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Joanne Y. McCall

University of Central Florida

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METALINGUISTIC DEVELOPMENT PARALLELED WITH PIAGETIAN STAGES

BY

Joanne Y. McCall

B.S., Indiana University of Pennsylvania, 1983

THESIS

Submitted in partial fulfillment of the requirement  
for the Master of Arts degree in Communicative  
Disorders in the Graduate Studies Program of the  
College of Health  
University of Central Florida  
Orlando, Florida

Spring Term  
1988

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## INTRODUCTION

Language has been thought to encompass the components of syntax, semantics and pragmatics. It is thought that children acquire these components in a developmental fashion to emerge as their language.

However, in the recent past a fourth component known as metalinguistics has been considered as a developing factor of language. Van Kleeck (1982) defined language development in terms of two different but related achievements. The first includes the child's developing linguistic skills: syntax, semantics and pragmatics. The second is metalinguistics, which she defined as "the ability to reflect consciously upon the nature and properties of language" (p. 237). Wilkinson, Wilkinson, Spinelli and Chiang (1984) stated "metalinguistic awareness is conscious reflection on language as an object of knowledge" (p. 2130). Nicolosie, Harryman and Kreshnick (1983) stated that metalinguistics is the "ability to think about language and comment on it, as well as to produce and comprehend it" (p. 149). The literature indicates that young children have metalinguistic abilities, but seldom use them because they are more concerned with the content of the utterance, not the linguistic form. However, Hakes (1982) and Smith and Tager-Fulsberg (1982) disagree with that contention. They feel children do not display linguistic judgment ability until four or possibly up to eight years of age.

Syntax, semantics and pragmatics are independent and may be assessed separately from one another. However, metalinguistics depends on the three language components and can't be measured without one of the components.

The literature pertaining to metalinguistic abilities in children expands as the subject encompasses more fields of learning and brings about increased interest. The literature will be reviewed in terms of syntax, pragmatics, semantics and cognition.

### Syntax

Liles, Schulman and Bartlett (1977) studied linguistically normal children and linguistically deviant children's ability to judge sentences as correct or incorrect according to three types of agrammatical sentences: violation of syntactic agreement, lexical restrictions and word order. The results yielded a significant difference between the groups in terms of violation of syntactic agreement and word order, but they didn't differ in recognizing errors in sentences containing lexical restrictions. Language-disordered children corrected sentences with lexical restriction errors better than any other type of sentence error. Normal children accurately corrected sentences for 90% across all three sentence types.

Scholl and Ryan (1980) investigated kindergarten, second and fourth grade children to determine their knowledge of syntax according to two metalinguistic tasks. The metalinguistic tasks consisted of judgment and repetition of sentences that differed grammatically.

No significant levels for age were noted for repetitions, while the older children were more accurate in making judgments.

However, Chappell (1980) studied mean length of utterance in children from fourth to seventh grade to establish their syntactic abilities. He also measured the use of five syntactical structures along with assessing their oral language skills. The results indicated a significant difference for mean length of utterance between the two groups. The younger children had a smaller mean length of utterance, but they used the following: noun clauses, modifiers and verb phrases as well as the older children.

Metalinguistic abilities of normal children and language-disordered children ranging in age from four years to seven years, two months was studied by Kahmi and Koenig (1985). The normal children and the language-disordered children corrected sentence errors in terms of syntactic and phonological origin in similar ways. The two groups did not display a difference in their repair strategies. Making judgments concerning semantic pertinence appears to be the easiest form for normal children according to Clark (1978).

### Pragmatics

In the past, language acquisition of children has focused on their language utterances and/or knowledge of grammatical rules for forming those utterances. Recent research indicated that focusing on the grammatical aspect may obscure several relevant factors of communicative competence (Savich, 1983).

A knowledge of the rules governing language use is needed for communicative competence (Hymes, 1972). The knowledge about the rules of language has two aspects. The first is the knowledge a speaker has concerning language rules. This knowledge is better described as language comprehension and performance. The second is the speaker's actual awareness of these rules, which is better known as metalinguistics. Few studies have investigated the metalinguistic awareness of pragmatic knowledge, which is known as metapragmatics (Savich, 1983).

Bates (1976a) was one of the first to investigate metapragmatic skills which she describes as "talking about talking" (p. 35). She conducted a longitudinal study with two children in Italy. The study revealed three stages in metapragmatic development that occur before a child is able to talk about speech acts in their entirety. The first stage concluded at about one and a half years old. The children could not shift the roles of speaker and listener. However, they could talk about themselves, their listener and some aspects of speech acts. The second stage ranged from one and a half to two years of age. At this point the children began to use the following: simple conjunctions, binary time adverbials and noun modifiers. These forms of speech indicated that the children were aware of their intentions for using the act and also aware that the speech act could be used to comment on a previous utterance. The third stage began at two and a half years of age. This is where the children began to talk about talking. They were using metapragmatic comments.

Bates suggested that for children to make metapragmatic statements, they must be able to simultaneously focus on two different procedural levels: the initial proposition and the resulting speech act and a new proposition formed from the relation between those two. Therefore, the child is able to talk about talking. This led Bates to hypothesize that the child must be able to process more than one complex symbolic unit mentally, in order for the speech act to become an object of thought and a topic of language. In children's language Bates identified three types of pragmatic structures: performatives, presuppositions and conversational postulates. The awareness of these three structures in children indicated knowledge of metapragmatics. The speaker's goal is known as a performative. In order to have metapragmatic awareness of performatives it is necessary to be aware of different speech acts and their correct use in a number of varied contexts. Research thus far, has investigated metapragmatic awareness in terms of directives only, which are better known as requests.

Bates (1976a) investigated children from three to seven years old to determine their awareness of politeness and their ability to talk about speech acts. The results indicated that children by the age of three are aware of the polite forms function and can make metapragmatic judgments concerning polite forms with increasing accuracy. The children also demonstrated pragmatic competence. However, metapragmatics and pragmatic competence are not one in the same. Therefore, their metapragmatic reasoning skills are separate and develop later from the pragmatic competence skills.



Bates' study is the only study to examine normal children's meta-pragmatic knowledge of performatives. Others have investigated meta-pragmatic judgments to determine pragmatic and communicative competence (Nippold, Leonard & Anastopoulos, 1982; Reeder, 1980 and Bates & Silvern, 1977).

Leonard and Reid (1979) investigated three to six year olds in order to examine their knowledge of presuppositions directly. The results indicated that children are aware to a certain degree of the presupposed information between a speaker and a listener at an early age. As the child develops so does their awareness. At about four or five years of age they are able to start to accurately judge and infer about the appropriateness of an utterance along with the speaker's intentions.

Reeder (1980) investigated two and three year olds to determine their ability to judge from context the underlying intentions in a single utterance. He also wanted to identify the linguistic and pragmatic cues children use to determine the intent of a message. The three year old children judged the requests better than the two year olds. However, both age groups did well in judging offers.

Ackerman (1981a) observed children from five to seven years old. Knowledge of relevance, informativeness and contingency of the conversation rules were assessed. The results indicated that six and seven year olds along with some five year olds were able to correctly judge utterances according to context based on conversational rule knowledge and/or awareness.

A second experiment by Ackerman (1981a) involved six and eight year old children. The children were to identify the intention of the speaker and then decide if any conversational rules had been violated. Only the older children were able to identify the intention of the speaker in violating a rule. Six year olds could identify the utterances that were correctly formed and those that violated conversational rules. However, they could not explain the reason for the violation of the rules. Ackerman hypothesized that in learning to comprehend conversational rules the child may need to recognize and accept correct explanations.

Ackerman (1981b) also investigated six to eight year old children's awareness of truthfulness in conversation. The results indicated that eight year olds could distinguish factual information and information contained in a false utterance. The older children were also aware of the reasoning behind deliberately using a false statement, which appears to increase with age.

The metapragmatic abilities of language-delayed children have been the center of attention in only two studies. Prinz (1982a) investigated three to five year old normal children and five to seven year old language-delayed children. The children were studied to determine their ability to comprehend, produce and judge requests in varying degree of directness. The language-delayed children were not able to produce syntactically complete and varied requests as well as the normal children. The judgments of politeness of requests by the language-delayed children were comparable to the younger normal

children. The language-delayed children also judged indirect requests as being less polite than direct requests. The metapragmatic judgments of the language-delayed children indicated their pragmatic concepts in regards to politeness of requests were significantly delayed when compared to the normal children. Prinz (1982b) later studied thirty language-disabled children from three to nine years old. These results reconfirmed his previous results.

Studies by Donahue, Pearl and Bryan (1980) and Donahue (1981) revealed some interesting results concerning learning-disabled and normal children. When an inadequate description was given, the learning-disabled children less frequently requested help in comparison to the normal children. However, both groups of children for the most part could identify an inadequate description. This reinforces the idea that learning-disabled children possessed the linguistic abilities, but they did not have adequate conversational rules for repairing the communication breakdown when interacting with adults.

Donahue and Bryan (1982) indicated that learning-disabled children may be aware of their own language limitations which may inhibit them from certain conversational situations which may call attention to their language ability. The results of their study indicated both the normal and the learning-disabled children displayed metapragmatic insight. However, the language-disabled children indicated the stress of the task and the importance of the emotional state of the host.

Pragmatic and metapragmatic knowledge of conversational rules was displayed by the learning-disabled children. However, it is not



certain if their linguistic limitations occur due to their unassertive behavior, lack of knowledge as to how and when to use specific conversational skills or a combination of both (Savich, 1983).

Wilkinson, Wilkinson, Spinelli and Chiang (1982) investigated the school age child from five to seven years old for metapragmatic knowledge of the request function. They utilized three tasks to determine their data: production, comprehension and reflection. The results indicated consistent differences for the age of the child along with the type of request used. Older children used the indirect request form more often, and they were able to justify an inappropriate request according to pragmatic violation. Wilkinson et al (1984) later did a similar study again involving children from five to seven years old. The study was to determine metalinguistic awareness of pragmatic rules in relation to judging the appropriateness of indirect and direct requests. The results indicated significant differences for the age of the child and the type of request. Again, older children used the indirect request form more often, and they were able to justify an inappropriate request according to pragmatic violation. For both age groups, indirect forms were used for requests for action, while direct forms were used for requesting information.

#### Semantic/Cognitive

A study conducted by Templeton and Spivey (1980) observed the development of the "word", in children from four years to seven years old and eight months. They also investigated to what degree metalinguistic awareness corresponded to the levels of Piaget's (1952)

cognitive development. The results indicated that the understanding of what a word actually is develops over a period of time, which was also noted in the Papandropoulou and Sinclair (1974) investigation. It was also suggested that the word development does follow the Piagetian cognitive levels to a great extent.

Papandropoulou and Sinclair (1974) investigated children four to ten years old to determine if the development of metalinguistic competence coincides with Piaget's (1952) cognitive structure. This study was concerned with the concept of "the word." The results of the study revealed that the concept of the word develops over a long and slow process. The authors identified four stages according to ages the concept of the word undertakes. Their findings of the emergence of the word appear to correspond to Piaget's cognitive structure.

Templeton and Thomas (1984) conducted an investigation on their performance and reflection of children's concept of a word. Four tasks to measure the performance and reflection knowledge of words were administered to children at the transitional and the concrete level of operations according to Piaget. The Piagetian theory claims that language performance must occur before metalinguistic ability may be acquired. However, the results of this study do not support the Piagetian theory but instead support an interactionist theory. The interactionist theory supports the view that language performance and metalinguistic ability work together to develop the child's concept of words.

Bowey, Tunmer and Pratt (1984) investigated children's understanding of the metalinguistic term "word" at three different grade levels:

preschool, first and second grades. The results yielded that children's developing concept of the word in relation to spoken language was increased after brief instruction, where they were taught to attach the metalinguistic label "word" to the concept.

Green (1985) observed three levels of metacommunication and the five factors that have been identified in a pilot study to help the listener understand the speaker's meaning. To determine if these levels and factors may be generalized, the following study was conducted using three different age groups: five to seven year olds, eight to eleven year olds and thirteen to eighteen year olds. The results yielded significant age group differences and a sequence for the metacommunication knowledge levels was indicated.

Several authors view that a developmental sequence may exist in a child's use of metalinguistic abilities. Van Kleeck (1982) indicated that language development generally may be considered in terms of two different aspects: development of primary linguistic skills and the emergence of metalinguistic skills. According to van Kleeck (1982) metalinguistic performance reflects a child's cognitive reasoning capabilities at different stages in development. Thus, leading one to believe a relationship does exist between metacognition and metalanguage.

Van Kleeck (1982) supported the thought that the development of metalinguistic skills are integrated into the Piagetian theory. According to van Kleeck, Piaget's model was developed to allow us to look at the growth awareness of children's sensorimotor actions, but it also provides a framework in considering the relationship between

metalanguage and metacognition. This model relies on the premise that development occurs as a function of the dynamic interaction between the environment and the child, and practical actions occur as a result of the interaction. Awareness begins when the child realizes that practical actions result in particular goals and results. Their main focus is on the end product. Awareness then progresses in two directions: toward the subject and toward the object. Movement toward the object occurs first. This is simply attending to the observable features of an action. Movement toward the subject occurs when the child becomes aware of the problem that needs solving, the cognitive ways in which to solve the problem and the underlying structures which are necessary to do so. The manipulation needed to complete the action must be inferred. They are not directly observable as they were in the object phase.

Van Kleeck (1984) further supported the Piagetian theory by developing her own cognitive stages. Her stages involved: centration, concrete and formal operations. Van Kleeck's stages are similar to Piaget's in many aspects. Her stages mainly differ from his in terms of age, by approximately one year.

In summary, the previous studies dealing with metalinguistics have centered on the young school aged child. The results of the studies indicated that for the most part older children demonstrate a better understanding of the rules of language. At the time of entering school most children demonstrate some metalinguistic abilities, but during the first few years of school the children display a noticeable increase in their knowledge of metalinguistics. Thus, indicating a Piagetian parallel.

### Acquisition

Two studies regarding the acquisition of language abilities are important to consider. Morehead and Ingram (1973) pointed out that language ability of the language-disordered child should not be considered odd just because they acquire their skills slower. Lawson and Woolman (1976) conducted an investigation to determine the effects of teaching formal operational stage tasks to those children still at the concrete operational stage. The results indicated that teaching strategies do help advance children from one stage to the next.

Several conclusions may be drawn from the accumulation of data. It appears that: (a) teaching techniques are effective in advancing children from one Piagetian operational stage to another; (b) language-disordered children and normal language children display a significant difference in regards to mean length of utterance; (c) the two groups do not demonstrate any differences in their respective repair strategies; (d) the normal language child displays easier semantic judgments in comparison to the language-disordered child; (e) it appears clear that cognitive ability is a prerequisite for the development of meta-linguistic skills as well as for the areas of syntax, semantics and pragmatics.

### Statement of the Problem

Piaget's (1952) cognitive operational levels offer the best explanation for the rationale of this investigation. The two operational levels of importance to this investigation are the concrete



operational stage and the formal operational stage. According to Piaget, the concrete operational stage includes children from seven years to eleven years old. The children at this stage demonstrate logical thought and the capability of utilizing a hierarchical process. The formal operational stage includes children from eleven years old and older. The children at this stage demonstrate abstract thought and complex reasoning such as adults display.

Utilizing the information from Piaget's concrete operational stage and formal operational stage it appears clear there should be performance differences between third and eighth grade students due to their functioning in concrete operational and formal operational stages, respectively.

The purpose of this investigation was to determine the differences, if any, between eighth-graders performance and third-graders performance on metalinguistic tasks.

## METHODOLOGY

The information in this study was compiled through the administration of the Metalinguistic Tasks for Adolescent Children (Griffin, 1986). The experiment was conducted in the Sumter County Public Schools using third and eighth grade students. Parent permission was obtained for each student prior to their participation (Appendix A) and notification was sent to all parents after the testing was completed as to whether their child was included in the study (Appendix B). The study was conducted in a quiet school setting over a period of four sessions. The test was administered to each student individually by one of four qualified speech language pathologists who were thoroughly trained in the administration and scoring procedures. The students were required to respond both verbally and non-verbally.

### Subjects

Fifty students, twenty-five third graders and twenty-five eighth graders, were selected from Sumter County Public Schools. Each third grade and eighth grade student was given a permission slip explaining the investigation, and the confidentiality of the student participants. Only those students whose parents granted permission were considered for the investigation. The students who participated in the investigation demonstrated normal speech and intellectual abilities along with no known auditory or visual difficulties. All the students were

administered a visual and auditory screening to ensure those modalities were within normal limits. The vision screening was administered by the speech language pathologist who had been qualified by a school official for this testing. The students that passed the vision screening were given an audiological screening at 25dBHL for the frequencies of 500 Hz, 1000 Hz, 2000 Hz and 4000 Hz (Appendix C). Those students who failed any screening device were referred to the school nurse for a follow up examination and were not considered for the study. Those students who passed the screening devices were randomly selected to fulfill the sample size of twenty-five at each grade level. Students intellectual ability were judged by scores in their cumulative records.

Students who were chosen to participate were given explanations about the test and the procedures to be used. They were also told that at any time during the test they had the right to stop the testing procedure if they choose not to continue. Each sample size of twenty-five students consisted of eight white females, eight white males, eight black females and one black male.

### Instrumentation and Scoring

The Metalinguistic Tasks for Adolescent Children (Griffin, 1986) is composed of seven tasks. The tasks include: Conflict Sentence Difference, Classification, Word Referents, Listening Game, Sentence Reformulation, Categorical Naming and Sentence Formulation. These tasks assessed semantic, syntactic, cognitive and metalinguistic abilities. The students were required to give verbal and written



responses. Approximately forty-five minutes was required to administer the test per student. Each task is described below and a complete test protocol may be found in Appendix D.

### Conflict Sentence Difference

The Conflict Sentence Difference task was administered to assess the student's ability to determine the accuracy of a sentence according to semantics and syntax. Each student was instructed to identify if a sentence sounded "right" or "not right". If the sentence did not sound right (e.g., The horse, that found I, followed me home). Each sentence was read out loud to the student. The task was scored by determining the number of correct and incorrect responses to display a raw score. Semantic and syntactic errors and the place of the error, within or outside the clause, were also determined.

### Classification

The Classification Task was administered to determine each student's ability to classify objects in reference to their similarities and differences. The students were given a list of words and were instructed to divide the list into two groups with each word in each group being alike in some fashion. The students were then instructed to make a third list using words from the two previous lists. Again, the list had to be alike in some fashion. The students were given a "+" for a correct answer and a "-" for an incorrect answer for the first task completed and the same scoring procedure was used for the second task completed. The number correct and incorrect for each grade level was calculated.

### Word Referent

The Word Referent task was administered to assess the ability of the students to describe a word. The students were instructed to listen and identify if the word spoken was a "big" or "little" word and why (e.g., bug, dictionary, radio, cigarette). The scoring for this task was determined by categorizing each response in terms of how the student described the word. The student's descriptions fell into three categories: number of letters in the word, the physical size of the object or the function of the word. A mean percentage was calculated for each category listed above.

### Listening Game

The Listening Game was administered to determine the ability of the students to replicate the examiner's sequence of colors hidden behind a barrier. Feedback was given to the student through the use of chips. The student was instructed to make the same color sequence as the examiner's. The scoring for this section was two fold. First, the amount of time each student required to correctly complete the task was recorded in minutes and seconds. Secondly, the number of attempts that were required to complete the task were recorded.

### Sentence Reformulation

The Sentence Reformulation task was administered to assess the student's ability to form a sentence from separate word components. Each student was given a sentence that had been scrambled and they were asked to unscramble the sentence to form a correct one using all the

words given (e.g., was, because, the, movie, all, the, weird, actors, masks, wore, -- The movie was weird because all the actors wore masks). The amount of time required to complete the task was used as the score. Each sentence was timed individually in terms of minutes and seconds.

### Categorical Naming

The Categorical Naming task was administered to determine the ability of each student to name components of a particular category. The students were instructed to name as many items as they could think of in a particular category for a total time limit of one minute (e.g., food, transportation). The number of items named for each category were tabulated to depict a score. A score was obtained for each category.

### Sentence Formulation

The Sentence Formulation task was administered to determine the ability of each student to use a given set of words to form a sentence. The students were given a list of words and were instructed that they may only use the words in the list only once, and that each word must be used and they may add as many other words as necessary to form an accurate sentence. The length of time required to complete the sentence was recorded in minutes and seconds for each sentence. Also each sentence was given a "+" (correct) or "-" (incorrect) in both areas of semantics and syntax.

### Procedure

The students were tested individually by the same speech language pathologist for the visual and auditory modalities prior to the administration of the Metalinguistic Tasks for Adolescent Children (Griffin, 1986). The testing form for the hearing screening is in Appendix C. Those students who met the criteria were then tested individually by one of four qualified speech language pathologists. The students were seated at a table beside the speech language pathologist for all the tasks. The administrators were in one large conference room that were separated by accordion doors giving complete privacy to each administrator.

## RESULTS

The Metalinguistic Tasks for Adolescent Children (Griffin, 1986) were used to assess the performance of third and eighth grade students. The results obtained for this study will be reported in terms of each individual task. At the beginning of this study it was thought that metalinguistic abilities would differ according to the age of the student. As the study progressed it appeared that metalinguistic skills could be influenced by race and sex. Hence, the variables of race and sex were separated to display any differences.

### Task 1: Conflict Sentence Difference

The Conflict Sentence Difference task was used to assess the student's ability to determine the accuracy of a sentence according to semantics and syntax. The errors occurred either within or outside of a clause. Figure 1 shows the total number of sentences correctly identified for third and eighth grade students in terms of race for each grade level. Figures 2 and 3 break down the results in terms of race and sex with Figure 2 displaying results of white males and females and Figure 3 revealing results of black females. Inspection of these numbers does not reveal a large difference between third and eighth grade groups. However, a difference is revealed between white and black students. The proportion test was used to compare the third and eighth graders ability to identify syntactically and semantically

correct and incorrect sentences. A summary of the computed significance levels is displayed in Table 1. This table reveals most syntactic errors occurred outside of the clause while the semantic errors occurred within the clause.

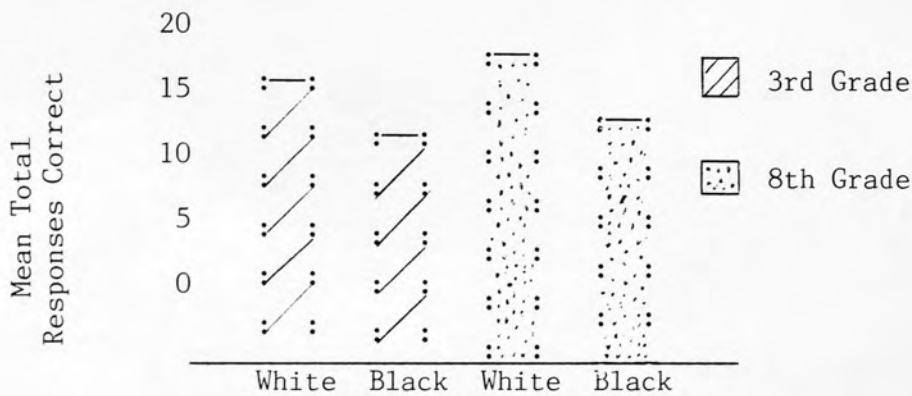


Figure 1. Mean number of correct responses for whites and blacks on Conflict Sentence Difference task.

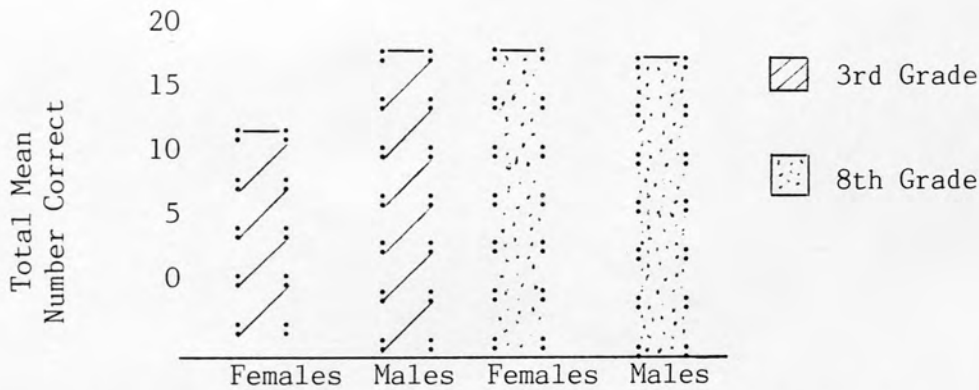


Figure 2. Mean number of correct responses for whites on Conflict Sentence Difference task.



Figure 3. Mean number of correct responses for black females on Conflict Sentence Difference task.

TABLE 1

Z-VALUES FOR THIRD VS. EIGHTH GRADE ON THE CONFLICT SENTENCE DIFFERENCE TASK

	WITHIN	WITHOUT
SYNTAX	--*	2.915**
SEMANTICS	3.3146**	.7563

\* no syntax errors within

\*\* significance at .01

### Task 2: Classification

The Classification task assessed the student's ability to classify words into lists according to similarities and differences. The students were required to divide one large group of words into two lists in such a way that the words in each list would relate in some fashion. Secondly, the students were required to make a third list of related words using some words from each of the two lists they had made previously. Figure 4 displays the number of correct responses for



the third and eighth grade students. It can be seen from the raw data that the word lists were similar for both the third and eighth grade groups. However, the amount of time necessary to complete the exercise was greater for third grade students than for the eighth grade students as can be seen in Figure 5. This difference was tested statistically by applying the Wilcoxon Rank Sum test which revealed a significant difference in the amount of time required by each grade to complete the task ( $z = 3.395$ ,  $p < .01$ ).

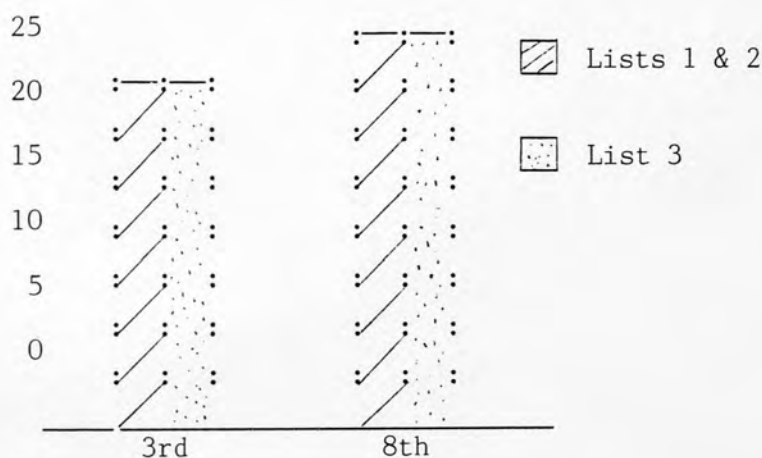


Figure 4. Number correct for third and eighth graders on the Classification task.

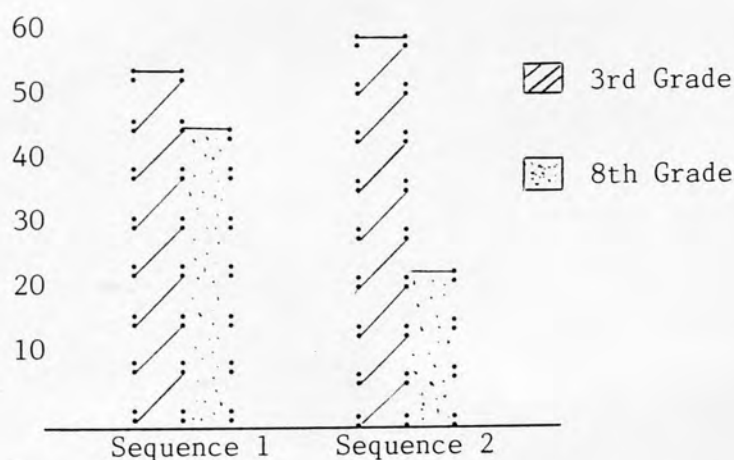


Figure 5. Median time in seconds for third and eighth graders for the Classification task.



### Task 3: Word Referent

The Word Referent task assessed the ability of the students to describe a word. The students were asked to classify the word spoken as "big" or "little" and why. Three areas were identified and used in comparing the two grades: letters, size and function. Some of the students judged the size of the word based on the number of letters/syllables in the word, while others based their decision on the physical size of the word/object and still others based their judgment on the function of the object. Figure 6 reveals differences between the two grades. The eighth grade students identified the difference between a big and little word differently than the third grade students. Figure 7 reveals white students identified the size of a word by letters more than the black students while black students identified the size of a word based on function. Figure 8 shows the females and males performed the task essentially the same. The proportion test was used to compare the third and eighth grade groups. No significant differences were found between the third and eighth grade groups based on their judgments of letters, size and function.

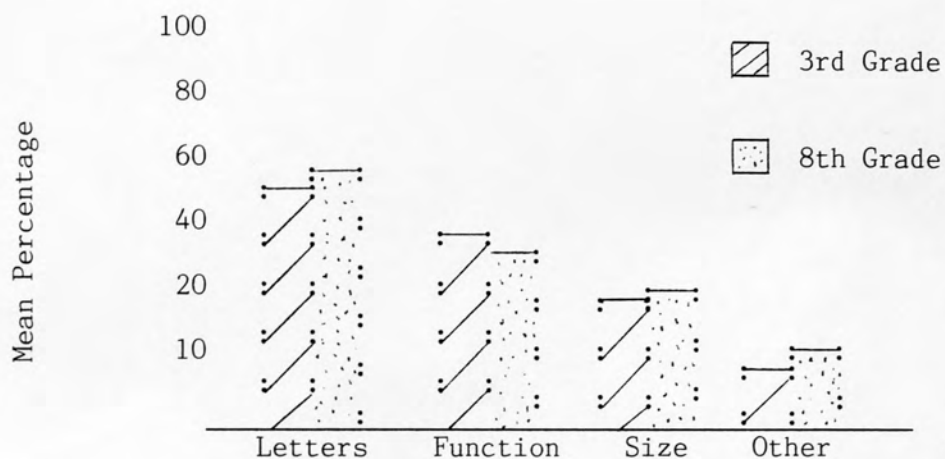


Figure 6. Mean percentage for third and eighth graders for description on Word Referent task.

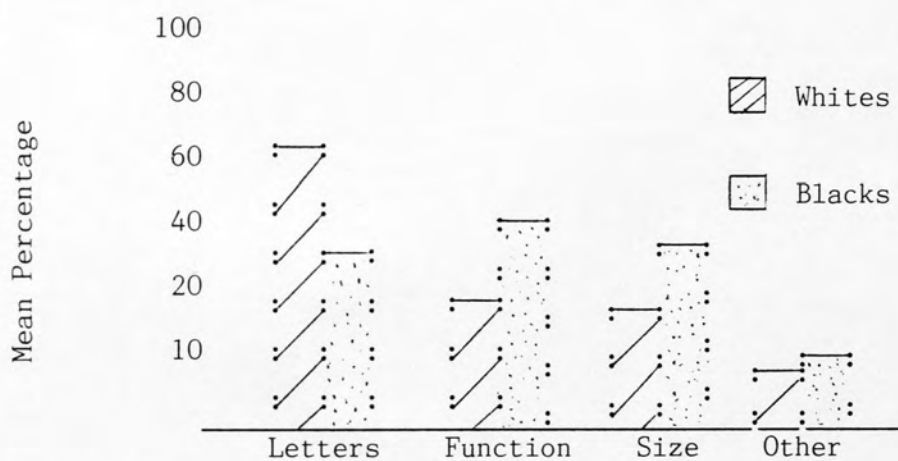


Figure 7. Mean percentage for black and white students for description on Word Referent task.

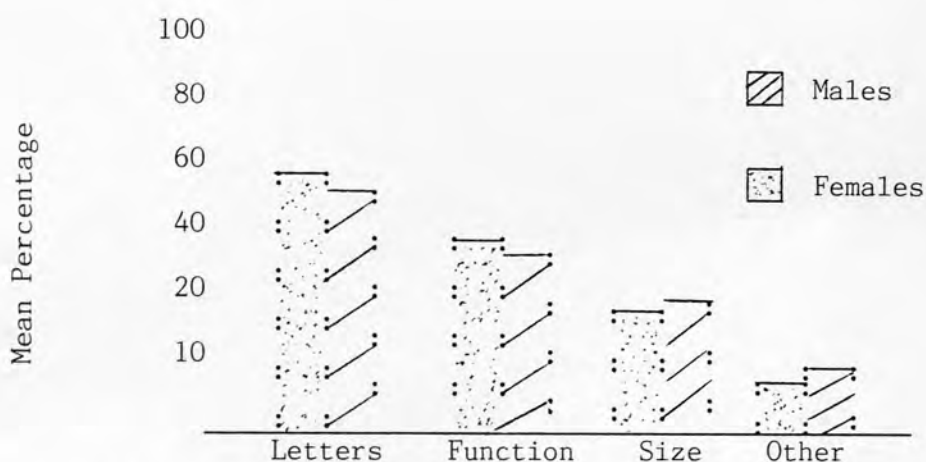


Figure 8. Percentage for males and females for description on Word Referent task.

#### Task 4: The Listening Game

The Listening Game task assessed the student's ability to obtain a goal via feedback. This task required the student to organize colored chips in the same manner as the examiner's while a barrier was between the two prohibiting any visual cues. A predetermined code system of white and black chips was used to provide the student with feedback. Figure 9 displays a higher number of trials were required for the third graders to complete the task as opposed to the eighth graders. Figure 10 reveals that the younger students also required a greater length of time to complete the task. Table 2 displays the computed significant levels for the two sequences in regards to time required for completion of the task. The third and eighth graders' performance was compared based upon the amount of time necessary to complete the task for each sequence and the amount of improvement between sequence one and sequence two. The student's performance on the two Listening Game activities was compared via the Wilcoxon Rank

Sum test. The eighth grade students required less time to complete the task, but it was only significant for sequence 2 ( $z = 3.317$ ,  $p < .01$ ). However, for sequence 1 the eighth graders were almost significantly different from the third graders ( $z = 1.62$ ,  $p > .10$ ) due to the fact the critical value at the .10 level is 1.645. The eighth grade students improved significantly more than the third grade students between the first and second sequence ( $z = -10.68$ ,  $p < .01$ ).

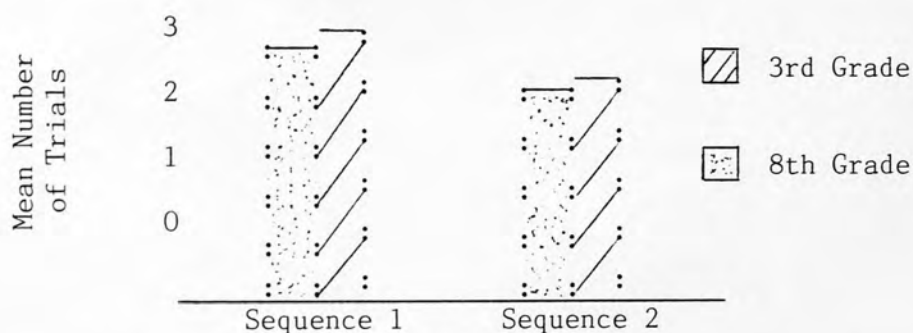


Figure 9. Mean number of trials for third and eighth graders for Listening Game task.

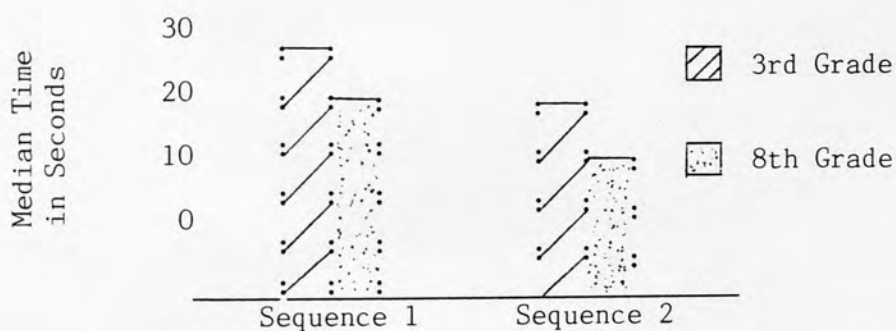


Figure 10. Median amount of time for third and eighth graders for Listening Game task.

TABLE 2

Z VALUES OF THIRD GRADERS VS. EIGHTH GRADERS ON  
THE LISTENING GAME TASK

	<u>TIME</u>
SEQUENCE 1	1.62
SEQUENCE 2	3.317*
IMPROVEMENT BETWEEN SEQUENCES	-10.68 *

\* significance at .01.

Task 5: Sentence Reformulation

The Sentence Reformulation task assesses the student's ability to form a sentence from separate word components. The students were instructed to unscramble a group of given words to form a semantically and syntactically correct sentence. Performance for comparison was based upon correctness of the sentence and the amount of time needed to complete the task. The students were given the option of accepting a clue after one minute had elapsed if necessary. Figure 11 reveals the third graders made more incorrect sentences than the eighth graders while Figure 12 indicates the third graders required more time to complete the task. The proportion test indicated the eighth grade students completed significantly more correct sentences than the third graders. The amount of time required by each grade for each individual sentence was tested statistically via the Wilcoxon Rank Sum test ( $z = 2.82, p < .01$ ;  $z = 1.55, p > .01$ ;  $z = 4.00, p < .01$ ;  $z = 2.93, p < .01$ ;  $z = 2.80, p < .01$ ). The eighth grade students completed all

the sentences significantly quicker than the third graders except for sentence number 2. The sentence that required the most amount of time to complete by both groups was sentence number 5 followed by sentence number 4. Both of these sentences were more complex in structure. The third graders also required more clues overall.

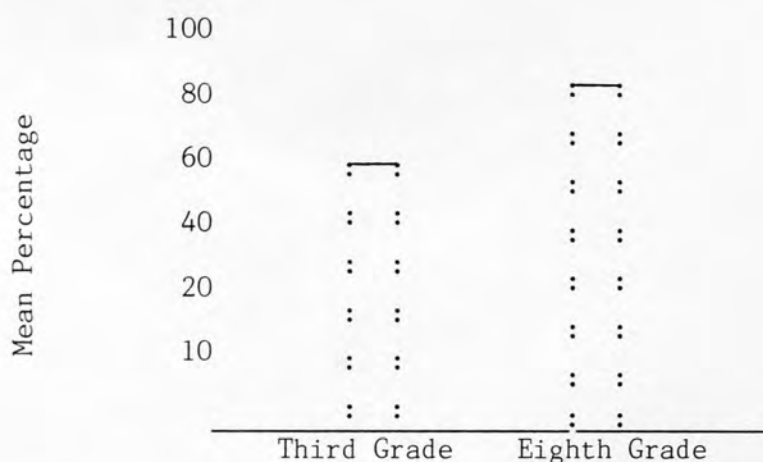


Figure 11. Mean percentage of correctness for the third and eighth graders on the Sentence Reformulation task.

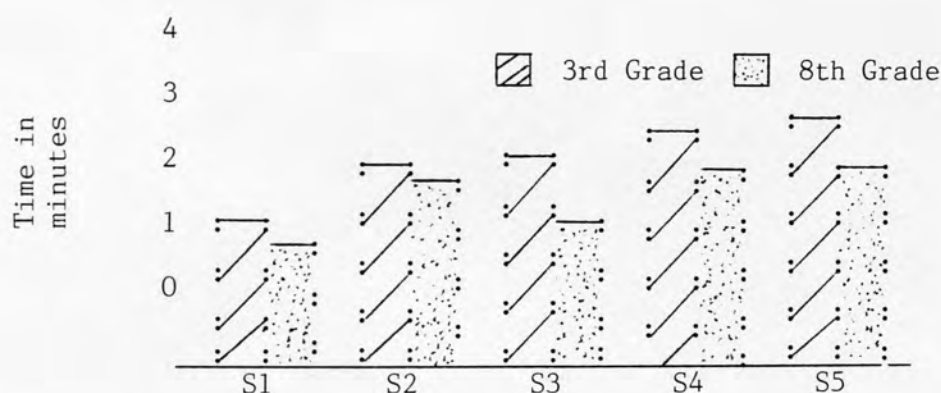


Figure 12. The mean time in minutes for third and eighth graders to complete 5 sentences in the Sentence Reformulation task.

### Task 6: Categorical Naming

The Categorical Naming task assessed the student's ability to name components of a particular category. Each student was given one minute to name as many items as possible in a given category. Each student was given one minute to name as many foods as possible and another minute to name as many forms of transportation as possible. Comparisons were made between the third and eighth graders for each category with the proportion test. Significance was found between the two grades for the category of food ( $z = 3.26, p < .01$ ), but not for the category of transportation ( $z = 1.25, p > .01$ ). Figure 13 reveals both grades were able to essentially complete the task the same.

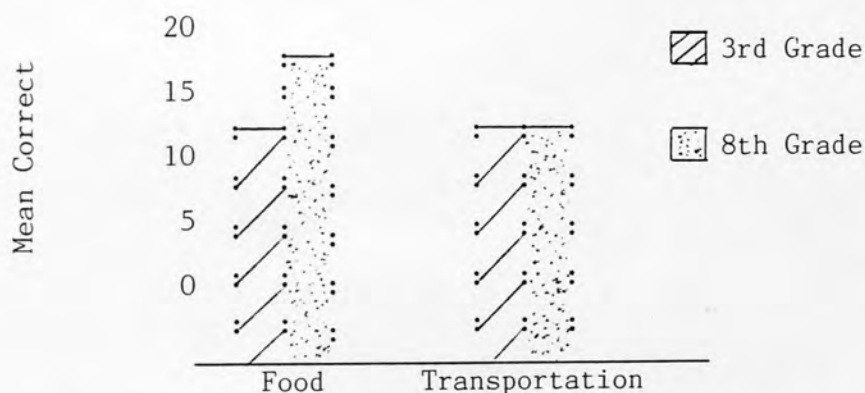


Figure 13. Mean number of words named by third and eighth graders in the Categorical Naming task.



### Task 7: Sentence Formulation

The Sentence Formulation task assessed the student's ability to form a sentence from a given set of words. Each student was instructed to formulate a sentence using all the given words. They also were told they could add as many other words as necessary to form a semantically and syntactically correct sentence. Performance comparisons were based upon the semantics and syntax of each sentence and the amount of time required to complete both sentences. Figure 14 indicated a higher number of semantically and syntactically correct sentences were produced by the eighth graders. Figure 15 displays the amount of time required to complete both sentences which indicated the third graders required a greater length of time to complete the tasks. The eighth graders significantly completed more correct sentences as determined via the proportion test ( $z = 3.86$ ,  $p < .01$ ). The Wilcoxon Rank Sum test revealed eighth graders required significantly less time to complete the task for sentence 1, but sentence 2 did not reveal any significance between the two groups ( $z = 4.12$ ,  $p < .01$ ;  $z = 1.057$ ,  $p > .10$ ; sentences 1 and 2 respectively). Although only the differences between third and eighth grade groups were to be observed originally a difference between race was identified in this task. White students completed more semantically and syntactically correct sentences than black students as can be seen in Figure 16.



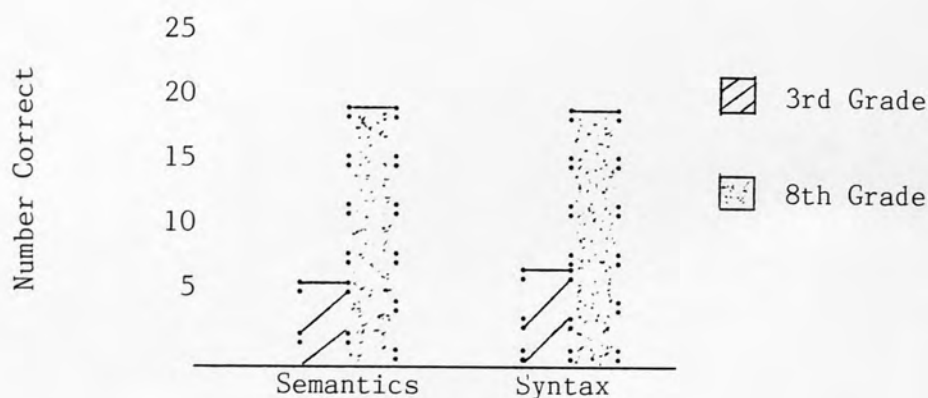


Figure 14. Number of semantically and syntactically correct sentences for third and eighth graders on the Sentence Formulation task.

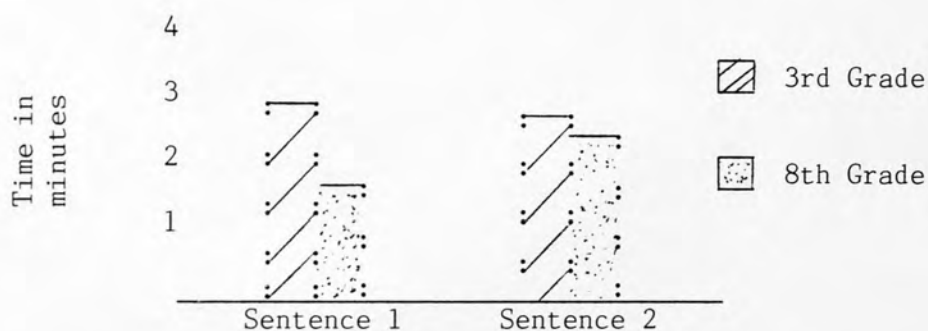


Figure 15. Mean time in minutes for third and eighth graders to complete the Sentence Formulation task.

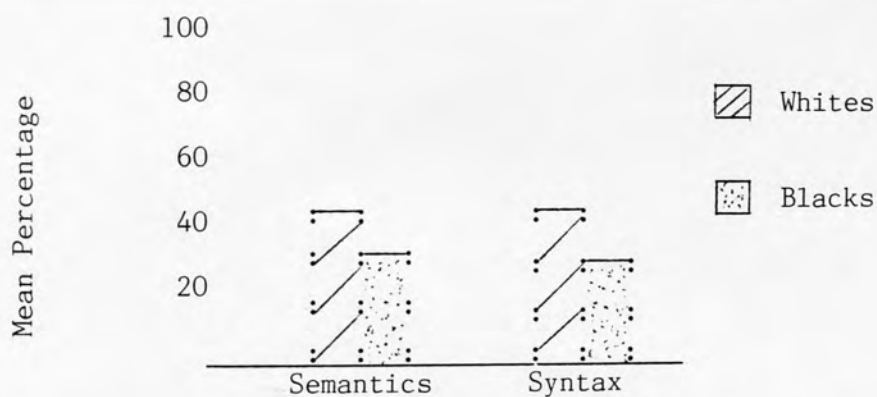


Figure 16. Number of semantically and syntactically correct sentences for white and black students on the Sentence Formulation task.

## Discussion

The purpose of this research was to investigate whether normal eighth grade students differed from third grade students on specific cognitive, semantic, syntactic and metalinguistic tasks. The results indicated that the two grades of students did differ significantly on many, but not all of the tasks. Piaget's information concerning cognitive growth suggested that the concrete level students (third graders) would function differently from the formal operational level students (eighth graders). The results of this study appear to support Piaget's beliefs at least in part. However, it is important to note other information that surfaced due to this study. This study originally set out to determine the differences between third and eighth grade students. However, after the testing was completed differences were also found on several tasks between sex and race.

The main way the third graders differed from the eighth graders will be discussed in terms of each task. The Conflict Sentence task demonstrated that the third graders had difficulty correcting the sentences. Both groups were able to identify a correct vs an incorrect sentence, but actually correcting an incorrect sentence was another matter. When correcting the sentences the third graders made more syntax errors outside the clause as well as more semantic errors inside the clause. These findings correspond to the findings of Liles, Schulman & Bartlett (1977). They performed a similar study of normal and

deviant linguistic children. Their study revealed both groups could recognize a correct vs an incorrect sentence, but the linguistically deviant children could not repair the sentences as well as the normally linguistic children. This study also substantiates Clark's (1978) view that making judgments concerning semantic pertinence appears to be the easiest task for most children. Scholl & Ryan studied kindergarten, second and fourth grade children and they found that fourth graders were better able to judge grammatically different sentences. In the present study both the third and eighth grade students were able to judge the sentences correctly. Hence, leading one to believe that a difference must emerge between second and third grade.

The Classification task revealed both groups were able to separate words into similarities. However, the third graders required more time to complete the task than the eighth graders required. Also, the third graders did not group the words in the same manner as the older students. The eighth graders used more abstract reasoning in grouping the words whereas the third graders grouped the words on a more concrete level. Also, more third graders required an example to be able to complete the task while fewer eighth graders needed an example to complete the task.

The Word Referent task revealed that the third graders identified a word as being "little" or "big" based on the function of the word whereas most eighth graders judged the size of a word based on the number of letters in the word. However, a large number of third graders also identified the size of a word based on the number of letters

present in the word. This leads one to believe as children mature and grow and expand from the concrete level of operations to the formal operational level so does their thinking and reasoning. These findings in this task support the Piagetian theory that as children progress from one level to the next so do their metalinguistic abilities. This is also supported by the findings of Templeton and Spivey (1980). They found that the understanding of what a word actually is develops over time.

The Listening Game revealed that both groups were able to complete the task, however, the third graders required more time. The completion of the task indicated that both groups have the capabilities and strategies to follow the directions, but the third graders are not as developed in their thoughts or rules. The third graders also did not utilize the use of the feedback chips as well as the eighth graders.

The Sentence Reformulation task indicated that the third graders were not able to reformulate as many sentences as the eighth graders. Also the eighth graders were able to complete the task at a much quicker pace than the younger students. It is also important to take into consideration the number of clues required to complete each sentence. The third graders required more clues than the eighth graders. This implies both groups have the rules necessary to complete the task, but the third grader's syntactic rule system may not be as complete as the eighth graders. Their reasoning skills also differed. The eighth graders were able to use more abstract reasoning to complete the more complex sentences whereas the third graders required more clues in

order to complete the more complex sentences. It was evident in this task that the students who were having difficulty forming the sentences were aware of their limitations and became stressed and on occasion slightly emotional. They were fearful of being incorrect and wanted to maintain my approval. This corresponds to the study of Donahue and Bryan (1982) who found that learning disabled children were aware of their language limitations. The language-disabled children indicated the stress of the task and the importance of the emotional state of the host.

The Sentence Formulation task revealed a large difference between third and eighth graders. Very few third graders could even complete the task of making a sentence from a group of given words. This reveals that the students have the rules necessary to make a sentence, as proven in the preceding task, but not the ability to form a sentence on their own. The third graders were able to unscramble words to form a sentence, but they could not form a sentence that required other words to be added to make a semantically and syntactically correct sentence. This leads one to believe the younger students have the rules and reasoning skills, but they are not as developed as the older students. These findings also parallel the Piagetian levels to the children's performances. According to Piaget the older students should perform differently from the younger students, which has occurred.

A difference was also noted between white and black students on several tasks. The Word Referent task revealed that the black students tended to identify the size of a word based on the actual function of the word or the physical size of the object while white students judged

the size of a word due to the number of letters present. This indicated the black students were functioning at a more concrete level while the white students were functioning at a more formal operational level.

The Listening Game revealed the black students required a greater amount of time to complete the task. This was due in part to their utilization of the feedback chips. The black students did not utilize the use of the feedback chips as well as the white students. Again, indicating a difference among the black and white students in terms of their strategies.

The black students required a greater amount of time and clues to complete the sentences in the Sentence Reformulation task. This was thought to be due to a difference among the two groups language systems. It is thought that the black students would be able to complete this task quicker and with fewer clues if the sentences were constructed in the black student's language system. The results of this task also correlated to the findings in the Sentence Formulation task. The black students displayed difficulties in forming a semantically and syntactically correct sentence. Again, the difference between white and black students was thought to be due to their different language systems.

A few differences were also found between females and males. These differences were not significant, but should be noted for future research purposes. The Conflict Sentence task revealed that females were able to perform this task better than males. Also the Word



Referent task revealed that females performed the task differently than males. Again, the results do not show significant differences among the sexes, but they should be controlled for in future research.

This study hypothesized that concrete level students would function differently from formal operational level students. As children mature and grow their reasoning skills and strategies should also mature and change. Leading one to believe that metalinguistic skills emerge as cognition expands. This study has indicated that as children expand cognitively and progress through the Piagetian stages so do their metalinguistic skills. It is thought that the younger students have the necessary rules and skills, but they are not as perfected as the older students. It is also believed due to the results of this study that black and white students differ in strategies and language systems. This may be due to the difference among the two groups language systems as well as their socioeconomic status.

The findings of this investigation may be applied to a treatment process. If students are exposed to these metalinguistic abilities at an earlier age they may enhance their reasoning skills and strategies. However, this would need to be proven via further research.

## APPENDICES

APPENDIX A

Permission Form

Dear Parent or Guardian,

I am presently employed by the Sumter County School Board as a Speech Pathologist. I am based at North Sumter Primary School where the majority of my work is conducted. I also service the Wildwood Middle School. I currently hold a B.S. degree in speech pathology and to better serve my students I am attending the University of Central Florida to earn my master's degree. I am in the process of gathering data for a research project. The purpose of the project is to determine the differences between third graders and eighth graders abilities during various language activities. The students selected for this study will be assigned a number in place of their name to ensure strict confidentiality. I would appreciate your permission to include your child in my study. Thank you for your cooperation.

Joanne McCall

Sumter County Speech Pathologist

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\_\_\_\_\_ I wish for my son/daughter \_\_\_\_\_ to participate in the language activities.

\_\_\_\_\_ I do not wish for my son/daughter \_\_\_\_\_ to participate in the language activities.

\_\_\_\_\_  
Date

\_\_\_\_\_  
Parent/Guardian Signature

## APPENDIX B

### Parent Notification

Dear Parent or Guardian,

Thank you for your recent response and interest in my research project. I greatly appreciate the support you have extended to me in granting permission to test your child. This letter is to inform you if your child participated in the research project or if they did not participate and the reason why.

\_\_\_\_ Your child did participate in the research project.

\_\_\_\_ Your child did not participate in the research project for the following reason(s):

\_\_\_\_ Your child did not pass a vision screening exam and has been referred to the school nurse for a follow up exam.

\_\_\_\_ Your child did not pass a hearing screening exam and has been referred to the school nurse for a follow up exam.

\_\_\_\_ The sample size requirement for the research project has already been fulfilled.

Again, I thank you for giving me your cooperation and understanding.

Joanne McCall

Sumter County Speech Pathologist

APPENDIX C

Hearing Screening

Name: \_\_\_\_\_

Grade: \_\_\_\_\_

Date: \_\_\_\_\_

Age: \_\_\_\_\_

School: \_\_\_\_\_

Evaluator: \_\_\_\_\_

Right Ear

Left Ear

500Hz \_\_\_\_\_

500Hz \_\_\_\_\_

1000Hz \_\_\_\_\_

1000Hz \_\_\_\_\_

2000Hz \_\_\_\_\_

2000Hz \_\_\_\_\_

4000Hz \_\_\_\_\_

4000Hz \_\_\_\_\_

Pass \_\_\_\_\_

Fail \_\_\_\_\_

Referral \_\_\_\_\_

Comments: \_\_\_\_\_

## APPENDIX D

### TEST PROTOCOL

#### Task 1: Conflict Sentence Difference

1. The dog, which was in the house, was eating his dinner.
2. The horse, that found I, followed me home.
3. She ate the pizza, that her mother made.
4. She was singing so softly, it hurt my ears.
5. The cat, that was grey, had five kittens.
6. The little boy, who was sleeping, ran around the house.
7. The man, who was tall, sit on the bench.
8. He eats his dinner, who was cold.
9. The man, who was sick, went to the hospital.
10. The girl, who was crying, looked happy.
11. The boy, who ran to class, was late.
12. The girl fixed the bike, which had a flat tire.
13. The chocolate bar, which was a Snickers, ate a girl.
14. She drink water, which was dirty.
15. He kicked the refrigerator, that was his favorite pet.
16. The family, which was big, went on a picnic.
17. He want some more soup, which was homemade.



Classification

marshmallow	mother
pie	pancake
ball	meadow
mop	map
moon	plate
balloon	motor
apple	mayonnaise

Word Referent

- |                 |               |
|-----------------|---------------|
| 1. dictionary   | 9. cornucopia |
| 2. bug          | 10. telephone |
| 3. radio        | 11. pizza     |
| 4. encyclopedia | 12. lake      |
| 5. house        | 13. umbrella  |
| 6. wall         | 14. earring   |
| 7. lipstick     | 15. cigarette |
| 8. tree         |               |

The Mind Game

1. R B G Y R
2. B B B Y Y

### Sentence Reformulation

1. He rowed in a boat which leaked.
2. The movie was weird because all the actors wore masks.
3. She was shoved into the hall by the force of the wind.
4. The story was told by a man who had a beautiful deep voice.
5. Which is the best beach where people are allowed to fish?

### Categorical Naming

1. Food
2. Transportation

### Sentence Formulation

- |             |           |
|-------------|-----------|
| 1. football | 2. and    |
| game        | he        |
| rainy       | but       |
| the         | winter    |
| incredible  | rain      |
| with        | Orlando   |
| because     | is        |
| seniors     | movie     |
|             | King Kong |

## Test Instructions

### Conflict Sentence Difference

Tell me which of the following sentences sound okay. Some will sound okay and some of them will not. When you hear a sentence that does not sound right, give me a new one which makes it sound right.

### Classification

Take these words and sort them into two lists and each list has to go together some way. For example: dress, sock, blue, chair, pants, box, dog, belt, bear, bathing suit.... these can be divided into a list of "clothing" and "not clothing." Now, make a third list using words from both of your lists, that are alike in a different way. You could make a list of words that begin with the letter "b." You do not have to use all of the words. (If cannot do the third list, say: this time don't use the meaning of the words to sort.)

### Word Referent

I am going to say some words and I want you to tell me if they are big or small. Then, I want you to tell me why.

### The Listening Game

I am going to make a pattern on the board and you try to make the same one. When you are through, I will tell you which ones are right and then you try again.

### Sentence Reformulation

I have some sentences that are all scrambled up. Try to unscramble them and put them in order. Some will be harder than others. If you need a hint or clue, please ask.

### Categorical Naming

See how many words you can name in this category. You have one minute.

### Sentence Formulation

I am going to give you a list of words and I want you to make up a sentence using each of those words only one time. You may add as many other words as you need.

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