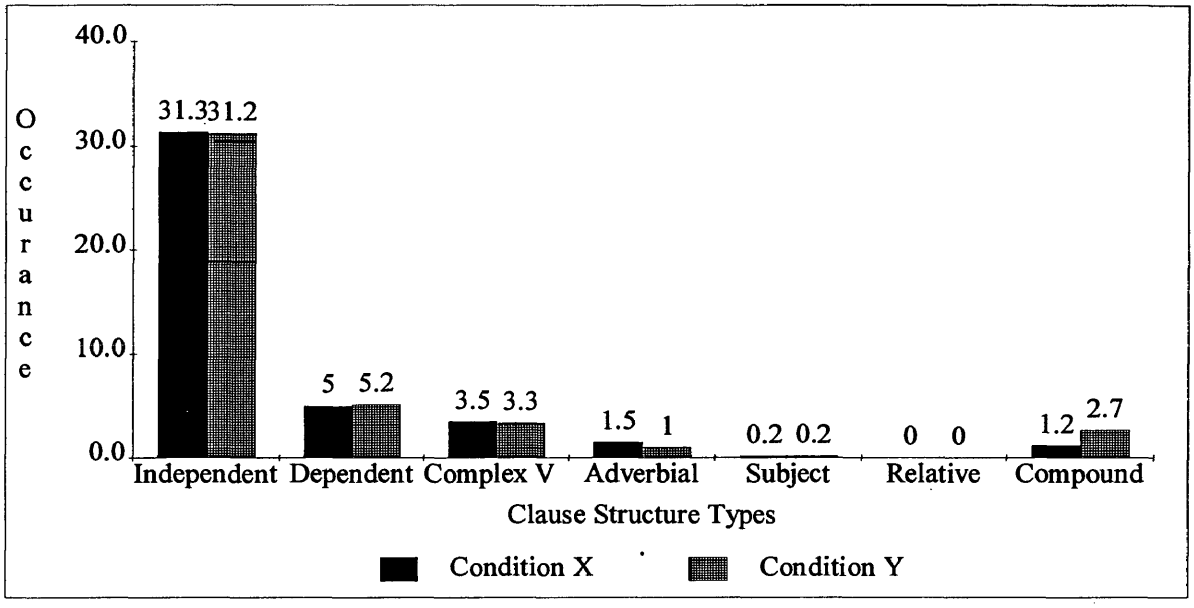

Figure 16. Average occurrence of clause structure types for Group B in Condition X and Condition Y.

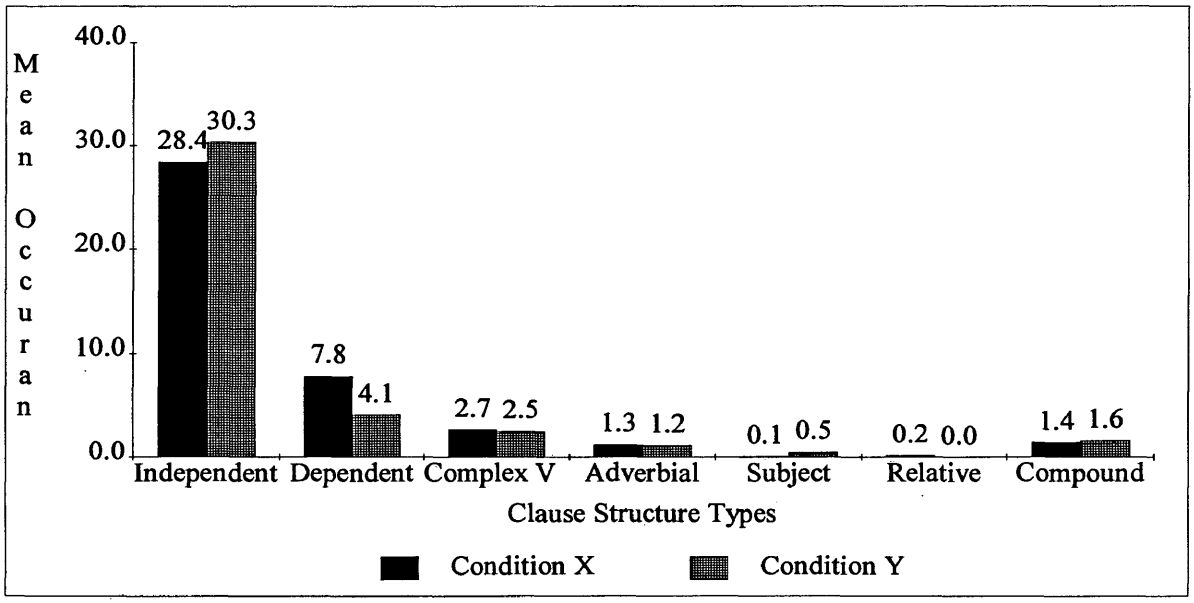

Figure 17. Average occurrence of clause structure types for Groups A and B combined in Conditions X and Y.

Analysis of clause structures for each group, in Conditions X and Y yielded the comparative data displayed in Figures 15-17. In Group A there was a greater occurrence of *dependent clauses, complex verb phrase, relative clauses, and compound clauses* in Condition X (Figure 15). There was a greater

occurrence of *independent clauses, adverbial clauses and subject clauses* during Condition Y. In Group B there was a greater occurrence of *adverbial clauses* during Condition X, and a greater occurrence of *compound clauses* during Condition Y (Figure 16). *The independent, dependent, complex verb phrase and subject clauses* occurred with equal frequency in the two conditions. No occurrences of *the relative clause* were found for subjects in Group B in either Conditions X or Y. When the average occurrences of *independent clauses, and subject clauses* for Groups A and B were combined there was a greater frequency of use in Condition Y than in Condition X (Figure 17). There was a greater frequency of occurrence of *dependent clauses and relative clauses* in Condition X for this same group. *The complex verb phrase, adverbial clause, and compound clause* occurred at an equivalent frequency in the two conditions.

Sentence types. The frequency of occurrence of *declarative, imperative, interrogative and negative* sentences was analyzed for each group during each condition. This analysis helps to provide a complete picture of any differences in language use between the conditions and the condition sequences. Figures 18-20 graphically display the frequency of occurrence of the sentence types for each group in each condition.

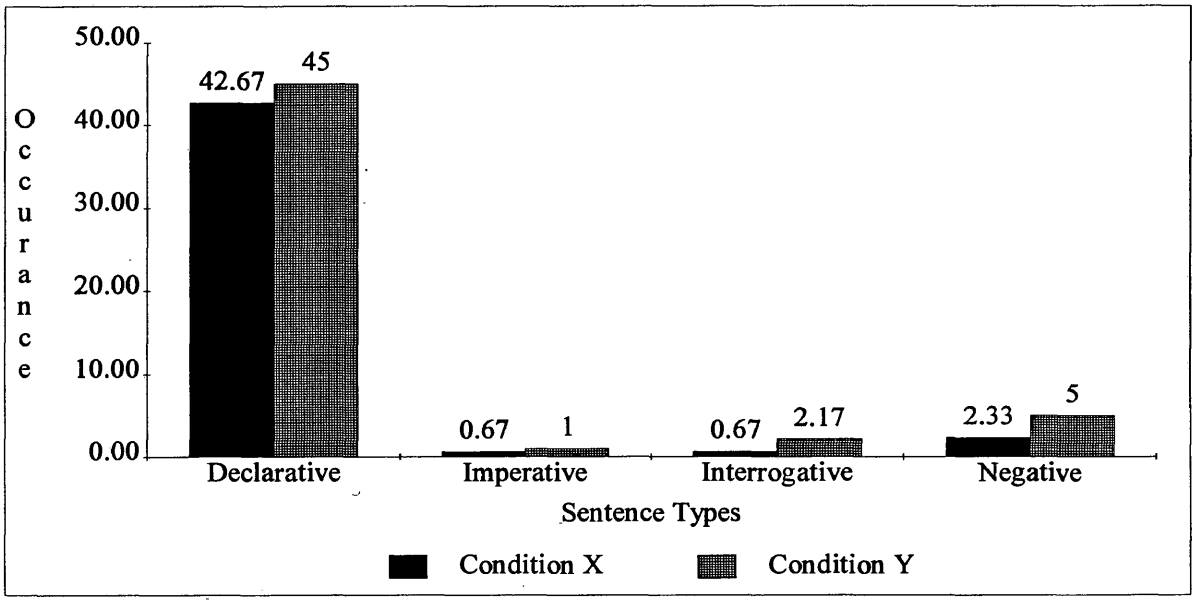

Figure 18. Average occurrence of sentence types for Group A, Conditions X and Y.

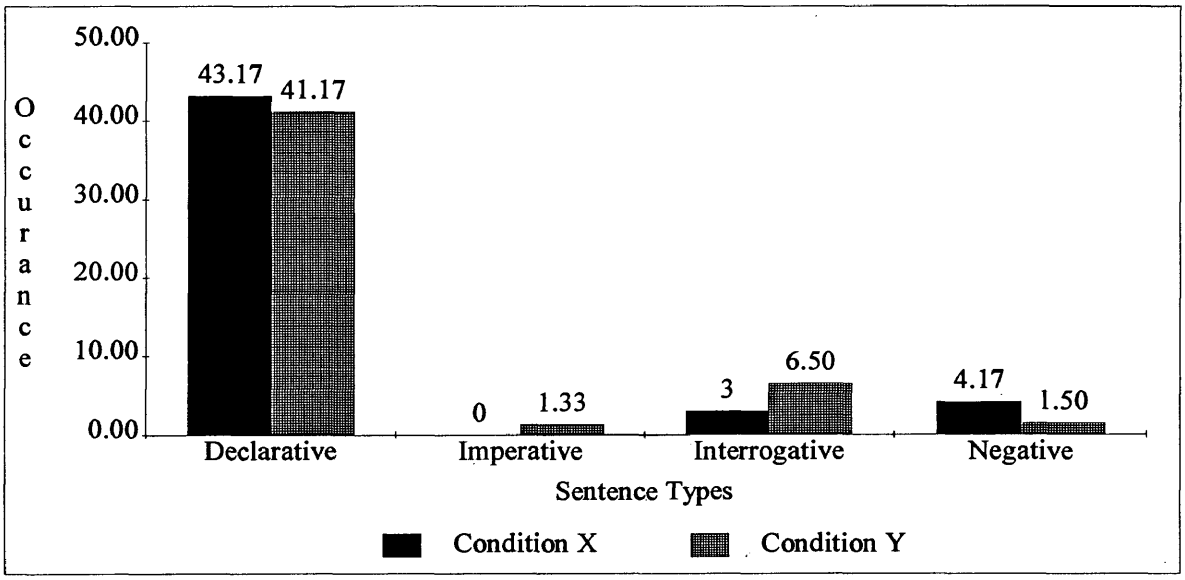

Figure 19. Average occurrence of sentence types for Group B, Conditions X and Y.

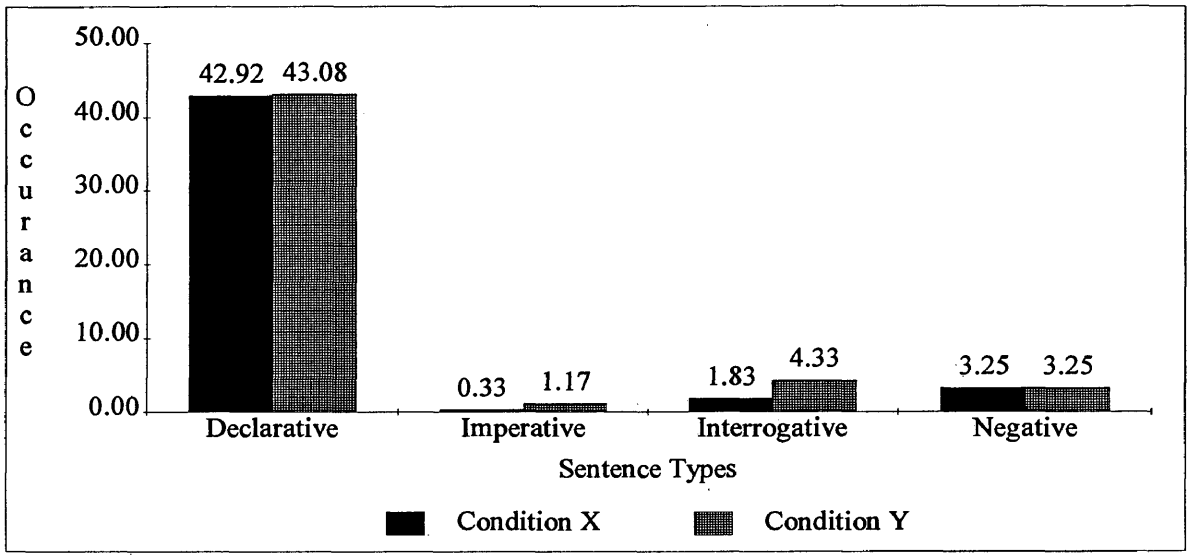

Figure 20. Average occurrence of sentence types for Groups A and B combined, Conditions X and Y.

The average occurrence of sentence type was examined for each condition and each group. In Group A all sentence types *(declarative, imperative, interrogative, negative)* were used more frequently during Condition Y than Condition X (Figure 18). However, the *imperative type* occurred with nearly equal frequency during the two conditions. In Group B *the declarative, and negative sentences* were used more frequently during Condition X (Figure 19). *The imperative, and interrogative sentence types* were

used more frequently during Condition Y. When the average occurrence of sentence types for Groups A and B were combined it was found that *the declarative and negative sentence types* occurred with nearly equal frequency during the two conditions (Figure 20). *The imperative and interrogative* occurred more frequently during Condition Y.

Negation. The presence of negation and the negation types in the language samples of each subject was tallied. The frequency of occurrence of each type for each group during each condition is graphically displayed in Figures 21and 22, and the frequency of occurrence of each type for the groups combined during each condition is graphically displayed in Figure 23.

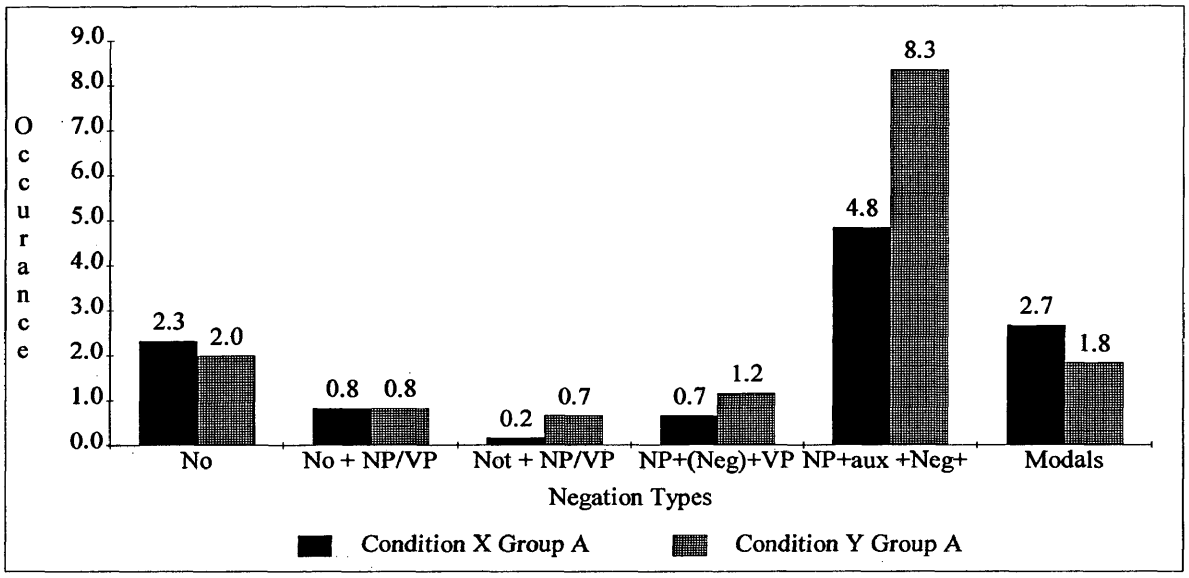

Figure 21. Average occurrence of negation forms for subjects in Group A, Conditions X and Y. The following is an explanation of the abbreviations used: NP/noun phrase; VP/verb phrase; aux./auxiliary; modals/past tense modals and to be in contracted and uncontracted form.

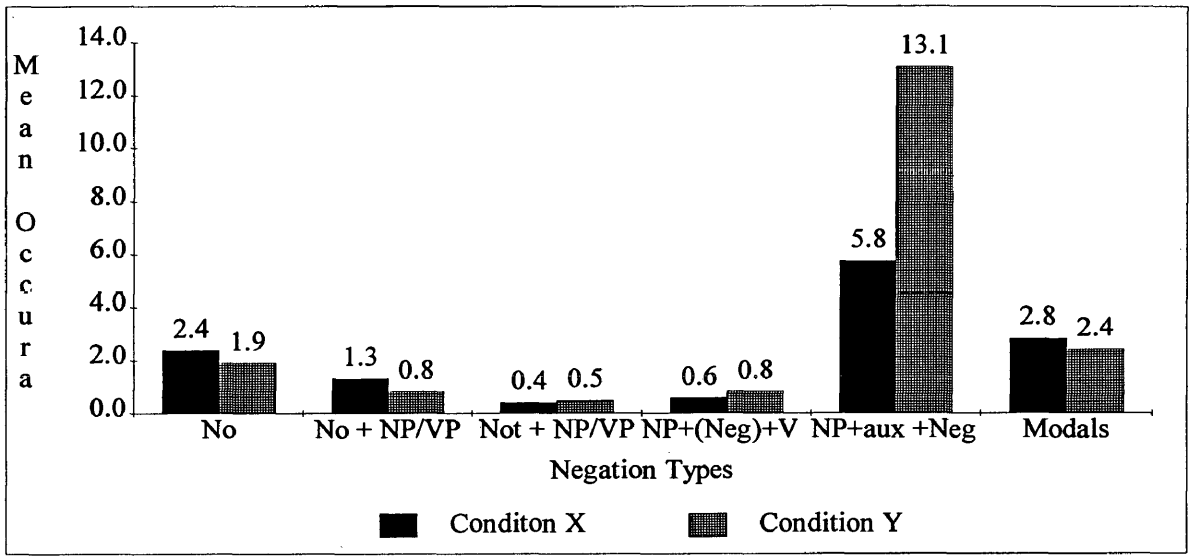

Figure 22. Average occurrence of negation forms for subjects in Group B, Conditions X and Y. The following is an explanation of the abbreviations used: NP/noun phrase; VP/verb phrase; aux./auxiliary; modals/past tense modals and to be in contracted and uncontracted form.

The average occurrence of negation types was compiled for Group A and Group B in Condition X and Condition Y (Figure 21 and Figure 22). In Group A the occurrence of *"no" as a single word, and past tense modals/to be in contracted and uncontracted form*, occurred more frequently during Condition X. During Condition Y the negation forms *Not + NP or VP, NP +(negative) +VP, NP + auxiliary + (negative) + VP* occurred more frequently. In Group B the negation *forms "no" as a single word, No + NP or VP, and NP + auxiliary + (negative) + VP*, occurred more frequently during Condition X. The negation forms *NP + negative + VP, and past tense modals and to be in contracted and uncontracted form* occurred with equal frequency during both conditions.

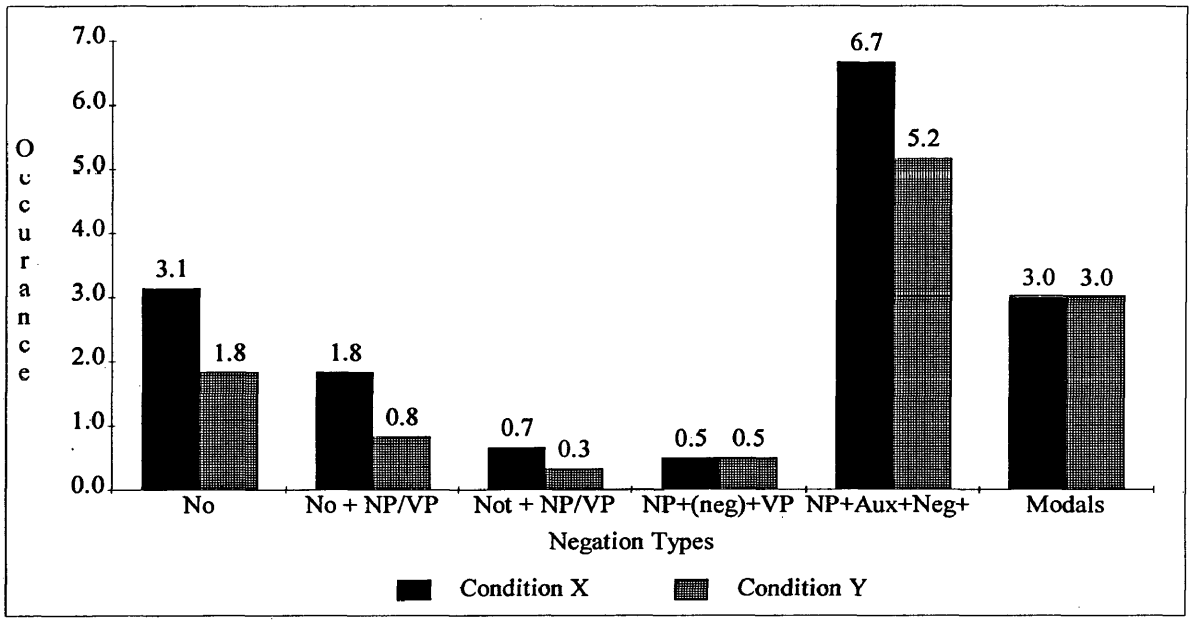

Figure 23. Average occurrence of negation types for Group A and Group B combined during Conditions X and Y. The following is an explanation of the abbreviations used: NP/noun phrase; VP/verb phrase; aux./auxiliary; modals/past tense modals and to be in contracted and uncontracted form.

The average occurrence of negation forms for Group A and Group B were combined to compare differences between Condition X and Condition Y (Figure 23).The negation types *"no" as a single word, no + NP or VP, and past tense modals/be in contracted or uncontracted form*, occurred more frequently during Condition X. During Condition Y the negation forms *not + NP or VP, NP + (negative) + VP, and NP + auxiliary + (negative) + VP,* occurred more frequently.

Semantic Roles. The frequency of occurrence of the semantic roles in Retherford's (1992), and Shipley & McAfee's (1994) procedures for language sample analysis were used. The determination of semantic roles used in a child's language sample provides a picture of the type of words a child uses and the frequency with which they were used. The role *complex* was given to any utterance that met the criteria for a complex utterance set in Retherford's (1992) rules for assigning semantic roles. The frequency of occurrence of these semantic roles for both groups during both conditions is graphically displayed in Figures 24-29. Semantic roles were divided across the figures to facilitate comparison and ease of reading.

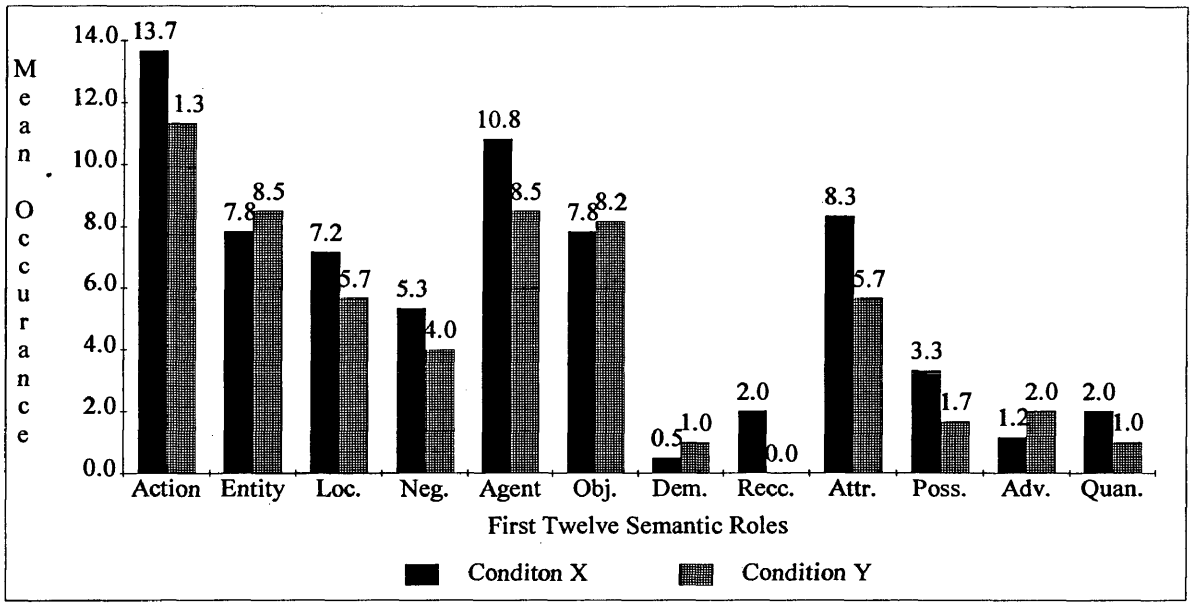

Figure 24. Average occurrence of the first twelve semantic roles for Group A, Conditions X and Y. The following is an explanation of the abbreviations used in the figure: Loc./Locative; Neg./Negative; Obj./Object; Dem./Demonstrative; Recc./Recurrence; Attr./Attribute; Poss./Passive; Adv./Adverbial; Quan./Quantifier.

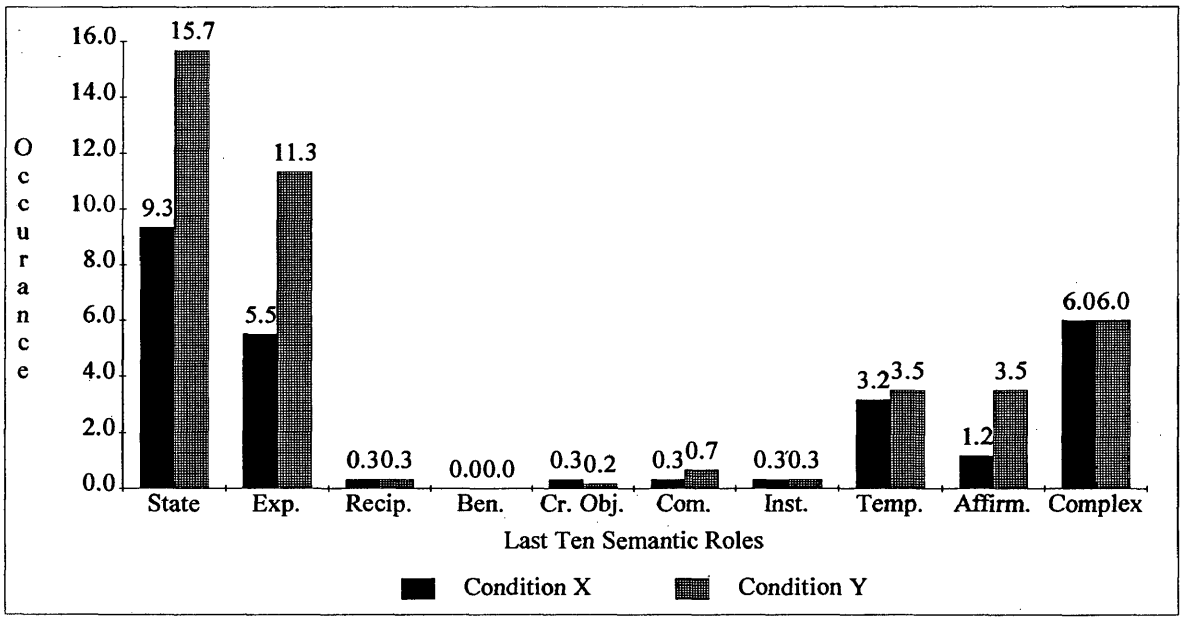

Figure 25. Average occurrence of the last ten semantic roles for Group A, Conditions X and Y. The following is an explanation of the abbreviations used in the chart: Exp./Experiencer; Recip./Recipient; Ben./Beneficiary; Cr. Obj./Created Object; Com./Comitative; Inst./Instrument; Temp./Temporal; Affirm./Affirmation.

The average frequency of occurrence of the first twelve semantic roles by subjects in Group A is displayed in Figure 24. The semantic roles *action, locative, negation, agent, recurrence, attribute, possessive, and quantifier* were used more frequently during Condition X than during Condition Y. The frequency of occurrence of *entity, object, demonstrative, and adverbial* was greater during Condition Y than during Condition X. The average frequency of occurrence of the last ten semantic roles by subjects in Group A is displayed in Figure 25. The semantic roles *state, experiencer, comitative, temporal, and affirmation* occurred more frequently during Condition X than during Condition Y. The semantic role *created object* occurred more frequently during Condition Y than during Condition X. The semantic roles *recipient, beneficiary, instrument and complex* were used with equal frequency by subjects in Group A, during Conditions X and Y.

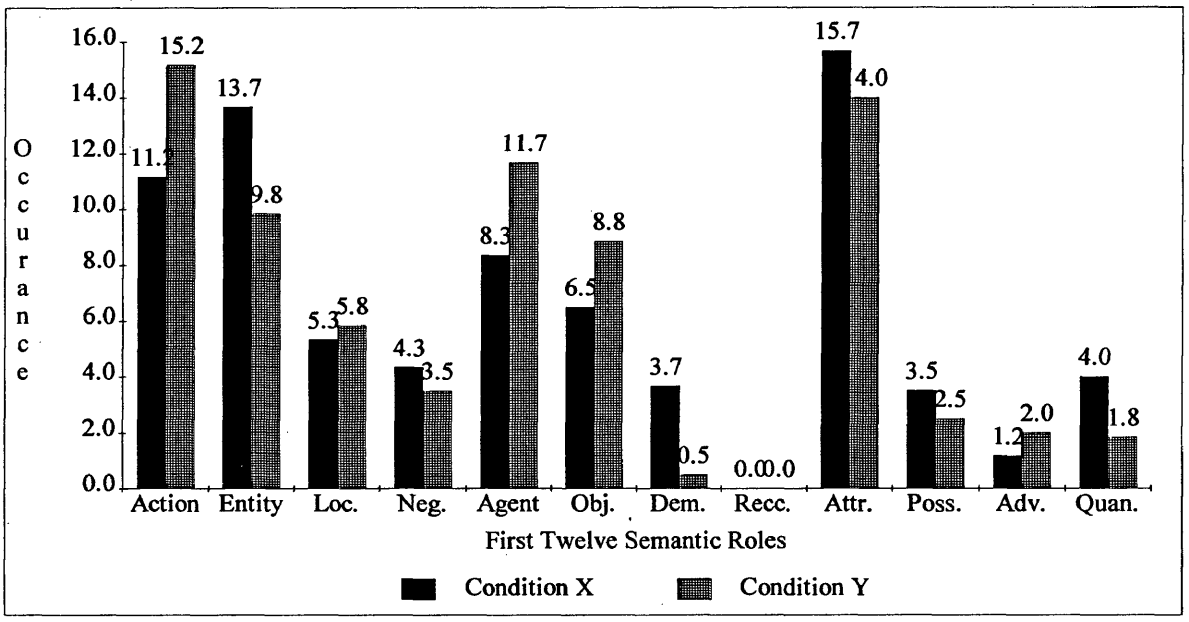

Figure 26. Average occurrence of the first twelve semantic roles for Group B, Conditions X and Y. The following is an explanation of the abbreviations used in the figure: Loc./Locative; Neg./Negative; Obj./Object; Dem./Demonstrative; Recc./Recurrence; Attr./Attribute; Poss./Passive; Adv./Adverbial; Quan./Quantifier.

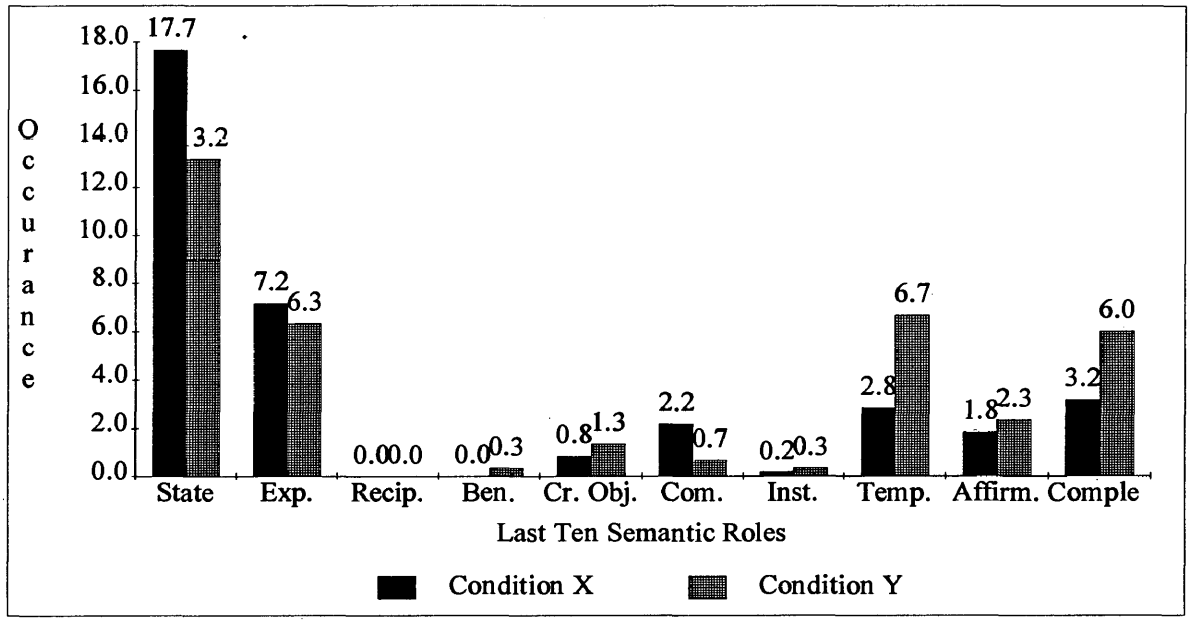

Figure 27. Average occurrence of the last ten semantic roles for Group B, Conditions X and Y. The following is an explanation of the abbreviations used in the chart: Exp./Experiencer; Recip./Recipient; Ben./Beneficiary; Cr. Obj./Created Object; Com./Comitative; Inst./Instrument; Temp./Temporal; Affirm./Affirmation.

The frequency of occurrence of the first twelve semantic roles by subjects in Group B is displayed in Figure 26. The semantic roles *entity, negation, demonstrative, attribute, possessive, and quantifier* were used more frequently during Condition X than during Condition Y. The semantic roles *action, locative, agent, and object* were used more frequently during Condition Y than during Condition X. The frequency of occurrence of the last ten semantic roles by subjects in Group B is displayed in Figure 27. The semantic roles *state, experiencer, and comitative* were used more frequently during Condition X than during Condition Y. The semantic roles *benefactive, created object, instrument, temporal, affirmation, and complex* were used more frequently during Condition Y than during Condition X. The semantic roles *recipient and recurrence* were not used by subjects in Group B during Conditions X or Y.

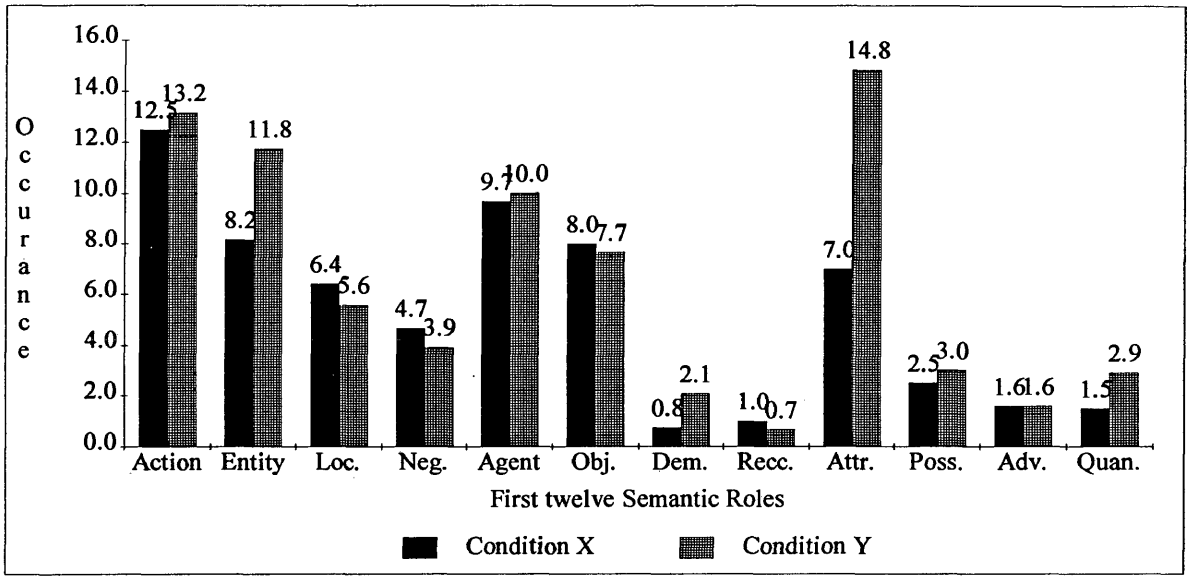

Figure 28. Average occurrence of the first twelve semantic roles for Groups A and B combined, Conditions X and Y. The following is an explanation of the abbreviations used in the figure: Loc./Locative; Neg./Negative; Obj./Object; Dem./Demonstrative; Recc./Recurrence; Attr./Attribute; Poss./Passive; Adv./Adverbial; Quan./Quantifier.

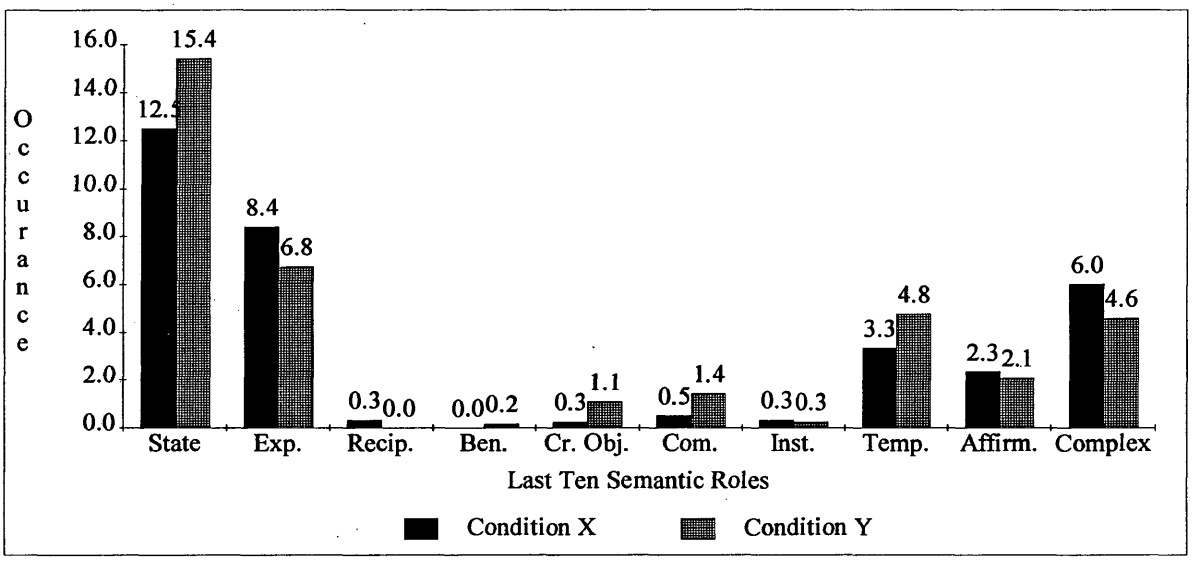

Figure 29. Average occurrence of the last ten semantic roles for Groups B, Conditions X and Y. The following is an explanation of the abbreviations used in the chart: Exp./Experiencer; Recip./Recipient; Ben./Beneficiary; Cr. Obj./Created Object; Com./Comitative; Inst./Instrument; Temp./Temporal; Affirm./Affirmation.

The frequency of occurrence of the first twelve semantic roles for Groups A and B combined is displayed in Figure 28. The semantic roles *locative, negation, object, and recurrence* were used more

frequently during Condition X than during Condition Y. The semantic roles *action, entity, agent, demonstrative, attribute, possessive, and quantifier* were used more frequently during Condition Y than during Condition X. The semantic role *adverbial* was used with equal frequency in Conditions X and Y. The frequency of occurrence of the last ten semantic roles for Groups A and B combined is displayed in Figure 29. The semantic roles *state, beneficiary, created object, comitative, and temporal* were used more frequently during Condition Y than during Condition X. The semantic roles *experiencer, recipient, affirmation and complex* were used more frequently during Condition X than during Condition Y. The semantic role *instrument* was used with equal frequency during Conditions X and Y.

CHAPTER 5

Discussion

The purpose of this study was to determine if the use of drawing in combination with video narration would elicit language constructs not seen in video narration alone. Several features of language were examined. Mean length of utterance (MLU), type-token ratio (TTR), and range in utterance length (RUL), were statistically analyzed for language samples taken during each sampling condition. In addition, the fourteen grammatical morphemes, negation, semantic roles, noun phrase elaboration, verb phrase elaboration, sentence complexity, and sentence types were descriptively analyzed.

Statistical analyses of MLU, TTR, and RUL revealed that there was not a statistically significant difference between video narration (Condition X) and art narration (Condition Y). In other words, the level of development seen in MLU, TTR and RUL, did not reveal significantly different scores between the two conditions. The consistency between the two conditions supports the reliability of the art narration context for language sampling. Statistical analyses of MLU, TTR, and RUL between condition sequences also revealed there was not a statistically significant difference in these measures when comparing the order of presentation for each condition. These findings suggest that the use of art narration as a language sampling context need not be precluded by video narration or vice versa.

While statistical analyses of TTR between the two conditions did not reveal any significant differences, it was noted that only in video narration did TTR scores fall below the standard deviation boundaries of the group. Whereas, if a subject's TTR score fell outside the standard deviation boundaries in art narration they always fell above the range. This indicates a greater variance between the total number of different words and total number of words in art narration, and less variance between these in video narration. In essence, the subjects used a greater variety of vocabulary in the art narration context. Therefore, it can be concluded that the use of art narration as a language sampling context would elicit a more representative sample of a child's complete vocabulary.

Statistical analyses of range in utterance length did not reveal any significant differences between conditions or condition sequences. However, it was found that all subjects whose upper utterance length fell outside the group's standard deviation boundaries, had an utterance length that was above the upper length set by Brown (1973). As discussed in the literature review the use of narration as a language sampling technique may have influenced the length of subject's utterances, as it tends to promote longer utterances.

Several syntactic and semantic features of language (fourteen grammatical morphemes, noun phrase elaboration, verb phrase elaboration, negation, semantic roles, clause structure, and sentence types) were also analyzed. Methods for obtaining objective measures for comparison to established norms, as can be done with MLU, TTR, and RUL, have not yet been established. However, the occurrence of these features can be recorded and descriptively analyzed. This analysis provides a profile of those features used more frequently in a given context and helps to provide a picture of a child's language skills, by detailing the structural and semantic variety in a sample. It also provides a detailed description of a child's language performance and can be used to profile a child's developmental language abilities by comparing an individual child's profile to established developmental milestones, such as those reported by Miller & Chapman (1982) and Retherford (1993). Further, language performance in any particular sample is analyzed to determine the individual child's use of target structures in obligatory contexts to determine progress toward the mature language system. In this way, progression toward the adult model can be determined at a given point in time and repeated compared to repeated successive samples from the same child over time.

Descriptive analysis of the fourteen grammatical morphemes revealed slight differences between the video narration context and art narration context. A difference of 11 percentage points for use was seen in Group A between the two conditions for the grammatical morpheme *irregular third person singular.* The percent use in obligatory contexts of this morpheme in video narration for Group A was 82.4%, which is below the 90% master level set by Brown (1973). The percent use of the same morpheme in art

narration for Group A was 93.8%. The percent use of the *irregular third person singular* morpheme for Group B in video narration was 88.2%, once again below the set level for mastery. The percent use for this group in art narration was 90%. While this difference is not as great as that seen for Group A, it appears that the art narration context elicited a greater percentage of correct use of the *irregular third person singular* morpheme. Developmentally, this is the latest acquired of the fourteen grammatical morphemes and therefore a reflection of linguistic maturation for children in Stage V or above (Miller, 1981). Therefore, the art narration context provided greater opportunity for the subjects to demonstrate a particular feature reflecting linguistic maturity that would not have been evidenced at mastery level during the video narration task. This is useful for the speech-language pathologist or teacher trying to elicit or encourage the use of this particular feature from a child.

A similar occurrence but in differing conditions is seen with the *contractible auxiliary*. Group A and Group B had 100% mean use in obligatory contexts of this morpheme in video narration. In art narration Group A had 90.2% use and Group B had 87.5 % use of the *contractible auxiliary*. These differences suggest that the use of video narration may be somewhat more useful in eliciting *contractible auxiliaries* from children. This feature is not expected to be acquired until children reach Stage V (age 41-46 months, MLU of 3.75-4.5, embedding of sentence elements occurs) or later, in linguistic maturity.

The noun phrase can be elaborated extensively in generating utterances of increasing syntactic complexity. The greater the amount of elaboration in the noun phrase the more complex the phrase and sentence become. During video narration *initiators* (i.e. well, so, etc.) *nouns, pronouns,* and *post-noun modifiers* (i.e. The boy *who went there* was gone.) were used more frequently than during art narration. During art narration the *determiner* (i.e. the, a, this, that, etc.) and *adjective* were used more frequently. The greater use of the *determiner* and *adjective* may be a result of the language sampling context. The use of art in combination with narration provides a referent in which more description may be used and more frequent reference (use of *determiners*) to the picture may be elicited. The greater use of the noun in video narration may be due to the fact that the subjects did not have the ability to refer to the picture drawn as a

means to enhance the listener's understanding of the narration, and thus had to use more specific language in their narration.

Perhaps more meaningful than the between condition differences, however, are the effects of condition sequence. When the sequence of each condition was examined for difference in noun phrase elaboration it was apparent that there were differences between the first condition and the second condition in each group. In each group, four of the five elaboration types were used more frequently in the second condition. It appears that as the subjects became more familiar with the story in the cartoon they were able to elaborate more effectively and with greater complexity, regardless of the context in which the sample was elicited.

The verb phrase is another integral part of linguistic structure. The effect of verb-phrase elaboration creates a more complex verb phrase and significantly changes the complexity of the sentence. Comparison of verb phrase elaboration in video narration and art narration revealed some differences. In video narration the *perfect auxiliary*, and *prepositional phrase* were used more frequently. The *verb* was also used more frequently in this condition. In art narration the *modal auxiliary, passive,* and *noun complement/adverbial phrase* were used more frequently. These differences between video narration and art narration for each of these modifiers was not greater than four occurrences. However, it may be the case that video narration may be more effective in eliciting the *perfect auxiliary*, and *prepositional phrase* and art narration may be more effective in eliciting *modal auxiliary, passive,* and *noun complement/adverbial phrase.* This knowledge may be a consideration when attempting to elicit or encourage the use of a specific verb phrase modifier.

As was seen in noun phrase elaboration analysis, it appears the condition sequence has an influence on the frequency of elaboration of the verb phrase. In Group A, six of the verb phrase elaboration types (*modal auxiliary, to be verb, negative, passive, prepositional phrase/noun phrase, and noun complement/adverbial phrase*) were used more frequently in the second condition. In Group B five of the elaboration types (*modal auxiliary, to be verb, negative, verb, preposition phrase/noun phrase*) were used

more frequently in the second condition. These findings continue to suggest the amount of exposure the child has to the video the greater the complexity of their language.

The clause structure of a sentence is based on the complexity of the verb phrase. The most significant difference between video narration and art narration in clause structure types was in the *dependent clause.* It was used approximately four more times in the video narration context than in the art narration context. The *independent clause* was used approximately two more times in the art narration context than in the video narration context. The *complex verb clause, adverbial clause, subject clause, relative clause,* and *compound clause* were all within one occurrence of each other across the two conditions. There does not appear to be a difference in the use of the clause structure types, when comparing the sequence of the conditions. These data are interpreted to mean that either context for sampling a child's language will elicit equivalent use of the various clause structures, though the dependent clause may occur more frequently during video narration than during art narration.

There are four different sentence types, the *declarative, imperative (command), interrogative (question),* and some consider the *negative* the fourth type (Retherford, 1993). In the art narration context the *interrogative* and *imperative* were used with more frequency (+.84 imperative, +2.5 interrogative) than during video narration. The greater occurrence of the *interrogative* may suggest that the child has a greater opportunity to process information regarding the cartoon while drawing and thus has more opportunity to ask the listener questions. During the collection of the language samples in the art narration context the use of the *imperative* appeared to be nearly always related to the picture the child was drawing and often was a command to "look at this", or something similar. The *declarative* and *negative* sentence types were used consistently across the video narration and art narration contexts. When comparing condition sequence effects, it appears that each sentence type was used more frequently in the second condition. This may be a further indication of the child's familiarity with the topic as a result of seeing the cartoon multiple times.

The frequency of negation types within the two conditions and across the condition sequences was analyzed descriptively. The greatest difference was seen in the use of a negative in conjunction with the

noun phrase, auxiliary or *verb phrase.* It occurred approximately eight more times in art narration than in video narration. It was also the most frequently occurring negation type for both groups in both conditions. The difference in occurrence of all the other negation types was never greater than 0.5. When comparing the effect of the sequences, the *"no + noun phrase or verb phrase", "not + noun phrase or verb phrase", noun phrase + negative + verb phrase" and, "noun phrase + auxiliary + negative + verb phrase"* occurred more frequently (+.5 to +3.5) in the second condition. This contributes support to the argument that greater exposure to the subject will lead to greater complexity in a child's language, more substantially than the sampling condition alone.

Conclusions

The results of this study suggest that the amount a child is able to view a cartoon used for language sampling contributes to the frequency the language constructs occurred in the child's language sample. The language sample of one subject in particular further supports this data. This subject had seen the video before the beginning of the study. His ability to elaborate on the story and to then continue with his own version, despite the fact that he knew the intended ending, appeared to be greater. It was also noted by the examiner that this subject's ease with the task appeared greater.

The narrative structure of the subjects generally reached the level of the unfocused chain. At this level events and characters in their narratives were logically linked. There was a theme noted throughout the narratives. It was always the case that what the child was attracted to within the cartoon was the focus of their narration throughout the sampling context. For example, several children focused on a particular fish in the cartoon with very large eyes, and a small body. Despite the fact that this fish was not a main character in the cartoon it remained an important character in the subject's narratives and in their drawings. The subjects also displayed some physical cause and effect awareness in their narratives. For example, they describe a scene in which the shark became stuck and as a result missed the fish.

The amount of narration in the language samples lessened as the subjects finished their narratives and as a result their language began to diverge onto various topics that were not consistent between

subjects. The examiner noted that as this began to happen the subjects talked less and sampling became more difficult and much like a conversation. In the art narration context this did not appear to happen as quickly, which may have been a result of the time it took to draw and describe their drawing. It also gave the subjects more to talk about, and the picture was a reminder of the topic at hand.

Some children appeared frustrated with the narration, especially following the initial presentation of the stimuli regardless of the task (Condition X or Y). It appeared they often had a difficult time remembering everything that had occurred in the video. In future research, and clinically, the use of a familiar cartoon or video with which the child may have some experience may aid in reducing or eliminating this type of frustration. This may aid in decreasing the high processing demands of the video narration context, and as was demonstrated in the results the more a subject saw the cartoon the greater their ability to effectively narrate the events in the cartoon.

It was noted that many of the subjects had difficulty understanding the request to finish or make up the story. It may be that they were not at a level of functioning making this task possible. Several children needed extended explanation of what "make up" meant and were still not sure what to do. They often replied that they hadn't seen the end. The combination of the multiple tasks of narrating, drawing, and speaking with an unfamiliar person may have also made this task difficult.

The presence of scripts was evident in the subject's narratives. As discussed in the literature review, a script is a set of ideas we hold regarding events, people and so on (Singer, 1990). We use these scripts when we encounter an experience familiar to a past experience we have a script for and often adapt that to the new experience. The subjects often incorporated their experiences with fish, sharks, water and so on in their narration (i.e. zoo trips, fishing experiences) and following the completion of their narrative would use those experiences in the continuing conversation.

While there did not appear to be an overall consistent difference in the language elicited in the video narration context and the art narration context there were differences that can be used when determining what context to use to sample a child's language, especially when attempting to elicit a specific

feature of language. The examiner noted that the subjects talked more, and talked more freely in art narration and appeared more relaxed. However, the art narration context did require more time for the sampling process to occur and more silent time (time in which the child is not narrating) should be expected in the beginning of the language sampling condition.

Implications

The purpose of this study was to determine if there was a significant difference in the language elicited with video narration and art narration. It also provided a stepping stone from which further research on the use of art combined with narration as a language sampling context can be used clinically. Specifically the use of art as a language sampling context with children who are suspected or are known to have language disorders now needs to be investigated. Further research on the narrative structure in each condition would be useful as a stepping stone to research on narrative structure in the art narration context for children with language disorders. Research into the elimination of the background music from the cartoon, and its effect on the language constructs elicited, may also provide valuable information on the most effective means of eliciting children's language. This research demonstrated that when sampling the language of children whose language was known to be developing in the expected manner through art narration that the language elicited did not differ significantly from the language elicited from video narration, which is an established language sampling context.

APPENDIX A

Description of Wording Used in Data Collection

Group A

Video Narration

Examiner: You are going to watch a cartoon twice. Both times I am going to stop the cartoon before it ends. After the second time you watch the cartoon I want you to finish the story for me.

Examiner: (following the second viewing): What happened in the cartoon?

Examiner: What do you think happened at the end?

If the child does not understand repeat exactly once more and if he/she still doesn't understand rephrase and make note of it. The examiner will use probes if it does not appear that the child wants to talk. Examples of such probes are: tell me more, explain that, and so on.

Art Narration

Examiner: Now you are going to watch the video one more time. This time after the video is done you will draw what you think happened in the story.

Clinician (after the drawing is completed): What happened in the cartoon?

Clinician: What do you think happened in the end?

GroupB

Art Narration

Examiner: You are going to watch a cartoon twice. Both times I am going to stop the cartoon before it ends. After the second time you watch the cartoon you will draw what you think happened at the end.

Examiner (after drawing is finished): What happened in the cartoon?

Examiner: What do you think happened in the end?

Video Narration

Examiner: Now you are going to watch the video one more time. This time after the video is done you will tell me what happened in the video and what you think happened at the end.

Examiner: What happened in the cartoon?
Examiner: What do you think happened at the end?

References

American heritage dictionary. (2nd ed.). (1985). Boston: Houghton Mifflin Company.

Barrie-Blackley, S., Ramsey, M. C., & Rogister, S. (1978). Clinical oral language sampling. Illinois: The Interstate Printers and Publishers, Inc.

Berko-Gleason, J. B. (Ed.) (1993). The development of language. New York: Macmillan Publishing Co.

Borg, W. R., & Gall, M. D. (1979). Education research. New York: Longman Inc.

Brown, R. (1973). A first language: The early stages. Cambridge, MA.: Harvard University Press.

Campbell, L. R. (1994). Discourse diversity and Black English vernacular. In D. N. Ripich & N. A. Creaghead (Eds.), School discourse problems. (pp. 93-132). California: Singular Publishing Group, Inc.

Cohen, E. P. (1976). Art: Another language for learning. New York: Citation Press.

Crystal, D., Fletcher, P., & Garman, M. (1976). The grammatical analysis of language disability: A procedure for assessment and remediation. London: Edward and Arnold.

Dawson, G., Finley, C., Phillips, S., & Lewy, A. (1989). A comparison of hemispheric asymmetries in speech-related brain potentials of autistic and dysphasic children. Brain and Language, 37, 26-41.

Dollaghan, C. A., Campbell, T. F., & Tomlin, R. (1990). Video narration as a language sampling context. Journal of Speech and Hearing Disorders, 55, 582-590.

Gaddes, W. H. (1985). Learning disabilities and brain function. New York: Springer-Verlang New York, Inc.

Gallagher, T. M. (1991). Pragmatics of language: Clinical practice issues. California: Singular Publishing Group, Inc.

Gardner, H. (1993). Multiple intelligences: The theory in practice. New York: BasicBooks.

Haynes, W. O. (1994). Concepts in neurolinguistics and information processing. In W. O. Haynes & B. B. Shulman (Eds.), Communication development: Foundations, processes, and clinical applications (pp. 29-54). New Jersey: Prentice-Hall, Inc.

Haynes, W. O., Pindzola, R. H., Emerick, L. L. (1992). Diagnosis and evaluation in speech pathology. New Jersey: Prentice-Hall, Inc.

Hubbell, R. D. (1988). A handbook of English grammar and language sampling. New Jersey: Prentice Hall, Inc.

Kläger, M. (1992). Nonverbal thinking and the problems of decoding exemplified by the artwork of people with developmental disabilities. American Journal of Art Therapy, 31, 41-45.

Klee, T. (1985). Clinical language sampling: Analysing the analysis. Child Language Teaching and Therapy, 1, 182-198.

Lahey, M. (1988). Language development and language disorders. New York: Macmillan Publishing Co.

Lee, L. L. (1974) Developmental sentence analysis. Northwestern University.

Liles, B. (1985) Production and comprehension of narratve discourse in normal and language-disordered children. Journal of Communication Disorders, 18, 409-427.

Lowenfeld, V., & Brittain, W. L. (1982). Creative and mental growth. New York: Macmillan Publishing Co., Inc.

Love, R. J., & Webb, W. G. (1992). Neurology for the speech language pathologist. Boston: Butterworth-Heinemann.

Lund, N. J., & Duchan, J. F. (1988). Assessing children's language in naturalistic contexts. New Jersey: Prentice-Hall, Inc.

Masterson, J. J., & Kamhi, A. G. (1991). The effects of sampling conditions on sentence production in normal, reading-disabled, and language-learning-disabled children. Journal of Speech and Hearing Research, 34, 549-558.

McGuire, G. N. (1984, May). How arts instruction affects reading and language: Theory and research. The Reading Teacher, 835-839.

Miller, J. F. (1981). Assessing language production in children. Maryland: University Park Press.

Nation, J. E., & Aram, D. M. (1991). Diagnosis of speech and language disorders. California: Singular Publishing Group, Inc.

Nelson, N. W. (1993). Children with language disorders: Infancy through adolescence. New York: Macmillan Publishing Co.

Norris, J. A. (1994). Psycholinguistic foundations of communication development. In W. O. Haynes & B. B. Shulman (Eds.), Communication development: Foundations, processes, and clinical applications. (pp. 5-28). New Jersey: Prentice-Hall, Inc.

Paley, V. G. (1994). Every child a storyteller. In J. F. Duchan, L. E. Hewitt, & R. M. Sonnenmeier (Eds.), Pragmatics: From theory to practice (pp. 10-20). New Jersey: Prentice-Hall, Inc.

Patterson, J. L., & Westby, C. E. (1994). The development of play. In W. O. Haynes & Schulman (Eds.), Communication development: Foundations, processes, and clinical applications. (pp. 136-162). New Jersey: Prentice-Hall, Inc.

Perecman, E. (1983). Cognitive processing in the right hemisphere. New York: Academic Press, Inc.

Retherford, K. S. (1993). Guide to analysis of language transcripts. Eau Claire, WI.: Thinking Publications.

Shames, G. H., & Wiig, E. H. (Eds.). (1990). Human communication disorders: An introduction. Columbus, Ohio: Merrill Publishing Co.

Shipley, K. G., & McAfee, J. G. (1992). Assessment in speech-language pathology: A resource manual. California: Singular Publishing Group, Inc.

Silver, R. A. (1989). Developing cognitive and creative skills through art. New York; Ablin Press.

Singer, M. (1990). Psychology of language: An introduction to sentence and discourse processes. New Jersey: Lawrence Erlbaum Associates, Publishers.

Sutton-Smith, B. (1986). The development of fictional narrative performances. Topics in Language Disorders, 7, 1-10.

Templin, M. (1957). Certain language skills in children: Their development and relationships. Minneapolis, MN: University of Minnesota Press.

Watkins, R. V., & Rice, M. L. (1994). Specific language impairments in children. Baltimore, Maryland: Paul H. Brookes Publishing Co.

Wellhousen, K. (1993). Eliciting and examining young children's storytelling. Journal of Research in Childhood Education, 7, 62-66.

Westby, C. E. (1994). Sociocommunicative bases of communication development. In W. O. Haynes & B. B. Shulman (Eds.), Communication development: foundations, processes, and clinical applications, (pp. 199-229). New Jersey: Prentice-Hall, Inc.

Young, E. C., & Perachio, J. J. (1981). The patterned elicitation syntax screening test. Tucson, AZ.: Communication Skill Builders, Inc.

Zimmerman, I. L., Steiner, V. G., & Pond, R. E. (1992). Preschool language scale-3. Sand Antonio, TX: The Psychological Corporation.