

SELECTED LINGUISTIC SKILLS
IN YOUNG DEAF CHILDREN

by

PERRY THOROLD LESLIE

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Department of Special Education

The University of British Columbia
Vancouver 8, Canada

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DISSERTATION ABSTRACT
SELECTED LINGUISTIC
SKILLS IN YOUNG DEAF CHILDREN

Perry Thorold Leslie

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This investigation examined the performances of forty deaf children on tasks involving singular and plural simple-active-declarative and corresponding yes/no statements. The task items used be as Aux in both past and non-past tenses. The forty subjects were grouped, according to age, into four groups of ten representing six, seven, eight, and nine year olds.

A model, based on transformational-generative grammar theories, was developed to enable qualitative analysis of the responses. Analysis of the linguistic performance demonstrated that the young deaf children were rule governed in responses to the tasks. Many of the linguistic performances examined were found to parallel development of linguistic performances of very young hearing children.

Analysis of the data demonstrated that 9 year old deaf children performed significantly better than 6 year old deaf children on the task items. The task battery included comprehension and production task items. The production-generation items were significantly more difficult than the production-completion items. Young deaf children performed significantly

better on singular statement items than they did on plural statement items.

The implications of the study were explored and a resulting delineation of language teaching techniques was recommended for future research.

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TABLE OF CONTENTS

CHAPTER		Page
I	INTRODUCTION	1
II	PROBLEM	12
	Statement of the Problem	12
	Related Research	13
	Definition of Terms	16
	Rationale	17
	Instrumentation	18
III	METHOD	22
	Sampling and Subjects	22
	Instruments	22
	Scoring	23
	Examiners	23
	Research Questions	23
	Design	24
	Experimental Hypotheses	24
	Procedure	28
IV	RESULTS	29
	Models for Analyzing the Data	29
	Results of the Quantitative Analysis	30
	Results of the Qualitative Analysis	50
V	DISCUSSION	63
	Interpretation of Results	63
	Implications	71
	Limitations	73

	Page
Future Research	74
REFERENCES	76
APPENDICES	82
A Task Battery	83
B Demonstrations Items	148
C Vocabulary Charts	173
D Standard Administration Procedures	176
E Check Lists	182
F Summary of Correct Responses	184
G Summary of Response by Task Level	186
H Summary of Task 3 and 4 Responses for Selected Subjects	221
I Summary ANOVA including Examiner as a Factor	227

LIST OF TABLES

TABLE		Page
1	Sources of Variation, Error Terms, and Degrees of Freedom for ANOVA	27
2	Means and Standard Deviations for Age Levels	32
3	Means and Standard Deviations for Hearing Levels	34
4	Summary of Analysis of Variance	35
5	Summary of Age (A) Contrasts	37
6	Summary of Task (B) Contrasts	39
7	Summary of Age x Task (AB) Interaction Contrasts	40
8	Summary of Age x Singular/Plural (AC) Contrasts	42
9	Summary of Tense x Transform (DE) Contrasts	44
10	Summary of Task x Tense x Transform (BDE) Contrasts	45
11	Summary of Age x Task x Singular/Plural x Tense x Transform (ABCDE) Contrasts	47
12	Summary of Examiner (X) Contrasts	48
13	Summary of Examiner x Singular/Plural (CX(A)) Contrasts	49
14	Summary of Examiner x Tense (DX(A)) Contrasts	51

LIST OF FIGURES

FIGURE		Page
1	Study Design	25
2	Study Design (cont.)	26
3	Model of Task Specific Rules	31
4	AB Interactions	41

CHAPTER I

INTRODUCTION

The problems of developing communication in the deaf have been recognized and recorded as far back as the pre-Christian era when Aristotle noted a relationship between congenital deafness and dumbness.

Aristotle ... placed strong emphasis on sound as the primary vehicle for conveying thought and therefore as the chief medium for education. Aristotle presumably believed, therefore, that since the deaf could neither give utterance to speech nor comprehend it from others, they were relatively incapable of instruction (Davis and Silverman, 1970, p. 375).

Here then was an early record of the recognition of the problem of communication. From that time to the present day, educators, philosophers, physicians, engineers, parents, and laymen have struggled to cope with the deaf child's problems of communication.

Dr. Richard Silverman very aptly pointed out that "man's struggle toward enlightenment is slow, faltering, and, in many instances haphazard" (Ibid., p. 375). This has been borne out by developments in the education of deaf children for it was not until the middle of the sixteenth century that the deaf were considered educable. At this time Girolamo Cardano stated that the deaf could be taught to comprehend written symbols or combinations of symbols by associating them with the object or picture of the object they were intended to represent (Ibid., p. 376). This is still one of the standard introductory techniques for language instruction.

It was not until the latter part of the eighteenth century that public schooling for the deaf became a reality. In the 1770's Abbé de l'Épée and Samuel Heinicke founded the first French and German public schools (Ibid., p. 377). These men differed in their methodological approach

to education of the deaf. De l'Épée was a proponent of a "manual" communication system while Heinicke was firmly convinced that an "oral" communication system was best suited to educating deaf children. Over a period of years a growing concern regarding methodology became evident.

Considerable research effort has been expended in examining the performances of children educated through differing communication systems (Quigley and Frisina, 1961; Birch and Stuckless, 1965; Montgomery, 1966; Quigley, 1969). It has been demonstrated that the results of the differing instructional methodologies, discussed above, were within one month of each other on a grade-score rating (Birch and Stuckless, 1966). Comparison of results of reading performance level studies (Annual Survey of Hearing Impaired Children and Youth, 1969; Furth, 1966; Quigley, 1969) revealed that, whether educated orally or through a simultaneous method of instruction deaf children do not develop reading skills commensurate with their hearing peers. It is probable, then, that concern over instructional methodology may be less important than other considerations in educating deaf children.

A reading study (Furth, 1966) revealed that eighty-eight per cent of the deaf sixteen year olds studied were functioning below a grade five performance level. These results made it apparent that education of the deaf, irrespective of methodology, has encountered difficulties in the area of reading.

One must bear in mind that the test batteries used were designed for hearing children and purported to measure reading skills. The tests presupposed language competency. However, deaf children approach a reading test with a very restricted competency in language, and therefore results are not necessarily a reflection of reading skills per se; rather, they reflect some combination of reading skills and language competencies.

Hence, Furth's report of deaf children's depressed performance on reading test batteries was a reflection of both reading skill and language competence deficiencies.

It would seem that a great deal of time and energy has been expended either supporting, decrying, or investigating the efficacy of a particular instructional methodology. Further, deaf children appear to be deficient in language competency yet little study has been directed toward examination of this variable. The present investigation, although restricted to some aspects of the language, attempted to provide some information related to language competency in deaf children.

To imply that the input methodology was the only concern of educators of the deaf would be inaccurate. While the manual-oral discussions continued, many teachers of the deaf have realized the importance of language. Consideration of comparisons between deaf and hearing children led teachers and researchers to the conclusions that the deaf child had a resultant deficiency in his "experiential background". Several research studies have dealt with the topic of the vocabulary of the deaf child (Fitzgerald, 1949; Foy, 1966; Kennedy, 1959; Richardson, 1957). There also have been several papers and programs prepared to assist the teacher with the guidance of the language acquisition process. Such programs as the "Barry Five Slate System", and "Wing Symbols", and the "Fitzgerald Key" were the results of these studies. However, these systems have not served as a complete model for the English language. Although simple statements were generally handled adequately, many complex structures were not readily described by the models.

The approach to developing language in the deaf child has been one of presenting the material to the child and expecting him to "learn"

correct usage through reference to a classification system. Eric Lenneberg (1967) makes reference to this approach to language and the point he makes is worthy of consideration:

In contrast to the hearing child, who is simply surrounded by a sea of sentences, well-formed and poorly formed and who builds up his sentence-making skills without knowing how, the deaf child is usually immediately introduced to theoretical grammar. In the course of the first year of language instruction, he is told that he must speak in "sentences" and that a proper sentence is made up of "nouns" and "verbs", that nouns must have "articles", and so on. These theoretical terms are written on the blackboard and also appear in some of the books that are used in the lower grades. Thus we have a situation in which the children are on the one hand quantitatively deprived of a large body of examples, and on the other hand are immediately given a meta-language, a language about the language which they do not yet have. Their own spontaneity of putting out the type of primitive sentences ... apparently the necessary developmental stage that must precede the complete unfolding of grammar in hearing children, is restricted by teachers who do not tolerate answers in "incomplete sentences". The child's flow of communication is constantly stopped by the teacher's instructions "to complete the sentence", which is accompanied by a theoretical discussion of how to do this ("verb is missing", "the article is not correct", etc.).

This mode of instruction raises an important question. Is it possible to instruct somebody how language works by giving him rules - particularly when he has little language as yet? (pp. 322-3).

Hearing children do not learn English through such a meta-language. They receive information about the structure of the language by listening to others speaking English. Once they have some ideas, or rules, describing language, they attempt to use them and they make mistakes. For the most part, they are not immediately stopped; generally the rules are reinforced or corrected by parental repetition and expansion of the child's sentence (e.g. child says "Daddy home" and mother says "Yes, Daddy is home"). In other words, the hearing child has his parents' productions as a model of the language and he has their repetitions or expansions of his productions to correct his ideas of the rules of English structure.

The deaf child, on the other hand, does not receive a similar language input and hence does not develop linguistic competency commensurate with his hearing peers. In fact, he often arrives at school, aged five, with little, if any, vocabulary and an extremely limited understanding of English. It would seem reasonable for the teachers to take on the role of parents and provide adequate models for the child through whatever medium seems most appropriate. This approach to language development is fairly common in schools for the deaf but it is not sufficiently developed. All too soon the meta-language and corrections mentioned by Lenneberg do appear and the child is lost in his attempts to sort out the structures of English.

In order to improve the approach to language development it is imperative that the language acquisition processes of deaf children be more clearly understood. The information gained from such study is certain to assist the development of more comprehensive language programs for deaf children.

Recently, language competency has been reconsidered in the light of new models of language acquisition for hearing children (Katz and Postal, 1964; Chomsky, 1965). Development of new theories of language acquisition has led to a reconsideration of the linguistic competency of deaf children (Lowenbraun, 1969; Schmitt, 1969; Quigley, 1971).

Consideration of the works of these and other authors explains, to a degree, why there has been difficulty in developing effective materials and programs adapted to the deaf child; for until the recent development of Generative theory and Transformational grammar models (T-G grammar theory), there has been no sound comprehensive theory dealing with the language acquisition process.

In order to clarify some of the concepts of these theories and

their applicability to the language of deaf children, a brief summary is presented below.

The writings of Noam Chomsky, Theorist, describe the basic thinking of generative grammar theorists. W. C. Ritchie (1967) gives a brief description of Chomsky's works:

In recent years ... Chomsky and his colleagues have ... concentrated on the construction of formal accounts of the linguistic "knowledge" that a native speaker possesses. ... Chomsky is attempting ... to account for the native speaker's ability to interpret any one of an infinite number of "possible" utterances in ... a language. ... Chomsky has proposed that the study of those influences on behavior which come under the heading of "knowledge" possessed by the organism is logically primary and therefore must be carried to a fairly advanced stage before behavior can be studied fruitfully. Chomsky's position seems to be that we cannot expect success in the study of "how" an organism "uses" stored information (or knowledge) in "behaving" until we have succeeded reasonably well in understanding "what" information it is that the organism has stored. (i.e., what "knowledge" the organism "possesses") ... From these considerations it follows that knowledge formation or acquisition (the process of storing information, e.g., about utterances) must take place before knowledge "use" (use of information already stored) (pp. 45-47).

Chomsky stated that we should not be attempting to explain a child's language through analysis of his productions before we examine his 'knowledge' of the language. This, one would logically expect, means that the receptive level of the language is a more informative avenue of study, at least initially. However, Chomsky developed the theory beyond this point. He noted that children can often cope, both receptively and expressively, with language that they had not previously encountered in their environment. Of particular import was the fact that the child produced utterances that he had never heard; that is, he generated sentences that he had not previously encountered. A summary of Chomsky's thought on this phenomenon follows:

A consideration of the character of the grammar that is acquired, the degenerate quality and narrowly limited extent of the available data, the striking uniformity of the resulting grammar, and...the independence of intelligence, motivation, and emotional state, over wide ranges of variation, leave little hope that much of the structure of the language can be learned by an organism initially uninformed as to its general character (Chomsky, 1965, p. 58).

Chomsky postulated that children have an innate capacity for language acquisition in general and that they must learn the rules of their native language. It is through a combination of the innate capacity and the acquired knowledge about utterances of the native language (resulting from reception and judgements regarding grammaticality) that a child eventually reaches a point where he produces utterances of the native language.

While this theory is derived from considerations of hearing children, it is assumed, by the researcher, to be equally applicable to deaf children. If one can assume that a hearing child is born with an innate capacity for language acquisition, it does not seem unreasonable to assume the same of a deaf child. Further, the hearing child combines the capacity for language acquisition with a wealth of auditory input (that is, models of English) to develop a theory about utterances of English and it appears logical to assume that the deaf child combines his innate capacity for language acquisition with a severely limited and distorted input to develop what well may be a theory grossly different from that of a hearing child-for whether the information received be oral, manual, written, or any combination thereof, it is not equal to the amount received by a hearing child, nor is the input encountered in as many different situations as is normal for a hearing child. If the assumptions are true it would then follow logically that the deaf child's use of his theory about English would result in the difficulties he experiences in trying to interpret our models. This problem is compounded

by hearing impairment as the child does not receive the full utterance clearly and therefore cannot make the appropriate corrections to his theory.

There is a need for information describing deaf children's linguistic competence. Studies attempting to describe children's linguistic competence are limited to the study of linguistic performance; that is, competence must be inferred from performance. It follows that statements about linguistic competence reflect a theory about what a child knows of language.

In order to examine language performances, there must be a grammar - a set of rules - for the language being studied. The rules are designed primarily, to demonstrate the relationships within a language. Hence these rules are primarily for the teacher and researcher and not for the child. That is, the child does not consciously learn the rules in order to learn the language.

As previously mentioned, it was not until recent times that a good grammar for English was written. The T-G grammar theories presented by researchers such as Chomsky (op. cit.), Katz and Postal (1964), and others have contributed toward the construction of the most comprehensive models of the rules governing the English language. The T-G grammar theory is not yet a complete explanation of all possible utterances in English but it is better than anything available in the past and is still developing.

On a very simplistic level, the basics of the transformation aspects of the theory were explained by Roberts (1968):

Grammar is essentially about sentences...at the beginning we must confine our attention to the sentence and in particular to the very simple sentences that form the foundation of the more complicated sentences we generally use.

These simple sentences we call "kernel" sentences. ...A sentence that is not a kernel sentence is called a "transform". Transforms are made by making changes on the structure of kernel sentences, reworking them, or combining them (pp. 9,10,57.).

The interpretation of this complex theory is simplified and slightly dated in its references to kernel sentences; however, one or two brief examples may serve to clarify the role of transformational grammar in the study of children's language.

Questions that can be answered yes or no are called 'yes/no questions'. The transformation that changes a simple-active-declarative (SAD) statement into a yes/no question is called a 'yes/no question transformation', or, more simple, T-yes/no (T_Q). Given the SAD sentence, "She is his mother.", the question form is "Is she his mother?". According to Roberts, the rules of the transformation are as follows:

NP	+	tense-be	+	X	.	+	2-3-1 \Rightarrow
she	+	is	+	his mother		+	2-3-1 \Rightarrow
tense-be	+	NP	+	X		+	2-3-3
is	+	she	+	his mother		+	2-3-3

The double arrows are markers indicating "transformation". The numerals represent the changing pitch patterns of the voice, '1' indicates a low pitch while '3' is a relatively high pitch.

Given the statement "John waited.", the question form is, "Did John wait?". However, the rules governing this transformation are more complex. The rules are:

NP	+	tense	+	verbal	+	2-3-1 \Rightarrow
John	+	past	+	wait	+	2-3-1 \Rightarrow
tense	+	NP	+	verbal	+	2-3-3
past	+	John	+	wait	+	2-3-3

Note that there is a floating tense. In English, whenever this happens a special transformation (T-do) becomes obligatory the word 'do' must be

added to 'carry' the tense. Hence:

past + John + wait + 2-3-3 \Rightarrow

do + past + John + wait + 2-3-3

As 'do + past' in English becomes 'did', the statement is "Did John wait?"

In the latter example, the rules of the grammar involved a combination of transformations (T_Q and T-do) to explain the correct statement. These examples present only the briefest glimpse of the complex way in which utterances of the English language are organized and related to each other through transformational grammar.

Summary

While there has been considerable research dealing with the development of communication skills in the deaf, most of the emphasis has been on the efficacy of particular methodologies of instruction. As a result of developments in the field of linguistics, recent research has been directed toward assessment of the linguistic skills of deaf children.

The traditional methods of language instruction in schools for the deaf have involved the use of a meta-language and the teaching of rules governing correct English language productions. In the light of T-G grammar theories, it appeared that educators of the deaf child may have been presenting a set of governing rules that the child was unable to cope with. This approach to language development did not account for the deaf child's grammar - or set of rules - which may have been grossly deviant from the grammar of a hearing person.

The use of the T-G grammar theories may provide a means of describing the deaf child's competency with English through an organizational system for examining the set of rules or grammar he is using. These descriptions

of competency are, necessarily, theoretical because the descriptions are inferred from linguistic performance.

CHAPTER II

PROBLEM

I. Statement of the Problem

There is some information on language performances of deaf children but these early studies are generally directed toward normative (Stuckless and Marks, 1966) or descriptive (Heider and Heider, 1940; Goda, 1964) information. In these types of studies the researchers were hampered by an inadequate theory of the grammar of the English language.

The T-G grammar theories provide a more complete and unifying model from which to work. Since 1967 there have been a few T-G grammar studies of deaf children's language skills. These studies have provided some much needed information concerning linguistic competence as reflected through performance in written and oral situations. There is, however, a continuing need for more information describing linguistic competencies of young deaf children. In particular there is a need for more detailed analysis of the comprehension and production of a limited number of structures. In order to improve the language teaching techniques there must be more information delineating the operational rules of a deaf child's grammar. One such study (Schmitt, 1969) deals with the generative rules of Kernel, Negative, Passive, and Passive-Negative structures in 8-17 year old deaf children. There are no studies dealing with the generative rules governing SAD structures and yes/no transforms of younger deaf children aged 6-9 years. It is during these early years at school that deaf children develop many language skills and patterns that they will continue to use throughout their lives. In view of their limited language input and the seemingly

deviant patterns of functioning developed, this investigation attempted to delineate some of the developmental and operational patterns of 6-9 year old deaf children working with SAD structures and yes/no transforms. All items were restricted to the use of be as Aux in each structure.

It should be noted that the present study dealt with written responses to a structured situation. The information sampled did not represent all of the English language competencies a deaf child possess. In fact, a very restricted reflection of linguistic competency resulted from experimental conditions. Subjects were taught response patterns for particular structures and then asked to transfer their learning to other structures given some data. The scope of the present study was restricted to examination of comprehension and production of singular and plural SAD structures and yes/no transforms using be as Aux in the present and past tenses.

II. Related Research

There have been many studies of deaf children's language skills. The investigations of deaf children's language skills have generally been normative or descriptive; if analytic, they were bound by inadequate theories of English grammar. Several recent studies have utilized T-G grammar theories in examining the linguistic performances of deaf children. One study (Stuckless and Marks, 1966) attempted to develop normative data while others endeavored to describe the developmental patterns of language growth (Quigley, 1971; Marshall and Quigley, 1970; Taylor, 1969). These studies gathered important data on developmental processes. However, studies such as those mentioned above must be complemented by analytic studies. Description of the developmental patterns alone is insufficient;

there is also a need for information detailing the process whereby the child arrives at a particular point. The earliest study attempting to describe the generative rules used by a deaf child was done by Cooper (1965). He conducted a study of morphological habits in an attempt to discover rules governing deaf children's grammar usage, and he thereby established that tests could be conducted with seven year olds through nonaural procedures, and that receptive control preceded productive control for most morphological patterns. However, the study did not deal with syntax and therefore no information was available as to the development of rules governing structural aspects of the English language.

In 1967, another study (Moore, 1967) involving deaf children and their linguistic abilities was reported. The study was designed to investigate the ability of "cloze" procedures to identify and isolate morphological, syntactic, and semantic differences between deaf and hearing groups. This study demonstrated that the hearing children performed significantly better than the deaf on items studied and stressed the fact that standard measurement devices do not tap the linguistic abilities of deaf children. Once again, however, there was no attempt to describe the rules governing the linguistic performance of the deaf child.

Another cloze procedure study (Marshall, 1970) examined the effect of context on deaf children's performances. Marshall found that relative redundancy of linguistic cues substantially affected cloze performance. These findings were not in accord with postulations for hearing children and served, as in the Moore's study, to emphasize that deaf children's performance is not predictable on the basis of knowledge of hearing children's performance. Marshall did not describe rules governing the functioning of the grammar of the deaf child.

In 1969 Lowenbraun attempted to deal with the question of how a deaf child uses English. She examined the development of syntactic rules in the oral language of deaf children. Of particular import to this thesis was the first section of Lowenbraun's investigation. Oral responses to picture stimuli were recorded and analysed using a T-G grammar theory. Quantitative and qualitative productions improved with age and did not closely parallel the sequence of skills taught in the language program of the school.

In general, studies reported above have not dealt with specific constructs of English but have dealt with more global concerns such as how the deaf child uses English given some restricting conditions. Schmitt (1969) examined the competence of deaf children in a much more restrictive experiment. A T-G grammar theory guided the exploration of the abilities of 8, 11, 14, and 17 year old deaf children to comprehend and produce simple sentences varying on the dimensions of transformation (Kernel, Negative, Passive, Passive-Negative) and time (past, present progressive, future). Qualitative analysis of results focused on patterns of incorrect responses in an effort to detect incorrect underlying rules which deaf children might have been using to process sentences. Three rules were discovered which could account for most of the errors made. These were designated:

- (a) the NP_2 - NP_1 Rule, which permits reversal of Noun Phrase 1 and Noun Phrase 2 in transitive verb, reversible sentences;
- (b) the Passive-Active Rule, which specifies the ignoring of passive transformation markers and permits the processing of passive sentences as actives; and
- (c) the No Negative Rule, which specifies the ignoring of negative markers and permits the processing of negative sentences as positives.

Schmitt stated that extensions and elaborations of his techniques should

have implications for language diagnosis and for future study of the language dynamics of deaf children. Extensions and elaborations of Schmitt's techniques were employed in this study.

Schmitt also concluded that the discovery of incorrect underlying rules of syntactic competence had implications for language remediation and instruction.

Power (in progress) is studying deaf children's acquisition of the Passive Voice in an attempt to gain more information about the Passive-Active Rule described by Schmitt. Research techniques being employed are similar to Schmitt's techniques. The study deals with 10 to 18 year old deaf children.

III. Definition of Terms

The definitions used in this study are:

Pre-lingually deaf - a mean hearing loss greater than 65dB ISO in the better ear for the frequencies of 500, 1000, and 2000 Hz. with onset of deafness prior to two years of age.

ISO - International Organization for Standardization reference zero level for pure-tone audiometers.

linguistic competence - "the speaker-hearer's knowledge of his language" (Chomsky, 1965).

linguistic performance - the speaker-hearer's "actual use of language in concrete situations" (Chomsky, 1965).

knowledge of language - an innate capacity for language acquisition.

knowledge about utterances - a combination of the knowledge of language and linguistic input from the surrounding environment creating a primitive grammar.

comprehension - a subject attends to a stimulus sentence and selects a picture which represents the sentence.

production - a subject attends to a picture and selects or writes a sentence which represents the picture.

IV. Rationale

Analyses of the results of this study were directed toward examining the linguistic competencies of young deaf children. The model for this examination is based on T-G grammar theory (Chomsky, 1965) which is assumed to underlie linguistic competence.

Previous discussion indicated that competence cannot be directly observed but that observation on tasks involving comprehension and production of language seemed to be an effective method of inferring the competence. The investigator designed four tasks (see Appendix A) for the purposes of collecting information regarding deaf children's comprehension and production of language.

The tasks used for these purposes in this study were designed to minimize extraneous experimental variables through the following procedures: (a) the tasks were paper and pencil, thereby eliminating oral-aural communication variables, (b) the tasks were constructed on four different levels. This enabled the experimenter to examine performances involving different skills, thereby gaining information as to competence and rules of operation on different structural tasks. It must be noted that the divisions made in the study were arbitrary and these divisions were not intended to reflect developmental stages; but, some structure was incorporated enabling data analysis. The results were not treated in a lock-step

stage theory fashion; rather attempts were made to demonstrate how particular deviant generative rules affected performance throughout the tasks of the study, (c) the measurements were completed in four sittings thereby avoiding historical variable contamination, (d) the tasks restricted the investigation to singular-plural SAD structures and yes/no transformations over the two tense forms and using be as Aux.

The SAD and yes/no transform structures were selected for study as they are two of the most basic grammatical competences (Menyuk, 1969; Schmitt, 1969). Further, there was no developmental and analytic information describing the young deaf child's competence with these structures.

The past and non-past tense variables were included to determine the effect of tense upon the student's performances.

The tasks were further restricted to tense-be considerations as that verb form has been commonly taught and used in schools for the deaf, and be has a high frequency of occurrence in many differing English structures. The tasks have been constructed to facilitate the measurement of competence in young deaf children.

The decision to investigate both comprehension and production skills was supported by the previously discussed theories presented by Chomsky and others.

Of the four tasks discussed below, justification for the first three tasks was supported by the research of Schmitt (1969).

V. Instrumentation

The demonstration items were designed to teach the child how to respond to the tasks. The vocabulary and sentence structures used differed

from those used in the task items. (Vocabulary differences may be found in Appendix C). It may be noted that the demonstration items (Appendix B) were constructed in the present indefinite (to use traditional grammatical terminology) while the task items (Appendix A) were in the present progressive. Subjects were taught task response behaviors (Appendix D) for each of the task levels. That is, a subject was taught to read a statement and select the corresponding representative picture for task one. Similarly, the subject was taught to select a sentence for task two, complete a sentence for task three, and generate a sentence for task four. The subject was taught to respond to tense markers below pictures and in statements and to statement-question markers; however, he was not taught singular-plural agreement differentiation of the verb as all demonstration items were singular. Details of the administration procedures are included in Appendix D.

The first task was designated "Comprehension". Comprehension was defined, for purposes of this study, as: (1) Subject (S) attended to the stimulus sentence. (2) S selected one of four pictures which corresponded to the sentence. It was assumed, if the correct response was made, that the subject was able to extract the intended meaning of the structure and associate this meaning with the appropriate picture (in the case of SAD structures) or extract the meaning and associate it with the picture which would have resulted with the appropriate "yes" response (in the case of yes/no transforms). Results of studies indicated that this was the least difficult task (Cooper, 1965; Schmitt, 1969).

The second task was the first of three production tasks. Production, for purposes of this study, was defined in three ways, dependent upon the task. In the "Production-Selection" task - production was: (1) S attended

to a pictured situation plus tense marker (2) S selected one of four sentences printed below the picture. Only one of the four sentences was the appropriate descriptor while the remaining three sentences served as diagnostic distractors. It was assumed that the child extracted some meaning from attending to the pictures and that this meaning was encoded. Further, it was assumed that this encoded meaning was matched with the meaning of one of the four sentences presented below the picture. It was difficult to assume fixed order of associations in this task but it was logical that the procedure followed the sequence outlined above as it appeared to be the path of least resistance, that is - it appeared simplest, methodologically.

The third task - "Production-Completion" - involved another definition of production: (1) S attended to a picture, tense marker, incomplete sentence frame and a punctuation marker (2) S completed the sentence by selecting and arranging words provided in the task material.

This task then demanded a higher level of proficiency than the previous tasks (Schmitt, 1969). The subject must have encoded the pictured situation and then completed the structure to match his previously encoded structure.

The fourth task - "Production-Construction" - was more complex than the third and this necessitated another definition of production: (1) S attended to a picture, tense marker, and a blank line with a period or question mark at the end of the line, (2) S constructed a sentence.

This last task appeared to be the most difficult as the subject was given only a picture and a punctuation marker for direction. It was assumed that the child, again, encoded the pictured situation and then constructed an appropriate sentence using his own generative rules.

The latter task was expected to be the most difficult experimentally as well as conceptually as past efforts had failed to elicit acceptable responses from subjects up to 14 years of age. It was expected that this barrier would be overcome through the sequencing of the tasks and the demonstration items (Appendices A and B).

The task items were not presented according to structural or tense category but rather by task category, all other variables being randomly distributed across the tasks. That is, the sequence of task presentation was: (item 1) Comprehension, (item 2) Production-Selection, (item 3) Production-Completion, (item 4) Production-Construction, (item 5) Comprehension, ... , with the tense and transformation variables being randomly distributed throughout all items. This approach was selected to assist the elicitation of Production-Construction responses and to avoid practice effect and/or incorrect pattern reproduction throughout one particular task. The organization of the tasks required the presentation of sixty four items. They were administered in four sittings in order to avoid subject fatigue. A review of the demonstration items preceded each sitting of the tasks.

CHAPTER III

METHOD

I. Sampling and Subjects

The data for the study were drawn from students at the Jericho Hill School for the Deaf in Vancouver. The data were collected from all of the Jericho Hill School students satisfying selection criteria. The 10 subjects per age level were selected according to the following criteria: within six months of the age designation at the time of task administration; prelingually deaf; hearing levels greater than 65 dB (ISO) in the better ear (average loss at 500, 1000, and 2000 Hz.); no apparent major handicaps other than deafness e.g. mentally retarded or emotionally disturbed. This was confirmed through medical records, teacher and supervisor corroboration. As discussed in Statement of the Problem, age levels selected were 6.0, 7.0, 8.0, and 9.0 years.

II. Instruments

The four tasks were designed to reflect some of the subjects' operational rules for the English language. The diagnostic distractors for the first three tasks (Appendix A) represented linguistic errors typically made by deaf students.

Prior to the task administrations, each subject was shown the vocabulary charts (Appendix C). Each subject also completed the demonstration items (Appendix B) prior to administration of the tasks. Details of the procedure for administration follows in Procedure.

III. Scoring

For purposes of a quantitative analysis, all responses were scored as correct (1) or incorrect (0). Partially correct answers were considered in the content analysis of the data.

IV. Examiners

Eight trained teachers of the deaf collected the data. All examiners were trained together in the same institution and were all able to communicate with deaf children through several media. The examiners received identical training in task, demonstration, and vocabulary administration. Each examiner was observed correctly administering the tasks prior to the experimental situation. Each examiner noted student responses on check lists (Appendix E) and followed the specifically stated Standard Administration Procedures (Appendix D). Each examiner administered the task items to five children from one age level. Examiners were randomly assigned to age levels, but because of transportation and timetabling restrictions, the students were not randomly assigned to examiners.

V. Research Questions

- 1) Was there a significant increase in performance associated with increasing age? (6 yr. < 7 yr. < 8 yr. < 9 yr.)
- 2) Was there a significant increase in task difficulty associated with levels 1 - 4? (1 > 2 > 3 > 4)
- 3) Was there a significant difference between task performances on singular and plural Aux items?

4) Was there a significant difference between task performances on past and non-past items?

5) Was there a significant difference between task performances on simple-active-declarative statements and yes/no transforms?

6) Were deaf children using particular operational language rules which explained some of their deviant language productions?

VI. Design

Each subject was administered four sittings of the tasks. The sittings involved replications of task, singular/plural, tense, transformation, and sentence items. The design of the study is shown in Figures 1 and 2.

Analysis of the results was effected through a five factor with repeated measures analysis of variance design. The levels of the five factors were: A_1 (6 yrs.), A_2 (7 yrs.), A_3 (8 yrs.), A_4 (9 yrs.); B_1 (Task 1), B_2 (Task 2), B_3 (Task 3), B_4 (Task 4); C_1 (Singular), C_2 (Plural); D_1 (non-past), D_2 (past); and E_1 (SAD), E_2 (T_Q). Factors B, C, D, and E were crossed with another, and each was repeated over the four levels of A. The resulting sources of variation, along with their respective error terms and degrees of freedom, are given in Table 1.

VII. Experimental Hypotheses

Hypothesis 1

The average number of correct responses will increase with age.

SENT.		TRANS.		TENSE		S/PL		TASK		TASK 1		TASK 2		9 yr.		8 yr.		7 yr.		6 yr.	
				Pres.		Sing.															
				Past																	
				Pres.		Plural															
				Past																	
				Pres.		Sing.															
				Past																	
				Pres.		Plural															
				Past																	
				Pres.		Sing.															
				Past																	
				Pres.		Plural															
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				Pres.		Sing.															
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				Pres.		Sing.															
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				Pres.		Sing.															
				Past								</									

TASK		TENSE		S/PL		SENT.
TASK 3		TASK 4				
Sing.		Plural		Sing.		
Plural		Sing.		Plural		
Pres.		Past		Pres.		
Past		Pres.		Past		
TRANS.		TENSE		S/PL		SENT.
S A D	Y N	Pres.		Sing.		The girl is clapping. The boy is jumping.
		Past		Plural		Is the boy running? Is the girl jumping?
S A D	Y N	Pres.		Sing.		The boy was sleeping. The dog was running.
		Past		Plural		Was the girl swimming? Was the boy falling?
S A D	Y N	Pres.		Sing.		The girls are swimming. The boys are falling.
		Past		Plural		Are the dogs running? Are the girls crying?
S A D	Y N	Pres.		Sing.		The dogs were sleeping. The boys were crying.
		Past		Plural		Were the boys sleeping? Were the girls laughing?
S A D	Y N	Pres.		Sing.		The girl is eating. The girl is falling.
		Past		Plural		Is the boy drinking? Is the boy walking?
S A D	Y N	Pres.		Sing.		The boy was clapping. The girl was skipping.
		Past		Plural		Was the girl sitting? Was the girl crying?
S A D	Y N	Pres.		Sing.		The boys are drinking. The girls are falling.
		Past		Plural		Are the girls clapping? Are the boys running?
S A D	Y N	Pres.		Sing.		The girls were running. The dogs were sitting.
		Past		Plural		Were the boys walking? Were the girls jumping?

FIGURE 2

Study Design (cont.)

TABLE 1

Sources of Variation, Error Terms, and Degrees of Freedom for ANOVA

Source ^a	Error Term	df	Source	Error Term	df
Mean	R(A)	1	ACE	CER(A)	3
A	R(A)	3	BCE	BCER(A)	3
B	BR(A)	3	ADE	DER(A)	3
C	CR(A)	1	BDE	BDER(A)	3
D	DR(A)	1	CDE	CDER(A)	1
E	ER(A)	1	BCR(A)		108
R(A)		36	BDR(A)		108
AB	BR(A)	9	CDR(A)		36
AC	CR(A)	3	BER(A)		108
BC	BCR(A)	3	CER(A)		36
AD	DR(A)	3	DER(A)		36
BD	BDR(A)	3	ABCD	BCDR(A)	9
CD	CDR(A)	1	ABCE	BCER(A)	9
AE	ER(A)	3	ABDE	BDER(A)	9
BE	BER(A)	3	ACDE	CDER(A)	3
CE	CER(A)	1	BCDE	BCDER(A)	3
DE	DER(A)	1	S(BCDE)	SR(ABCDE)	32
BR(A)		108	BCDR(A)		108
CR(A)		36	BCER(A)		108
DR(A)		36	BDER(A)		108
ER(A)		36	CDER(A)		36
ABC	BCR(A)	9	ABCDE	BCDER(A)	9
ABD	BDR(A)	9	AS(BCDE)	SR(ABCDE)	96
ACD	CDR(A)	3	BCDER(A)		108
BCD	BCDR(A)	3	SR(ABCDE)		1152
ABE	BER(A)	9			
Total: 2560					

aMean = grand mean

A = age

B = task

C = singular/plural

D = tense

E = transformation

S = sentences

R = replicates

Hypothesis 2

The average number of correct responses will decrease with task.

(Task 1 > Task 2 > Task 3 > Task 4).

Hypothesis 3

There will be a larger average number of correct responses for singular statements than for plural statements.

Hypothesis 4

There will be a larger average number of correct responses for past tense statements than there will be for present tense statements.

Hypothesis 5

There will be a larger average number of correct responses for simple-active-declarative statements than for yes/no transforms.

VIII. Procedure

Subjects were selected according to the criteria noted above (Sampling and Subjects). Each subject completed the vocabulary, demonstration, and first sitting of the task items as per Standard Administration Procedures (Appendix D). The following day the same examiner administered the second sitting of the task items, again following instructions in Appendix D. The third and fourth sittings of the tasks were administered by the same examiner as per instructions (Appendix D), on the third and fourth days respectively. In a few instances, a subject completed the third and fourth sittings in one day, however, in each case, the subject was given an appropriate rest between sittings.

CHAPTER IV

RESULTS

I. Models for Analyzing the Data

The data were analysed under two separate models. The first model was used to consider the quantitative results and the second model was used to consider the qualitative results. Each model will be discussed below.

Quantitative Analysis

Responses were scored as correct or incorrect ... 1 or 0 ... and it was therefore necessary to consider the effect of limitations of the number of criterion score values on the validity of using analysis of variance techniques. Hsu and Feldt (1969) investigated some specific problems that are pertinent to this study:

1. ... is the distribution of mean square ratios largely independent of the number of score units?
2. Do analysis of variance techniques, the short scale notwithstanding, have an advantage over the χ^2 -test of independence in detecting differences in central tendency? (p. 516).

Their conclusions were as follows:

1. ... With samples of 11 cases or more, no adjustment appears necessary in the tabled values of F needed for significance at the 10 per cent, five per cent and one per cent levels.
2. When considering data with a limited number of score values, analysis of variance techniques have an advantage over the χ^2 -test of independence when the sample size is very small, when the study involves more than one factor, or when the primary interest is in the differences among means rather than the variances of the populations (p. 526).

The ANOVA's performed in this study indicated that there were significant differences among levels of factors. In order to determine

how profiles differed, - statistical contrasts were performed. Earlier discussion (Chapter III - Experimental Hypotheses) implied that some contrasts were a priori (prediction of direction of differences) while others were a posteriori (unspecified inter-action effects). Some of these contrasts were orthogonal while others were non-orthogonal. Games (1971) discussed several techniques for performing multiple comparisons of means. His article demonstrated that Bonferroni's t test was the most suitable statistic for the present study. Bonferroni's t test permits orthogonal or non-orthogonal a priori or a posteriori contrasts. Results of the test are conservative.

Qualitative Analysis

A model, based on T-G grammar theories, was developed for purposes of analysis of the content of task responses. The model was task specific as considerations were made for the unique properties of the be-ing verb in singular and plural statements (rules 13-18). The model allowed for a complete description of a subject's performance on task items. The model is presented in Figure 3.

II. Results of the Quantitative Analysis

Means and standard deviations for age levels. In order to demonstrate that the results were reflective of the age levels designated in the selection criteria, means and standard deviations for the four age levels were computed. Results are presented in Table 2.

Means and standard deviations for hearing levels. In order to demonstrate that the results were reflective of children with hearing levels designated in the selection criteria, means and standard deviations

Model of Task Specific Rules

		<u>Rule</u>
SAD	→ Nuc	1
Nuc	→ NP + VP	2
VP	→ Aux + <u>V + ing</u> ^a	3
Aux	→ <u>be</u> + C	4
NP	→ <u>The</u> + N + no	5
no	→ {singular}	6
	{plural}	7
singular	→ ∅	8
plural	→ s	9
C	→ tense + no.	10
tense	→ {past}	11
	{non-past}	12
no.	→ {s/[N + ∅ + —]}	13
	{re/[N + s + —]}	14
be + past + s	→ <u>was</u>	15
be + non-past + s	→ <u>is</u>	16
be + past + re	→ <u>were</u>	17
be + non-past + re	→ <u>are</u>	18
S.D.: SAD	→ The + N + no + be + C + <u>V + ing</u> .	19
S.D.: T _{y/n}	→ be + C + the + N + no + <u>V + ing</u> ?	20


a.  signifies V + ing presented together on chart.

FIGURE 3

Model of Task Specific Rules

TABLE 2
Means and Standard Deviations for Age Levels

Age Level	Mean (in months)	Standard Deviation (in months)
A ₁ - 6 yrs.	74.5	3.9
A ₂ - 7 yrs.	84.9	3.7
A ₃ - 8 yrs.	97.7	3.3
A ₄ - 9 yrs.	107.3	3.7

for the four age levels were computed. Results are presented in Table 3.

A summary of the analysis of variance is presented in Table 4.

The main effects for age (A), task (B)¹, and singular/plural (C) were significant, and are examined in greater detail below.

Age contrasts (A). To determine the sources of variation among levels of the Age factor, Bonferroni t tests were performed. A summary of these contrasts is presented in Table 5.

The significant differences were between 7 yr. and 9 yr. levels. The mean for the 7 yr. olds was less than that of the 6 yr. olds, hence the 7 yr. olds and 9 yr. olds were also significantly different.

The first experimental hypothesis (Chapter III) indicated an expectation that the 6 year old Ss would have a mean significantly smaller than that for 7 year olds, which, in turn, should be significantly smaller than that for 8 year olds. However, a preliminary examination of the results (Appendix F) indicated that the 6 yr. olds' and the 7 yr. olds' means were similar and to contrast them would seem to be pointless. Schmitt's (1969) sampling procedure provided three year mean differences between age groups in order to demonstrate significant changes in performance. On the basis of Schmitt's evidence and the mean differences (Table 5), the investigator selected 6 yr. olds and 9 yr. olds for the third contrast.

1. As assumptions of equal covariances in the pooled variance-covariance matrix were not met, a Greenhouse & Geisser conservative F test was performed for factors B and C ($df(1,36)$ for both tests) with the results indicating significant differences at the .01 level. Greenhouse and Geisser F tests for AB and AC interactions ($df(3,36)$ for both tests) indicated significance at the .05 level.

TABLE 3
Means and Standard Deviations for Hearing Levels

Age Level	Mean (in dB)	Standard Deviations (in dB)
A ₁ - 6 yrs.	98.0	10.1
A ₂ - 7 yrs.	100.5	13.8
A ₃ - 8 yrs.	98.0	12.3
A ₄ - 9 yrs.	95.5	16.9

TABLE 4
Summary of Analysis of Variance

Source	df	Mean Square	F
MEAN ^a	1	181.6891	163.8406
A ^b	3	7.4838	6.7487 **
B ^c	3	15.1046	96.7340 **
C ^d	1	36.5765	45.0421 **
D ^e	1	.3062	1.7579
E ^f	1	.1562E-02	0.0084
R(A) ^g	36	1.1089	
AB	9	.5841	3.7413 **
AC	3	4.0213	4.9521 **
BC	3	.4463	2.4136
AD	3	.3072	1.7639
BD	3	.1593	1.1640
CD	1	.9179E-05	0.0001
AE	3	.2588	1.3864
BE	3	.2963	1.8198
CE	1	.7656E-01	0.3297
DE	1	1.4062	14.3253 **
BR(A)	108	.1561	
CR(A)	36	.8120	
DR(A)	36	.1742	
ER(A)	36	.1867	
ABC	9	.1453	0.7858
ABD	9	.2201	1.6078
ACD	3	.2218	1.6739
BCD	3	.5728E-01	0.5574
ABE	9	.8559E-01	0.5256
ACE	3	.4219E-01	0.1817
BCE	3	.1713	1.1850
ADE	3	.2072	2.1116
BDE	3	.5635	4.2421 **
CDE	1	.5624E-01	0.5424

TABLE 4 (cont.)

Source	df	Mean Square	F
BCR(A)	108	.1849	
BDR(A)	108	.1369	
CDR(A)	36	.1325	
BER(A)	108	.1628	
CER(A)	36	.2321	
DER(A)	36	.9816E-01	
ABCD	9	.1694	1.6481
ABCE	9	.1161	0.8029
ABDE	9	.1548	1.1656
ACDE	3	.6978E-01	0.6730
BCDE	3	.1302	1.0509
S(BCDE) ^h	32	.1640	1.6294
BCDR(A)	108	.1027	
BCER(A)	108	.1446	
BDER(A)	108	.1328	
CDER(A)	36	.1036	
ABCDE	9	.2979	2.4050 *
AS(BCDE)	96	.1005	0.9982
BCDER(A)	108	.1238	
SR(ABCDE)	1152	.1006	

* - probability < .05

** - probability < .01

a - grand mean

b - age

c - task

d - singular/plural

e - tense

f - transform

g - subjects nested within age

h - sentences nested within BCDE

TABLE 5
Summary of Age (A) Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_1 = 7 \text{ yr. vs. } 8 \text{ yr.} = .1141$	$-.0749 \leq \Psi \leq .3031$
$\hat{\Psi}_2 = 8 \text{ yr. vs. } 9 \text{ yr.} = .1188$	$-.0702 \leq \Psi \leq .3078$
$\hat{\Psi}_3 = 6 \text{ yr. vs. } 9 \text{ yr.} = .2203$	$.0313 \leq \Psi \leq .4093^{**}$
Means	
6 yr. = .1890	8 yr. = .2906
7 yr. = .1765	9 yr. = .4093

** - equivalent to significance at .01 level

Task contrasts (B). To determine the source of variation among levels of the Task factor, Bonferroni t tests were performed. A summary of these contrasts is presented in Table 6.

The contrasts performed were determined by the second experimental hypothesis (Chapter III). Tasks two, three, and four were demonstrated to be significantly different while tasks one and two were not significantly different. However, it was concluded that tasks one, three and four were significantly different as the mean for task one was larger than the mean for task two.

Singular/plural contrasts (C). It was apparent that the subjects had less difficulty with singulars than they had with plurals (504 correct singulars vs. 188 correct plurals).

Age x Task contrasts (AB). The age-by-task (AB) interaction was statistically significant (Table 4). Selected contrasts were performed to determine which tasks differentiated between age levels. A summary of the Bonferroni contrasts for AB interactions is presented in Table 7.

Task one differentiated between 7, 8, and 9 year age levels. As the cell means for A_1B_1 was smaller than that of A_2B_1 , it was apparent that task one also differentiated between 6 and 8 year levels.

Task three differentiated between 7 and 8 year olds, however, task four differentiated between 8 and 9 year old subjects.

The age-by-task interactions are graphed in Figure 4.

Age x Singular/plural contrasts (AC). The interaction between age and singular/plural was significant (Table 4). In view of the significant difference in favor of the singular factor, age levels were contrasted within the 'singular' level of the singular/plural factor. A summary of the Bonferroni contrasts for these selected AC interactions is presented in Table 8.

TABLE 6
Summary of Task (B) Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_4$ = Task 1 vs. Task 2 = .0578	- .0022 $\leq \Psi \leq$.1178
$\hat{\Psi}_5$ = Task 2 vs. Task 3 = .2000	.1400 $\leq \Psi \leq$.2600 **
$\hat{\Psi}_6$ = Task 3 vs. Task 4 = .0609	.0009 $\leq \Psi \leq$.1209 **
Means	
Task 1 = .4250	Task 3 = .1671
Task 2 = .3671	Task 4 = .1062

** - equivalent to significance at .01 level

TABLE 7
Summary of Age x Task (AB) Interaction Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_7 = A_2B_3 \text{ vs. } A_3B_3 = .1313$	$.0017 \leq \Psi \leq .2609$ **
$\hat{\Psi}_8 = A_3B_3 \text{ vs. } A_4B_3 = .1125$	$-.0171 \leq \Psi \leq .2421$
$\hat{\Psi}_9 = A_2B_4 \text{ vs. } A_3B_4 = .0813$	$-.0483 \leq \Psi \leq .2109$
$\hat{\Psi}_{10} = A_3B_4 \text{ vs. } A_4B_4 = .1313$	$.0017 \leq \Psi \leq .2609$ **
$\hat{\Psi}_{11} = A_2B_1 \text{ vs. } A_3B_1 = .1875$	$.0579 \leq \Psi \leq .3171$ **
$\hat{\Psi}_{12} = A_3B_1 \text{ vs. } A_4B_1 = .1813$	$.0517 \leq \Psi \leq .3109$ **
Cell Means	
	B_1 B_2 B_3 B_4
A_1	.2812 .3687 .0687 .0375
A_2	.2875 .3125 .7500 .0312
A_3	.4750 .3687 .2062 .1125
A_4	.6562 .4187 .3187 .2437

** - equivalent to significance at .01 level

where: $A_1 = 6$ yrs; $A_2 = 7$ yrs; $A_3 = 8$ yrs; $A_4 = 9$ yrs

$B_1 = \text{Task 1}$; $B_2 = \text{Task 2}$; $B_3 = \text{Task 3}$; $B_4 = \text{Task 4}$

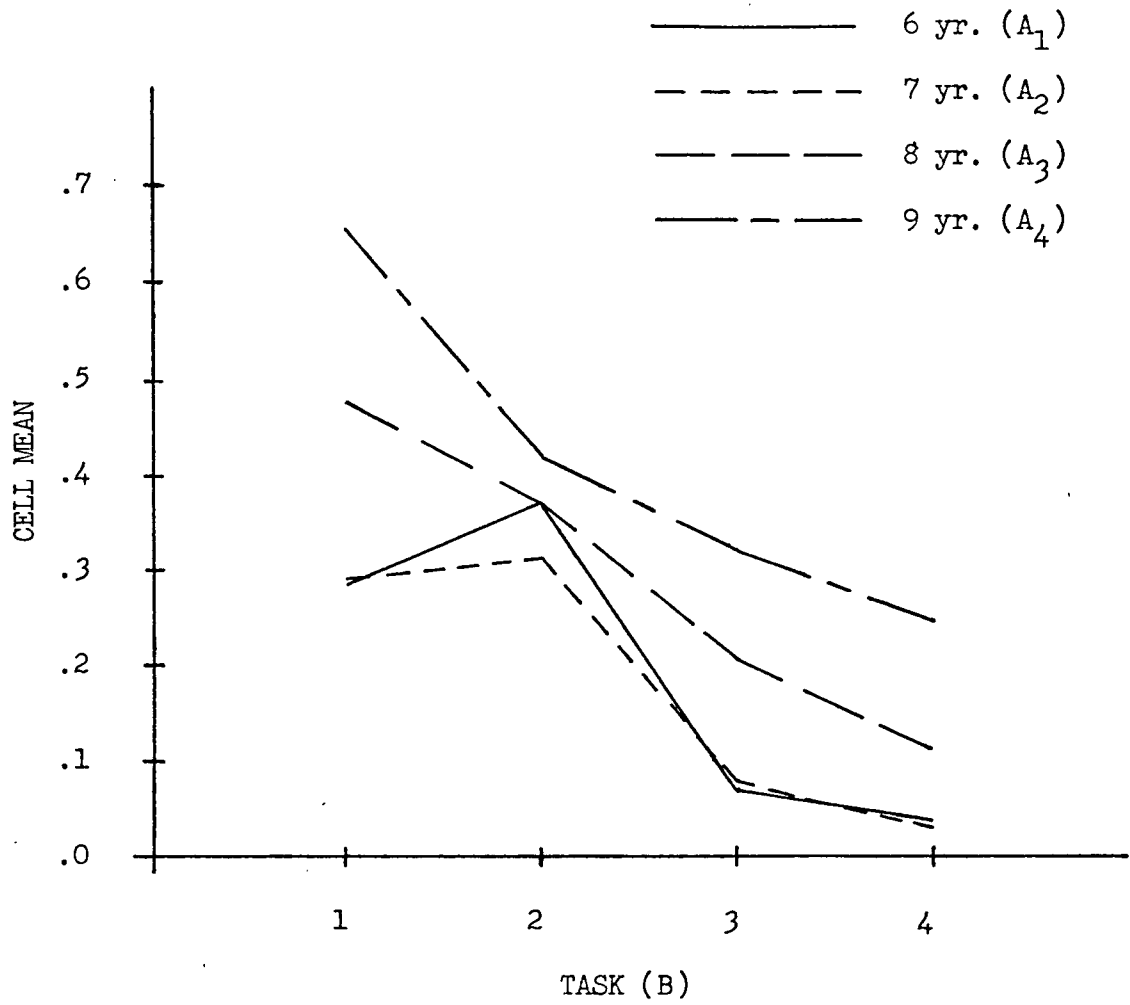


FIGURE 4
AB Interactions

TABLE 8
Summary of Age x Singular/Plural (AC) Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_{13} = A_2C_1$ vs. $A_3C_1 = .1500$	$-.0593 \leq \Psi \leq .3593$
$\hat{\Psi}_{14} = A_3C_1$ vs. $A_4C_1 = .2438$	$.0345 \leq \Psi \leq .4531$ **
Cell Means	
$A_1C_1 = .2500$	$A_3C_1 = .4000$
$A_2C_1 = .2500$	$A_4C_1 = .6437$

** - equivalent to significance at .01 level

where: $A_1 = 6$ yrs; $A_2 = 7$ yrs; $A_3 = 8$ yrs; $A_4 = 9$ yrs

$C_1 =$ Singular

It was clear that 9-year-olds performed significantly better on singular noun and verb task items than did 8-year-olds. Six and 9 year age levels were significantly different as were 7 and 9 year age levels. In each case the better performance was associated with the nine year age level.

Tense x Transform contrast (DE). This contrast was of particular interest as experimental hypotheses three and four (Chapter III) were not supported and selected contrasts of the interaction may explain the lack of significant main effects. Examination of cell means (Table 9) indicated that response patterns for levels of factor D were different (e.g. $D_1E_2 > D_1E_1$ and $D_2E_2 < D_1E_1$). This pattern may account for non-significance of the hypothesis. A similar pattern was noted for the factor E cell means. However, there was a difference between cell means for D_1E_2 and D_2E_2 . The Bonferroni contrasts is presented in Table 9.

Task x Tense X transform contrasts (BDE). The differences between Tasks was highly significant (see Table 4). Because the task factor was so significant, selected contrasts were performed to investigate the contribution of within task variance to the three factor interaction. A summary of the contrasts is presented in Table 10.

The contrasts demonstrated that the task factor was responsible for considerable variation within the three factor interaction.

Age x Task x Singular/plural x Tense x Transform contrasts (ABCDE). The ABCDE interaction was of little consequence as all significance levels reported above were at the .01 level while this interaction was at the .05 level. However the first three factors were previously demonstrated to be significant, as were several interactions noted above. These results may have been responsible for part of the five factor interaction. In

TABLE 9
Summary of Tense x Transform (DE) Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_{15} = D_1E_2 \text{ vs. } D_2E_2 = .0688$	$.0090 \leq \Psi \leq .1286^{**}$
Cell Means	
$D_1E_1 = .2531$	$D_2E_1 = .2781$
$D_1E_2 = .3015$	$D_2E_2 = .2328$

** - Equivalent to significance at .01 level

where: D_1 = Non-past; D_2 = Past

E_1 = Simple-active-declarative; E_2 = Yes/no question

TABLE 10
Summary of Task x Tense x Transform (BDE) Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_{16} = B_2 D_1 E_2$ vs. $B_3 D_1 E_2 = .2938$	$.1698 \leq \Psi \leq .4178$ **
$\hat{\Psi}_{17} = B_2 D_2 E_2$ vs. $B_3 D_2 E_2 = .1563$	$.0323 \leq \Psi \leq .2803$ **
$\hat{\Psi}_{18} = B_2 D_1 E_1$ vs. $B_3 D_1 E_1 = .1063$	$-.0177 \leq \Psi \leq .2303$
$\hat{\Psi}_{19} = B_2 D_2 E_1$ vs. $B_3 D_2 E_1 = .2438$	$.1198 \leq \Psi \leq .3678$ **

Cell Means				
	$D_1 E_1$	$D_1 E_2$	$D_2 E_1$	$D_2 E_2$
B_1	.4375	.4812	.4437	.3375
B_2	.2875	.4562	.3875	.3375
B_3	.1812	.1625	.1437	.1812
B_4	.1062	.1062	.1375	.0750

** - equivalent to significance at .01 level

where: B_1 = Task 1; B_2 = Task 2; B_3 = Task 3; B_4 = Task 4

D_1 = Non-past; D_2 = Past

E_1 = Simple-active-declarative; E_2 = Yes/no question

order to investigate this possibility, five contrasts were performed to examine the interaction of age with differing levels of the remaining four factors. A summary of the contrasts is presented in Table 11.

The selected contrasts performed did not examine all possible pair-wise contrasts of the five factor interaction and the results, therefore, were not assumed to have isolated the total source of variance within the interaction. Rather, the intent was to demonstrate that the particular significances discussed earlier were, at least partially, responsible for the five factor interaction.

Examiner differences. Each examiner administered the tasks to five children from one age level. Hence, examiners were nested under age ($X(A)$). Use of more than one examiner may have resulted in differences in administration procedures. In order to investigate this possibility, the data were re-analyzed with a sixth factor (examiner) included in the ANOVA. The results of that analysis are presented in Appendix I.

Examiner contrasts. There was a clear differentiation of results collected by different examiners. In order to determine the source of variation in this factor, Bonferroni contrasts were performed. As a result of population (Chapter V, p. 65) and cell mean differences (Table 12), contrasts were made between examiners at the A_3 (8 yrs.) and A_4 (9 yrs.) age levels. A summary of the contrasts is presented in Table 12.

Examiner x Singular/plural contrasts ($CX(A)$). The $CX(A)$ interaction was significant at the .01 level (Appendix I). Bonferroni contrasts were utilized to locate the sources of variation. Age levels three and four were selected for the same reasons discussed in the previous subsection (Examiner contrasts). A summary of the contrasts is presented in Table 13.

TABLE 11

Summary of Age x Task x Singular/Plural x Tense x Transform (ABCDE)

Estimated Contrast	.05 Confidence Interval for Ψ_j
$\hat{\Psi}_{20} = A_1 B_4 C_1 D_1 E_2$ vs. $A_4 B_1 C_1 D_1 E_2 = .4000$	$.1107 \leq \Psi \leq .6893$ *
$\hat{\Psi}_{21} = A_2 B_1 C_1 D_2 E_2$ vs. $A_4 B_1 C_1 D_1 E_2 = .5000$	$.2107 \leq \Psi \leq .7893$ *
$\hat{\Psi}_{22} = A_2 B_3 C_1 D_2 E_2$ vs. $A_4 B_4 C_1 D_1 E_2 = .3500$	$.0607 \leq \Psi \leq .6393$ *
$\hat{\Psi}_{23} = A_2 B_3 C_1 D_1 E_2$ vs. $A_4 B_3 C_1 D_2 E_2 = .6500$	$.3607 \leq \Psi \leq .9393$ *
$\hat{\Psi}_{24} = A_1 B_1 C_1 D_1 E_2$ vs. $A_4 B_1 C_1 D_2 E_2 = .4500$	$.1707 \leq \Psi \leq .7393$ *
Cell Means	
$A_1 B_1 C_1 D_1 E_2 = .4000$	$A_2 B_3 C_1 D_1 E_2 = .1000$
$A_4 B_1 C_1 D_1 E_2 = .7000$	$A_4 B_3 C_1 D_1 E_2 = .4500$
$A_2 B_1 C_1 D_2 E_2 = .2000$	$A_2 B_3 C_1 D_2 E_2 = .2000$
$A_4 B_1 C_1 D_2 E_2 = .8500$	$A_4 B_3 C_1 D_2 E_2 = .7500$
$A_1 B_4 C_1 D_1 E_2 = .0500$	$A_4 B_4 C_1 D_1 E_2 = .5500$

* - equivalent to significance at .05 level

Where: A_1 = 6 yrs; A_2 = 7 yrs; A_4 = 9 yrs B_1 = Task 1; B_3 = Task 3; B_4 = Task 4 C_1 = singular D_1 = Non-past; D_2 = Past E_1 = Simple-active-declarative; E_2 = Yes/no question

TABLE 12
Summary of Examiner (X) Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_{25} = X_1A_3 \text{ vs. } X_2A_3 = .1938$	$-.0176 \leq \Psi \leq .4052$
$\hat{\Psi}_{26} = X_1A_4 \text{ vs. } X_2A_4 = .2188$	$.0074 \leq \Psi \leq .4302^{**}$
Cell Means	
$X_1A_1 = .1562$	$X_1A_3 = .1937$
$X_2A_1 = .2218$	$X_2A_3 = .3875$
$X_1A_2 = .2125$	$X_1A_4 = .3000$
$X_2A_2 = .1406$	$X_2A_4 = .5187$

** - equivalent to significance at .01 level

where: X_1 = Examiner 1; X_2 = Examiner 2

A_1 = 6 yrs; A_2 = 7 yrs; A_3 = 8 yrs; A_4 = 9 yrs

TABLE 13

Summary of Examiner x Singular/Plural (CX(A)) Contrasts

Estimated Contrast	.01 Confidence Interval for Ψ_j
$\hat{\Psi}_{27} = X_1 A_3 C_2$ vs. $X_2 A_3 C_1 = .4125$	$.1407 \leq \Psi \leq .6843$ **
$\hat{\Psi}_{28} = X_1 A_4 C_2$ vs. $X_2 A_4 C_1 = .6875$	$.4157 \leq \Psi \leq .9593$ **
Cell Means	
$X_1 A_3 C_2 = .1750$	$X_1 A_4 C_2 = .1437$
$X_2 A_3 C_1 = .5875$	$X_2 A_4 C_1 = .8312$

** - equivalent to significance at .01 level

where: X_1 = Examiner 1; X_2 = Examiner 2 A_3 = 8 yrs; A_4 = 9 yrs C_1 = Singular; C_2 = Plural

Examiner x Tense contrasts (DX(A)). The examiner by tense interaction was of lesser significance (.05 alpha level; Appendix I). An attempt was made to locate the source of variance for the interaction through application of Bonferroni's t test. Again, age levels A₃ (8 yrs.) and A₄ (9 yrs.) were investigated. A summary of the contrasts is presented in Table 14.

III. Results of the Qualitative Analysis

Detailed analysis of the content of responses for all subjects was considered too large a task for this investigation as the intent was not to describe a complete grammar but to describe some of the operational rules of these children. Consequently, two subjects per age level were selected from the population studied. An attempt was made to select those subjects whose performance was average. That is, their results were neither the best nor the worst of the data collected. Subjects selected were numbers, 5, 6, 16, 19, 24, 30, 33, and 40. A summary of their responses on tasks three and four is presented in Appendix H, while task one and two responses are presented in Appendix G.

Each subject's responses will be analysed and reported separately to assure clarity of analysis and reporting. The results of the analyses will be discussed in Chapter V.

Subject #5 (Age: 6 yrs. 5 mos.). Task one. One error was noted on singular responses. Subject 5 selected a picture representing a plural noun and past tense markers when the correct response for this particular yes/no transform (#301 - Appendix G) was a picture representing singular noun and past tense markers. All other responses involving singular markers were correct, regardless of tense or transform.

TABLE 14
Summary of Examiner x Tense (DX(A)) Contrasts

Estimated Contrast	.05 Confidence Interval for Ψ_j
$\hat{\Psi}_{29} = X_1 A_3 D_2$ vs. $X_2 A_3 D_1 = .2500$	$.1484 \leq \Psi \leq .3516$ *
$\hat{\Psi}_{30} = X_1 A_4 D_1$ vs. $X_2 A_4 D_2 = .2500$	$.1484 \leq \Psi \leq .3516$ *
$\hat{\Psi}_{31} = X_1 A_4 D_2$ vs. $X_2 A_4 D_1 = .1875$	$.0859 \leq \Psi \leq .2891$ *
Cell Means	
$X_1 A_3 D_2 = .1312$	$X_2 A_4 D_1 = .5187$
$X_2 A_3 D_1 = .3812$	$X_1 A_4 D_2 = .3312$
$X_1 A_4 D_1 = .2687$	$X_2 A_4 D_2 = .5187$

* - equivalent to significance at .05 level

where: X_1 = Examiner 1; X_2 = Examiner 2

A_1 = 6 yrs; A_3 = 8 yrs; A_4 = 9 yrs

D_1 = Non-past; D_2 = Past

Every plural present response was incorrect. In each instance subject 5 selected the picture representing plural noun and past tense markers. All plural past task items were completed correctly.

Task two. A similar pattern to the task one singular responses was noted. All singular statements were selected correctly with the exception of one yes/no transform. In this instance the correct singular past statement was not selected, rather a plural non-past Aux with a singular noun (N) was selected (#114). When dealing with plurals, subject 5 again experienced difficulties. Of the eight plural items, one was completed correctly (#106). When presented with a plural non-past SAD item, subject 5 selected a statement containing a plural noun and singular past Aux (#110). The remaining six errors were consistent in that a statement in the correct tense was selected, but the Aux was always singular when it should have been plural. In other words, the student operated with the tense rule but not the agreement rule (concord).

Task three. The first task three item presented (#103) was completed incorrectly. Subject 5 used a past tense Aux for a non-past tense item.

Item 411 was correct structurally. A substitution error ('dog' for 'boy') was noted but it was not considered to be of any consequence in this study as the error did not occur more than once. The item was, therefore, considered correct.

Singular past SAD items were completed correctly while plural SAD items were completed incorrectly. In every instance a singular Aux was selected for plural statements and two of the four nouns selected were singular.

Subject 5 was unable to complete yes/no transforms (Appendix H).

Singular yes/no transform items elicited a double SAD statement corresponding to the pictured situation. Plural yes/no transform items resulted in plural nouns being selected one half of the time with singular Aux selected throughout. Two of the four plural yes/no transforms were left incomplete (No response recorded in one of the spaces provided). With the exception of #103, tenses were used correctly throughout the task.

Task four. Singular SAD items were generated correctly and plural SAD items were generated incorrectly. Two of the four incorrect plural items contained singular nouns and a singular Aux was used in every instance.

As in task three, subject 5 was unable to deal with yes/no transforms. All yes/no generations were incorrect. In the case of singular items, a correct corresponding SAD was produced, while plural yes/no items elicited corresponding plural SAD structures with a singular Aux.

Tenses were used correctly throughout task four.

Summary. Subject 5 demonstrated mastery of tense markers and a beginning of number concepts. She did not attach an inflectional ending to singular nouns and did use the 's' morpheme on all but one plural noun in task four. Subject 5 did not demonstrate knowledge of subject-verb concord in plural situations as a singular Aux was consistently selected. The subject was unable to generate or complete a yes/no transform but was able to perform correctly on 3 of 4 singular yes/no questions in both tasks one and two. A summary of Subject 5's operational rules, relative to this study, are as follows:

Structural Description (SD) for both SAD and T_Q statements

$$\Rightarrow \underline{\text{The}} + N + \text{no} + \left\{ \begin{array}{c} \underline{\text{is}} \\ \underline{\text{was}} \end{array} \right\} + \overset{\text{---}}{\text{V}} + \underline{\text{ing}}$$

Reference to the model of task specific rules (Figure 3) demonstrated that Subject 5 used rules 7 and 9 inconsistently, did not use rules 14,

17, 18, and 20 but used all other rules of the model correctly.

Subject #6 (Age: 6 yrs. 3 mos.). Task one. Two singular items were completed correctly (one SAD and one T_Q). All of the six remaining singulars were treated as plurals. Tense usage was inconsistent in SAD structures and consistently past throughout T_Q responses. Two plural items were also completed correctly (again, a SAD and a T_Q) but the remaining responses were inconsistent in tense and number.

Task two. Singular past SAD statements were selected for all singular SAD statements, regardless of tense, while the three errors in singular T_Q statements were number errors of concord (i.e. were girl). One plural non-past SAD and two plural past T_Q statements were correctly selected but the remaining five selections indicated many concord inconsistencies (both tense and number).

Task three. None of the completions were correct. Subject 6 generally supplied a noun with a plural inflection inconsistently attached. This response pattern was noted throughout SAD and T_Q items. It was of interest that T_Q items had two blanks in each completion item and the student generally supplied the same noun twice with inconsistencies in plural inflection. Item 415 elicited a $V + \text{ing}$ response.

Task four. Subject six continued the pattern discussed above, that is supplying $N + s$ for all items. However, it was of interest that in all instances but one a $V + \text{ing}$ was supplied whenever the stimulus picture included boys.

Summary. Subject 6 generally appeared to function at a one word level on production tasks. Inconsistencies were noted throughout tasks on tense and number (both concord and plural inflections). A general operational rule for subject 6 on tasks 1-4 is noted below:

SD for SAD and T_Q structures

$\Rightarrow N + (s)$
 $\Rightarrow V + \underline{ing}$ if N = boy(s)

Reference to the model confirmed that rules 6-9 were used inconsistently and there was no evidence of the other rules of the model being used.

Subject #16 (Age: 7 yrs. 2 mos.). Task one. Subject 16 selected singular pictures for all singular SAD statements. Three of the four singular pictures selected were marked as non-past tense, hence 3 of 4 responses were correct (2 non-past and 1 past). Singular T_Q statements elicited selection of three singular non-past pictures. None of the plural items resulted in correct responses. Three of four plural SAD item responses were singular non-past and three of four plural T_Q item responses were plural. Subject 16 selected singular non-past more frequently than plural or past responses.

Task two. Two SAD items were correctly selected (1 singular and 1 plural) otherwise the selections reflected what appeared to be a random choice of Aux. The T_Q items resulted in one correct response (singular non-past) with singular Aux selected in all but one instance. Tense of the Aux was used inconsistently.

Task three. Subject 16 did not complete any of the items correctly. In every instance a correct noun was selected; however the plural inflection was used only twice in plural items. A pattern of combining what appeared to be an undefined inflection (was) with the noun was apparent throughout the task. This pattern led to two correct responses in T_Q items (singular past) as the 'was' inflection filled the first blank and the noun filled the second thereby completing a T_Q statement.

Task four. A similar pattern of inflectional 'was' plus noun

was noted throughout SAD singular and plural and singular T_Q items. There were two unexplained responses (#116 and #104) where it appeared that $V + \text{ing}$ was used. The plural T_Q items seemed to confuse the subject as his pattern was broken. A non-past tense inflection appeared once (#108); the order was reversed once (#308); and the inflection was omitted once (#112); another response did not fit any pattern (#304).

Summary. Subject 16 generally appeared to be functioning with the rule that;

$S \rightarrow \text{was} + N + (s)$ with was as an undefined inflection and 's' selected inconsistently. According to the model the subject was using rules 6-9 inconsistently and demonstrated a partial understanding of rule 3 but there was no evidence of use of other rules.

Subject #19 (Age: 7 yrs. 3 mos.). Task one. Four singular SAD items resulted in selection of plural pictures. Tense marker selections were inconsistent. T_Q items caused subject 19 to select non-past singular pictures three times resulting in two correct choices. Plural SAD items resulted in selection of three plural pictures but again tense marker selection was inconsistent. Two of the four responses were correct. Plural T_Q items elicited three singular and three non-past responses. Tense and number responses were inconsistent throughout the task.

Task two. Singular Aux statements were selected for singular SAD items three of four times. Plural Aux statements were selected for plural SAD items. However, tense errors resulted in only 50% accuracy on SAD items. T_Q items resulted in inconsistent selection of singular-plural, past-non-past Aux statements. Only 12 1/2% accuracy was noted for T_Q items.

Task three. Throughout the task subject 19 supplied either

$\overbrace{V + \text{ing}}$ or $N + (s)$. There did not appear to be any consistency of choice. In T_Q transforms, the first blank was used and the second was not. In one plural T_Q item the student used is and are in the two blanks.

Task four. Subject 19 generally supplied $\overbrace{V + \text{ing}}$ for all items. Exceptions to this rule were: a plural noun generation for a plural SAD item; no response when the student could not find the desired verb on the chart; and one $N + \overbrace{V + \text{ing}}$ for a singular T_Q item.

Summary. Subject 19 was inconsistent in tense and number differentiations. He generally supplied a noun if the verb was given, otherwise, he generated a verb. He appeared to use the following two rules:

SD for SAD and TY/N structures

1. $\implies \overbrace{V + \text{ing}}$, and
2. If given $\overbrace{v + \text{ing}} \implies N + (s) + \overbrace{V + \text{ing}}$

The first rule did not correspond to the model of task specific rules; however the second rule appeared to be a crude application of rule 2 of the model.

Subject #24 (Age: 7 yrs. 11 mos.). Task one. Responses for singular SAD and T_Q items were in the correct tense in seven of the eight instances and correct number was used for five of the eight items. Plural SAD and T_Q items resulted in five correct tenses and one correct number for the eight items.

Task two. Responses to singular SAD and T_Q items were correct for seven of the eight items with the eighth item incorrect in both tense and number. Plural SAD and T_Q statements selected were in the correct tense seven times but the number of the Aux was correct only twice in eight responses.

Task three. It appeared that subject 24 experienced some task

confusion as he interchanged Aux and noun positions in some statements. Singular SAD statements were completed correctly with the exception of the Aux being consistently placed in the wrong position (preceding the noun). Singular T_Q statements were correctly completed. Plural SAD items again had the Aux in the wrong position and there was continued difficulty with the number of the Aux. Plural T_Q statements were correctly completed with the exception of the number of the Aux.

Task four. Singular SAD items again resulted in a T_Q response; however it was noted that the verb was omitted in three of the four generations. Singular T_Q items resulted in generation of one correct response and three corresponding SAD statements and the verb was omitted once. Plural items demonstrated a continued confusion of SAD and T_Q responses (one-half were correctly generated) as well as continued difficulty with the number of the Aux. The verb was omitted in five of the eight generations.

Summary. Subject 24 generally appeared to comprehend singular statements but did not appear to comprehend or use a plural Aux in SAD or T_Q items. There was a confusion of rules for completing or generating SAD and T_Q statements. In some instances, task four items (generation) resulted in omission of the verb. Subject 24 appeared to complete the tasks according to the following rules of operation:

SD

$$\begin{aligned} \text{SAD} &\Rightarrow \underline{\text{The}} + N + \text{no} + \left\{ \begin{array}{c} \underline{\text{is}} \\ \underline{\text{was}} \end{array} \right\} + (\text{V} + \underline{\text{ing}}) \\ \text{TY/N} &\Rightarrow \left\{ \begin{array}{c} \underline{\text{is}} \\ \underline{\text{was}} \end{array} \right\} + \underline{\text{the}} + N + \text{no} + (\text{V} + \underline{\text{ing}}) \end{aligned}$$

It was apparent that rules 19 and 20 of the model were confused and that rules 14, 17 and 18 were not used in the tasks; otherwise the rules of the model appear to have been utilized.

Subject #30 (Age: 8 yrs. 6 mos.). Task one. All singular items were completed correctly and five of the eight plural items were also completed correctly. The three plural errors were the result of selection of pictures marked as non-past tense when the statements were past tense.

Task two. Seven of the eight singular items were correctly selected. One plural Aux was selected for a singular item. Seven of the eight plural items were incorrect as the result of selection of singular Aux statements.

Task three. All singular items were completed correctly and all plural items were incorrect. The errors were the result of singular Aux consistently being used for plural items.

Task four. All singular SAD statements were correctly generated and all singular T_Q statements were correct with the exception of the determiner. As in previous tasks, the singular Aux was used for plural items. Generation of plural T_Q transforms also resulted in omission of the determiner in every question.

Summary. Subject 30 generally demonstrated comprehension and production skills in all areas examined with the exceptions of plural Aux, and generation of T_Q statements. The student's rules of operation were summarized as follows:

SD

$$\begin{aligned} \text{SAD} &\Rightarrow \underline{\text{The}} + N + \text{no} + \left\{ \begin{array}{c} \underline{\text{is}} \\ \underline{\text{was}} \end{array} \right\} + \text{V} + \underline{\text{ing}} \\ \text{TY/N} &\Rightarrow \left\{ \begin{array}{c} \underline{\text{is}} \\ \underline{\text{was}} \end{array} \right\} + N + \text{no} + \text{V} + \underline{\text{ing}} \end{aligned}$$

The subject did not use model rules 14, 17 and 18 and he reduced rule 20.

Subject #33 (Age: 8 yrs. 8 mos.). Task one. A tense error was

made on one singular response and the other seven responses were correct. Plural past pictures were selected for seven of the eight plural items. This pattern resulted in only three correct responses.

Task two. All singular statements were selected correctly. All plural items were incorrect as a result of selection of singular Aux statements.

Task three. With one exception, responses had exactly the same pattern as in task two. That is, singular statements were correct and singular Aux was used for plural statements. The only exception was the omission of one plural inflection of a noun for a plural T_Q statement.

Task four. The generation items followed the same pattern as task three responses, with one exception. The noted difference in performance was that subject 33 generated SAD statements for T_Q transforms.

Summary. Subject 33 did not generate T_Q transforms but did appear to comprehend them. She could also complete a partially provided T_Q structure (Task 3). Generally, the student was unable to deal with plural Aux regardless of tense. The operational rule summarizing task performance is as follows:

SD for both SAD and T_Q structures

$$\Rightarrow \underline{\text{The}} + N + \text{no} + \left\{ \begin{array}{c} \underline{\text{is}} \\ \underline{\text{was}} \end{array} \right\} + \overset{\text{V}}{\text{ }} + \underline{\text{ing}}$$

It was noted that the student appeared to be using all of the model with the exception of rules 14, 17, 18, and 20.

Subject #40 (Age: 8 yrs. 9 mos.). Task one. All singular items were completed correctly and six of the eight plural items were also completed correctly. The two errors were confusions of tense and number.

Task two. Seven of the eight singular statements were correctly selected while only two plural items were correct. The singular error was

the result of a selection of a plural instead of singular Aux statement. The six plural item errors were the result of selection of singular Aux statements.

Task three. All singular items were completed correctly. Three of four plural SAD statements were completed incorrectly as a result of selection of a singular Aux. It was noted that a plural inflection of a noun was omitted in one item. Plural T_Q items also utilized a singular Aux in three instances; however the fourth item was completed with a plural Aux in the wrong tense.

Task four. There was an apparent confusion of SAD and T_Q structures. All singular items were correctly generated except that one T_Q statement was generated for a SAD item and vice versa. Seven of eight plural generations used a singular Aux. The eighth item used a plural Aux correctly but the determiner and plural inflection of the noun were omitted.

Summary. Subject 40 generally was able to comprehend and produce singular statements but experienced some difficulty with plural Aux items. It was noted that the plural inflection of the noun was sometimes omitted when the number of the noun and Aux were in conflict. There was a confusion of structural pattern for SAD and T_Q statements. There were five items where plural Aux was used correctly. One of the five items also included a reduction of the structure through the omissions of the determiner and plural inflection of the noun. Subject 40 appeared to operate on the tasks according to the following rules:

SD

$$\text{SAD} \Rightarrow \underline{\text{The}} + \text{N} + (\text{no})^2 + (\text{be} + \text{C})^1 + \overbrace{\text{V} + \text{ing}}$$

$$\text{TY/N} \Rightarrow (\text{be} + \text{C})^1 + \underline{\text{the}} + \text{N} + \text{no} + \overbrace{\text{V} + \text{ing}}$$

It was also noted that rules 19 and 20 were confused at times. This was probably a confusion of task response and not necessarily a reflection of the subject's normal performance.

-
1. It was noted that (be + C) was used inconsistently. Subject 40 generally used the singular Aux (rules 13, 15, and 16 of the model) but occasionally he used a plural Aux (rules 14, 17, and 18).
 2. Number was used inconsistently - occasionally the plural inflection of noun was omitted if it was in conflict with the number of the Aux.

CHAPTER V

DISCUSSION

I. Interpretation of Results

Quantitative Results

The purpose of this study was to investigate the six research questions previously stated (p. 23). The results pertaining to the first five questions were considered in this section.

Age. The first research question queried the effect of age on performance. The main effect for the age factor was significant at the .01 level. Further statistical investigation led to the conclusion that the source of variation was between six and nine year levels (A_1 and A_4) and seven and nine year levels (A_2 and A_4). The first of these findings appeared to be in agreement with the Schmitt (1969) results where a three year age difference was used to demonstrate significant differences. However, progress with older children (14 yrs. +) such as those in the Schmitt study is so much slower than that of young children (Annual Survey of Hearing Impaired Children and Youth, 1969) that smaller age ranges were expected to be significantly different.

The multiple contrasts of age-by-task interactions revealed that task three (production-completion) differentiated between seven and eight year olds (A_2 and A_3) while the more difficult task four (production-construction) differentiated between eight and nine year olds (A_3 and A_4). The decrease in mean performance levels between six and seven year olds (A_1 and A_2) was considered to be a reflection of the previously discussed lack of language skills common to most young deaf children. Both groups generally

were functioning on a one or two word sentence level and were unable to deal with tense, number, and structural considerations. The two groups were, therefore, approximately equal in performance on the tasks.

Task. The second research question (p. 23) dealt with the levels of difficulty of the four levels of tasks. Statistical evidence confirmed that the levels of task were significantly different. Bonferroni contrasts indicated that the sources of variation were significant differences between task levels two and three, and levels three and four with the differences in the predicted direction. There was no significant difference between tasks one and two. This result led the investigator to reconsider the nature of the tasks. In retrospect it seemed that the second task was not a production item in that a stimulus picture and tense marker were observed and the subject then read four sentences and selected the correct one. The requirements of the task were similar to those of the first task-comprehension. In other words, the second task level was inaccurately named and should have been designated a comprehension task.

The difference between means for tasks one and two (Table 6) was in the predicted direction but the difference was not statistically significant at the .01 level of significance. As both tasks one and two required attention to picture and sentence items, they were probably reflecting similar comprehension skills. Task two may have been slightly more difficult (Table 6) as particular attention was required of several differing Aux constructions.

An increase in skill associated with age was reflected in parts of the tasks.

Singular/plural. Results of the ANOVA indicated that the subjects experienced significantly more difficulty with plural than with singular markers. The result was not surprising and would have been of interest

only if the opposite results were found. It was interesting to note that the tasks were sensitive to age-associated skill increases (Table 8). These differences were most apparent at the production level (Appendix F - tasks 3 and 4).

Tense and transform. The predictions of significant main effects for tense and transform factors were not supported. The significant interaction of these two factors was investigated. Results of the contrasts indicated that the source of variation was between non-past and past tenses of T_Q statements, with non-past tense results being significantly larger. This finding is of interest in light of the language methodology in use in schools for the deaf. The language instructional techniques for young deaf children concentrate on past tense simple-active-declarative structures. It was expected that the language teaching at school would generalize to performance on the tasks. However, the demonstration items concentrate on singular, past-non-past, and SAD- T_Q differentiations. It appeared that this emphasis was generalized to the task performances. The relative success with T_Q items indicated that the children could comprehend and produce such structures. The three factor interactions involving task, tense, and transform were demonstrated to be, in part, the result of strong task differentiation (Table 10).

The five factor interaction was significant of the .05 level and this result was demonstrated (Table 11) to be, in part, the result of a combination of previously discussed significant main effects and interactions.

Examiner. The examiner variable was demonstrated to be significant at the .01 level. Previous discussion (pp. 23-24) indicated that two examiners were randomly assigned to each age level but that students were not randomly assigned to examiner. This procedure resulted in a

confounding of factors. Four of the five A_3 (8 yr.) students assigned to one examiner and all of the A_4 (9 yr.) students assigned to another examiner were above average in their academic and social performances and were placed in off-campus classes. That is, their school program was under the jurisdiction of the school for the deaf but their classrooms were situated in regular public schools. These children were generally superior to their deaf peers in linguistic skills and were placed in off-campus classes to enable further development of social and academic skills and integration with their hearing peers.

The teachers, supervising teacher, principal, and superintendent were interested in comparing the results of these "advanced" children with the results of their peers. Their interest and terminology supports the premise that an exceptional group of children was assigned to these particular examiners.

The results of Bonferroni contrasts (Table 12) indicated that significant differences were located within the A_4 (9 yr.) level. The significantly better group was composed of children who were in the off-campus classes. The examiner-by-singular/plural and examiner-by-tense tests for interactions indicated both A_3 and A_4 levels as having examiner differences. While the results of the examiner factor investigation were not easily interpretable due to confounding, it appeared that the population differences associated with examiner were of considerable importance.

Qualitative Results

Qualitative analyses of the responses attempted to provide an answer to the sixth research question (p. 24). An interpretation of the results of each subject analysis follows:

Subject #5. Subject 5 demonstrated a knowledge of the structure of

SAD statements but was unable to cope with T_Q statements at the production level (rule 20 of the model). This difficulty was not apparent at the comprehension level (tasks one and two). The student was unable to deal with plural Aux statements. That is, the student did not understand that an 're' morpheme must be selected in the presence of a plural noun (rule 14) and that the 're' morpheme combined with tense to produce either were or are (rules 17 and 18). Subject 5 appeared to be using all other rules in the model.

Subject #6. Responses to all tasks demonstrated inconsistencies in performance dealing with number and tense. Number inconsistency was noted in both plural inflection of nouns and Aux agreement. It was apparent that subject 6 was functioning at a one word level. There was some indication of an awareness of rules of number for nouns; however, the rules were not consistently utilized and probably not fully understood.

If the child portrayed in the stimulus picture was a boy, subject six supplied a $V + \text{ing}$ response. However, the ing inflection can not be credited as it was provided on the vocabulary chart (Appendix C). Hence, the subject generally provided a verb if the subject was a boy.

Consideration of the nature of the input of the vocabulary charts led to an interesting explanation of the subject's response pattern. Each picture describing a verb has a boy portraying the action. It appeared that the subject used that information to develop a rule. The oversight (using all boys for verb pictures) served to demonstrate that the form of the linguistic input is crucial to language learning.

The production of a noun for a sentence is typical of early productions of young hearing children. This phenomenon was explained by McNeill (1970):

... the child combined no words until 17 months. It is of considerable interest that most of the words noted above are 'nouns'; those that are not nouns are 'adjectives', i.e. attributes of nouns. 'Verbs' are completely missing ... , the syntactic category of nouns is unique in that it alone appears in every grammatical relation. The richness of nouns in holophrastic speech (production), therefore, possesses an advantage for communication. Because all grammatical relations are implicit, nouns can be used in every available relation without endangering the comprehension of adults. Verbs do not have this property (pp. 24 - 25).

Subject #16. A consistent response pattern was noted in tasks one and two. Task one responses utilized non-past tense and task two responses employed a singular Aux for most of the items. The production tasks (3 and 4) also reflected a consistency in response pattern. Subject 16 appeared to function according to the rule that a sentence consisted of an undefined inflection (was) plus a noun. The response patterns throughout the four tasks indicated that the student was aware of the existence of rules in the language but had not yet been able to successfully define the rules. The one word sentence (noun) pattern was similar to that of the previous subject (#6); however the appearance of the inflection indicated that the subject had progressed beyond that level and was attempting to define another operational rule. The use of was was probably a direct reflection on the demonstration items but it served to demonstrate that the subject was aware of further operational rules and willing to attempt to use an ill-defined concept of a rule. McNeill (1970) stated: "children form relationships with ease, but require time to learn the restrictions on relationships" (p. 104). He also pointed out that it is the role of experience to slowly develop these restrictions. Subject 16 was, then, attempting to use a relationship that was probably perceived during the demonstration items.

Subject #19. This student was also performing at a basic level in language skills. Tense and number inconsistencies were evident throughout tasks one and two and performance on tasks three and four was generally at the one word level with indications of two word structures emerging. Subject 19 generally produced a verb for task four items. This response was probably task specific, in that it was possible to accurately describe a situation with a verb from the vocabulary chart. In this particular study, the verb did designate the central communication of the situation and the student could replace the one word noun sentence with a verb with a resultant increase in communication of content of the item.

However, in task three performances the verb was given and the student then generally provided a noun to complete the statement. This response pattern indicated a partial understanding of sentence structure (i.e. NP + VP). There was also one instance of N + V + ing generation for the task four items.

Subject #24. The student was generally able to cope with sentence structures. There were definite indications that structural differentiations were made between SAD and T_Q statements. However, the inconsistency of performance indicated that the rules were not completely established in the student's grammar. Subject 24 did not appear to be using the number rule which requires that an 're' morpheme be used with be in the presence of a plural noun. Hence, all performances resulted in production of singular, or 's' morpheme, Aux constructions. This particular rule is specific to the verb to be and it was, therefore, not surprising that the rule was not yet learned as "the contribution of experience will... be largest in those regions of grammar where general rules apply least." (McNeill, 1970, p. 104) and these young deaf children have had a very

limited linguistic experience. It was also of interest that subject 24 omitted the verb and progressive inflection when required to generate complete structures. This operation was similar to findings reported by Bloom (1970) where " ... the operation of negation within a sentence increased its complexity, and thereby necessitated reduction in the surface structure" and " ... it appeared that reduction was the result of something more than a production limitation on sentence length" (pp. 156 and 165).

Task four responses required the use of many operational rules in order to generate correct statements. This increase in task complexity relative to tasks one, two, and three could have been responsible for the reduction of the structure.

Subject #30. The results of subject 30's task performances were very similar to those of subject 24. The student did not use the 're' morpheme rule previously discussed (subject #24) and also had a consistent reduction of structure for T_Q statements. There were no omissions in SAD generations but the additional operation of one transformation (T_Q) appeared to be related to the omission of the determiner. Hence, a reduction transformation, as proposed by Bloom, appeared to be operative in this student's performances.

Subject #33. Subject 33 appeared to be using all but two rules of the model of task specific rules. This student was not using the 're' morpheme rule and was not differentiating between SAD and T_Q structures on task four performances. However, it appeared that the subject did have some skill with T_Q structures as they were correctly completed (structurally) in tasks one, two and three.

Subject #40. This subject demonstrated more skills than any of the others discussed in this section. The student appeared to understand and

use the structural differences of SAD and T_Q statements as well and there was some correct usage of plural Aux statements. The student did not demonstrate mastery over the 're' morpheme rule but did demonstrate an awareness of the role of that rule. Considerations of concord also appeared to be responsible for the omission of plural inflection on some nouns. This subject appeared to understand all of the rules presented in the model but did not demonstrate performance mastery of those rules.

II. Implications

Bloom (1970) states that:

It is now a basic assumption that the specification of 'what' the child learns ... and 'how' this learning takes place - knowledge of the substance and process of language development - can be a preeminent source of insight into the development of thought and the learning process (p. 1).

The tasks developed for this study were a means to an end. They were not intended as 'measures' of linguistic competence or performance in the sense of describing complete grammars for the children studied. Rather, the tasks provided an opportunity for collection of some data which would reflect some of the linguistics skills of young deaf children. This was a first attempt to describe the skills demonstrated through structured, paper and pencil tasks. This result was not surprising as McNeill (1970) states that:

There is a strong tendency among children to include nothing in the surface structures of sentences that cannot be related to deep structures - i.e., nothing for which there is no transformational derivation known (p. 106).

The results of this study demonstrated that the techniques used were useful for collection of data related to Bloom's 'what' and 'how' of language learning. It was apparent that there were developmental

differences associated with age and that these changes followed a consistent pattern. It was also demonstrated that some of the children could comprehend statements before they could produce similar structures.

Of particular import were the findings that the patterns of performance of the six to nine year old deaf children were not dissimilar to performances of much younger hearing children (Interpretation of Results). Very early developmental patterns of one-word sentences, development of plural inflections on nouns, emergence of undefined two word sentences, and one instance of the emergence of the use of plural Aux rules and reduction operation are also found in very young hearing children (Bellugi, 1967; Klima and Bellugi, 1964; Bellugi and Brown, 1964; Brown and Fraser, 1964).

The results of the study demonstrated that the children performed consistently throughout the tasks. They, therefore, were rule governed in their performances. The description of a complete model for the tasks enabled the investigator to locate the rules with which particular children were encountering difficulty. In this respect, the tasks combined with the model provided diagnostic information which would be of assistance to teachers. For example, it was apparent that the linguistically more advanced children were experiencing difficulty with the 're' morpheme rule. They did however demonstrate mastery of the plural inflection for nouns. The 're' morpheme rule is unique to the verb to be and this rule is likely to create difficulties. McNeill (1970) pointed out that a great deal of experience would be required to develop mastery over such a specialized rule. The be-ing verb is used frequently in English and yet results of this study indicated that operational rules for its use emerged much later, chronologically, than for hearing children. This slower development has been attributed to a lack of experience (Furth, 1971).

The "lack of experience" explanation is insufficient for educators of the deaf in that the experiential deficit may never be overcome. A highly restricted rule such as the 're' morpheme rule would require an extremely large body of experiences to establish mastery of the rule. An alternative approach to development of mastery over such a restrictive rule has been suggested as an outgrowth of the delineation of the model of rules for the tasks. The procedure will be presented in a following section (IV. Future Research, No. 4).

III. Limitations

1) The study examined only a small part of young deaf children's linguistic skills. The results are, therefore, not necessarily representative of their complete grammars.

2) Several examiners were used in the study and an examiner difference was demonstrated to be significant. While the reasons for the differences were discussed, the fact remained that results were confounded. Hence generalizability is restricted by constraints of the examiner factor.

3) The population studied was selected from one school for the deaf. Instructional methodologies and language programs differ from school to school. The results, therefore, are possibly not general among other schools for the deaf in populations of the ages studied.

4) All subjects in the study were pre-lingually deaf but there was no control over the type of language input they received prior to the study. McNeill (1970) pointed out the importance of experience in development of rule governed language performance. The amount of stimulation and input necessarily varied from child to child. Some children were residential students while others lived at home. However, examination of this variable

alone is insufficient as there is no standard level of language stimulation or input associated with either situation. Generalizability of results is, therefore, restricted by constraints of the historical factor of linguistic input.

IV. Future Research

1) The task battery should be used with a very large group of 6-9 year old deaf children in order to determine the generalizability of findings.

2) More task batteries are needed to isolate other linguistic skill performances. The results of such studies would provide more information for describing deaf children's grammar and language acquisition processes.

3) More studies to complement the structured - paper and pencil results are needed. Collection of data in unstructured situations utilizing other expressive media (speech or sign) would provide information necessary for description of a deaf child's grammar.

4) Some very specific clinical research is required to develop more detailed and efficient teaching techniques for language instruction.

One such technique suggested from the delineation of rules for the model of task specific rules is outlined below.

It was apparent that the agreement or concord rules become complex when dealing with the verb to be. It appeared that the students were developing plural inflection of the noun to plural agreement of the Aux. If this Aux agreement rule could be broken down into steps involving only one operation at a time, the student may gain more insight into the operational restrictions of the rules involved.

A logical beginning (Stage I) for subject-verb agreement would be use

of "The girl plays" and "The girls play". It is noted that the s inflection of the verb in the singular statement is moved to the noun in the plural statement.

(The + girl + \emptyset + play + s \longrightarrow The + girl + s + play + \emptyset).

Stage II of the process would involve the use of the be-ing verb as a copulative. In this instance the s morpheme transformation could again be used for the agreement rule.

(The + ball + is + green \longrightarrow The + ballss + are + green).

It could very easily be pointed out that the s marker is present in the verb phrase for singulars and in the noun phrase for plurals.

The third stage would involve a similar procedure with the distinctions being made in the past tense.

(The + boy + was + happy \longrightarrow The + boyss + were + happy).

Stage four would involve introduction of be as Aux and the same pattern would be repeated. (non-past \implies The + boy + is + laughing \longrightarrow The + boyss + are + laughing. past \implies The + boy + was + laughing \longrightarrow The + boyss + were + laughing.)

This suggestion for study would provide a wealth of information about the amount and kind of experience necessary to develop mastery over a particular rule. This research would begin to answer some of the questions posed by McNeill (1970):

Since the role played by experience is greater with rules that carry more restrictions, we should focus attention on these most restricted cases ... (until this is done) nothing much can be said about even the basic questions. What amount of exposure, for instance, and what kind of material, is necessary to learn restrictions on general rules? (p. 105).

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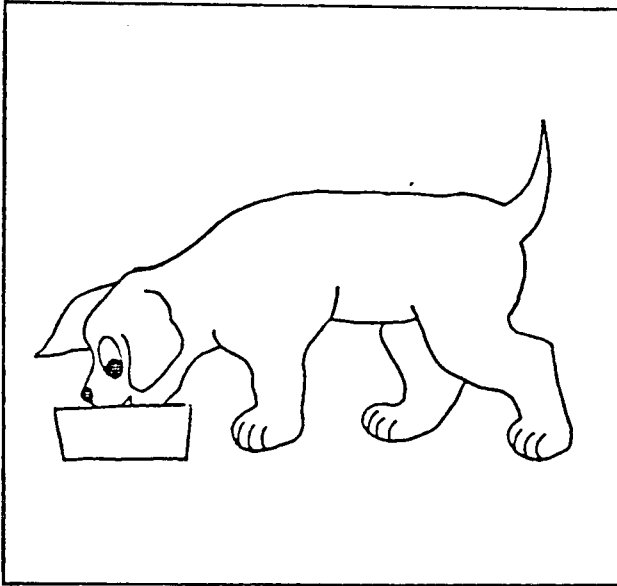
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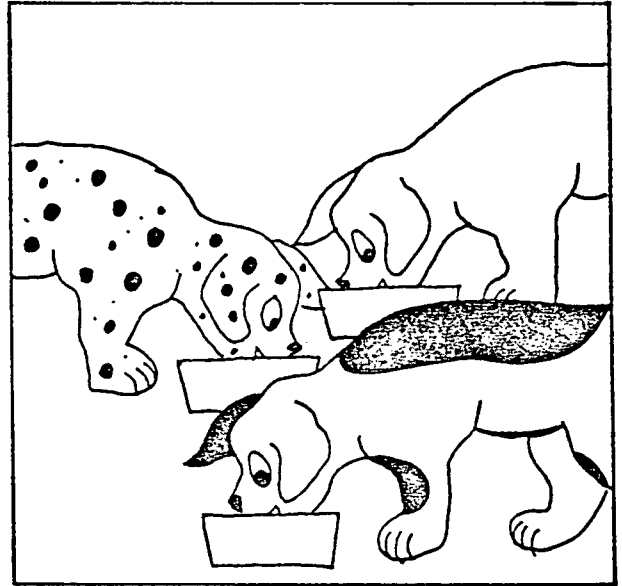
APPENDIX

APPENDIX A
TASK BATTERY

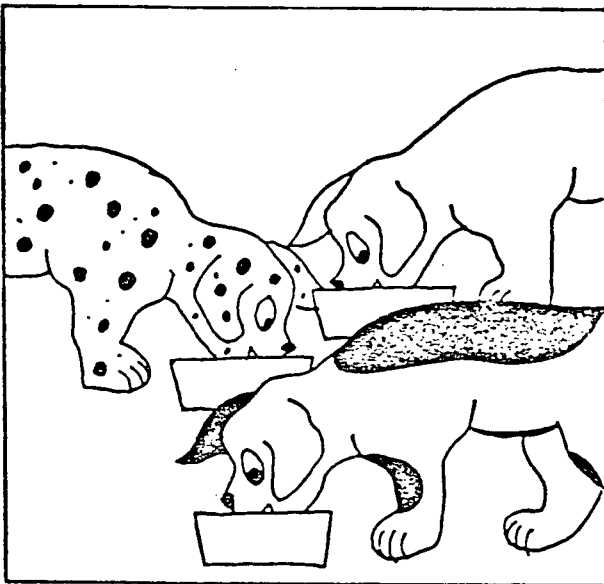
Were the dogs eating?



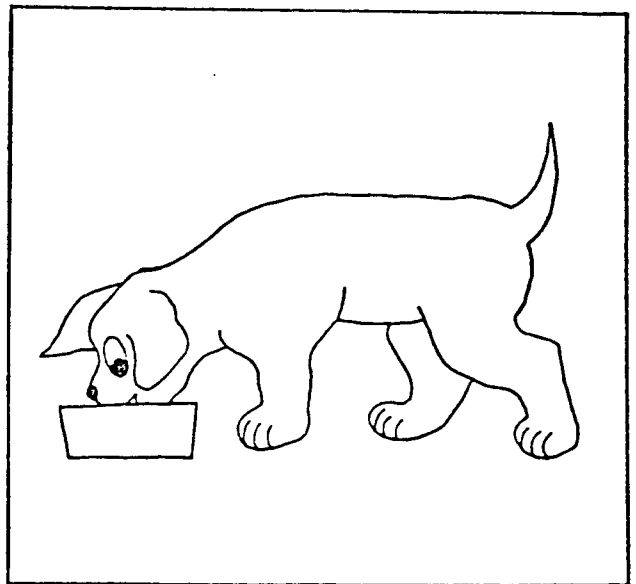
Before



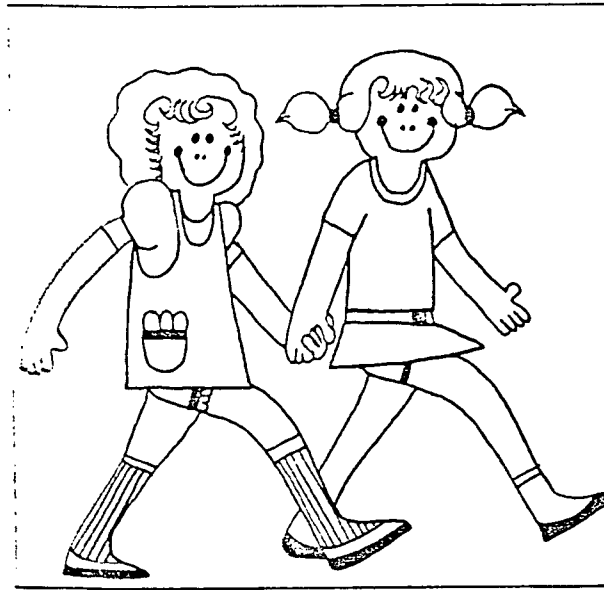
Now



Before

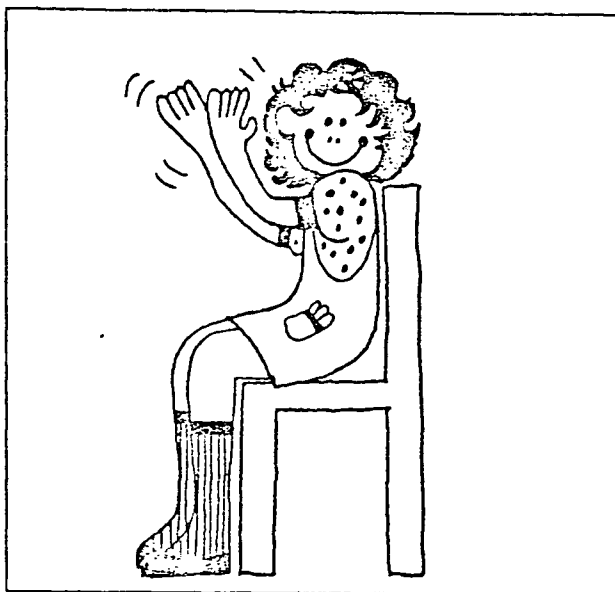


Now



Before

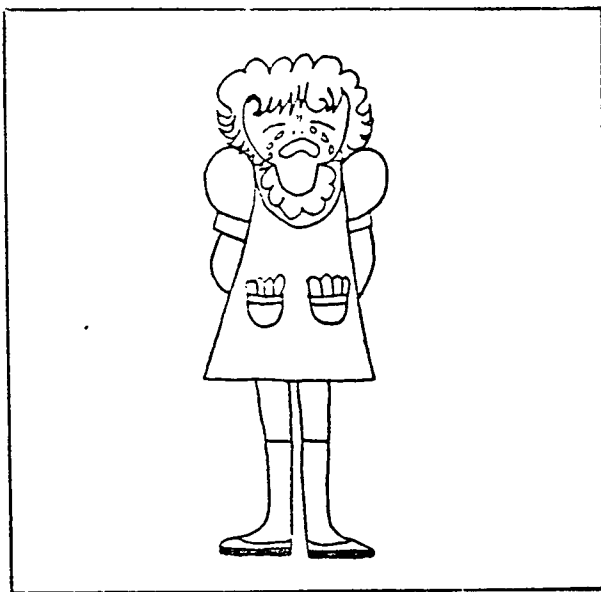
- ☐ The girls were walking.
- ☐ The girls is walking.
- ☐ The girls was walking.
- ☐ The girls are walking.



Now

The _____ clapping.

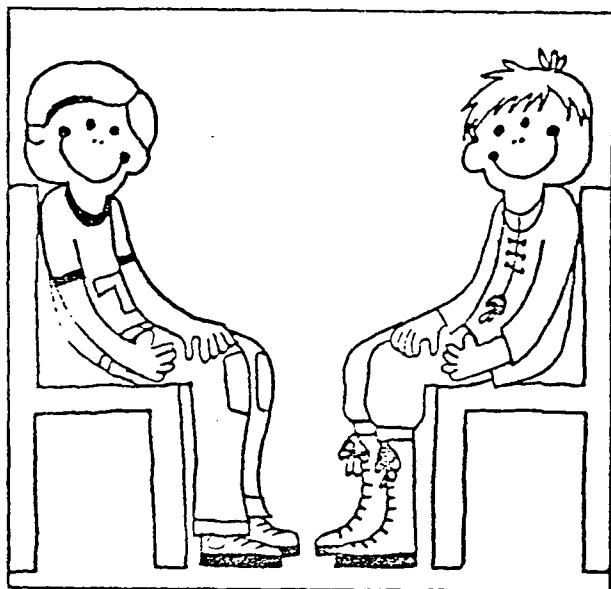
was
is
were
girls
are
girl



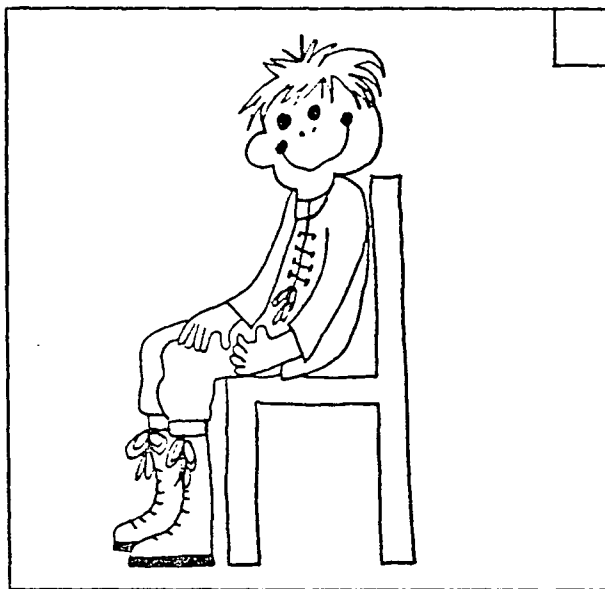
Before

2

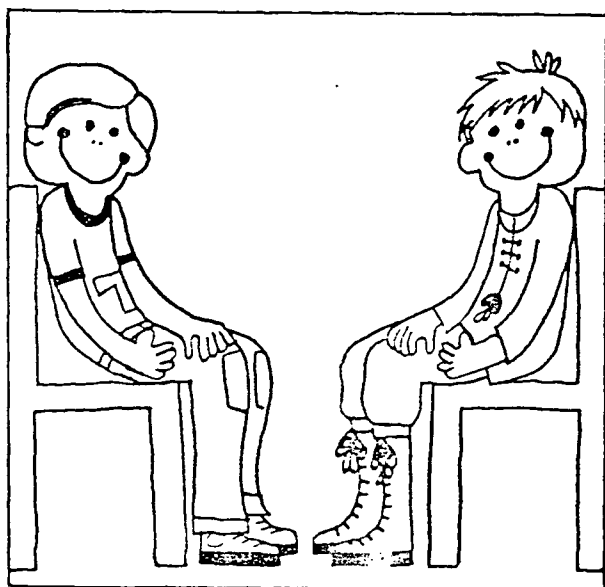
Are the boys sitting?



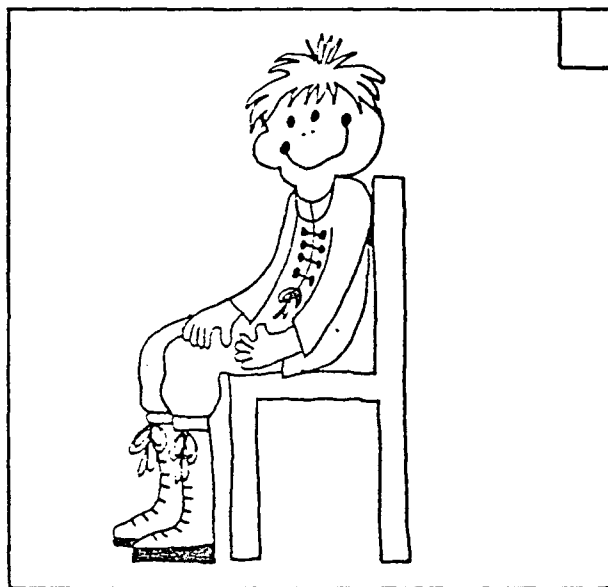
Before



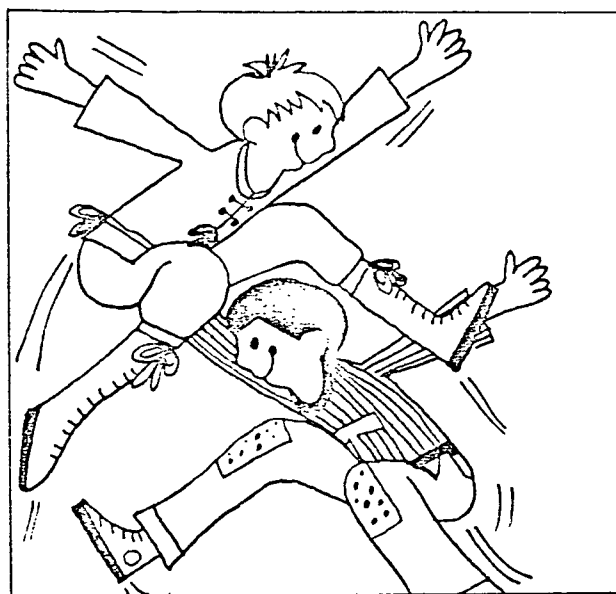
Before



Now

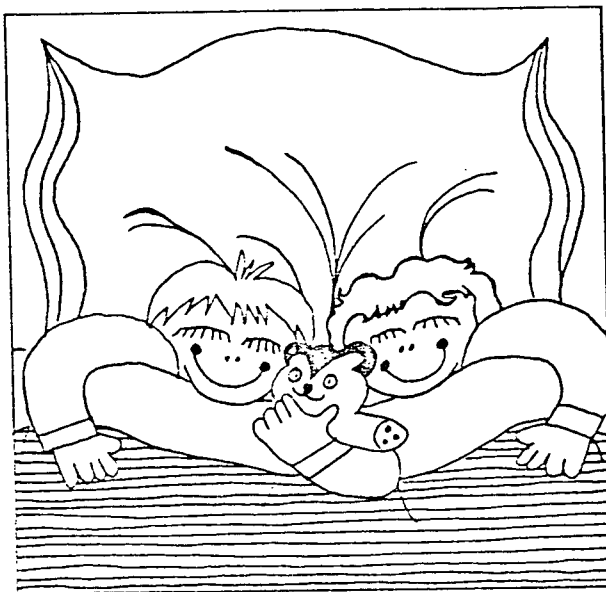


Now



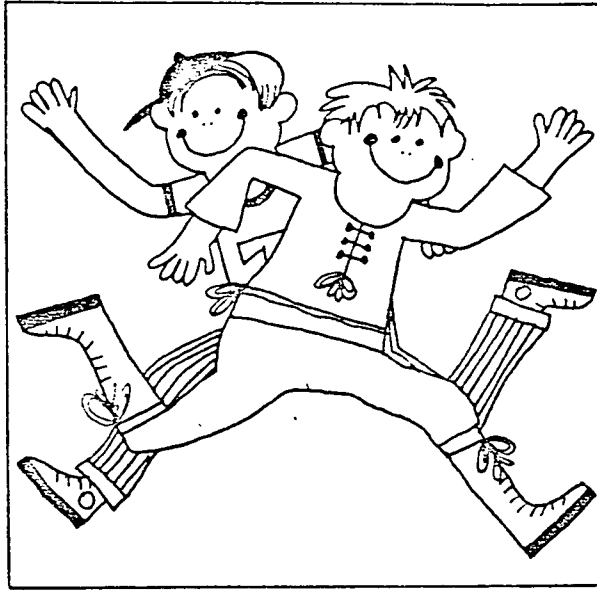
Now

- ☐ Was the boys jumping?
- ☐ Are the boys jumping?
- ☐ Is the boys jumping?
- ☐ Were the boys jumping?



Before

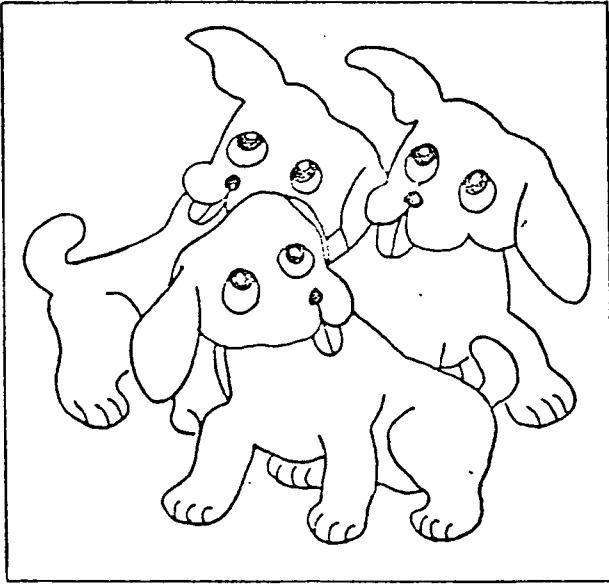
_____ the _____ sleeping? boys
is
are
were
boy
was



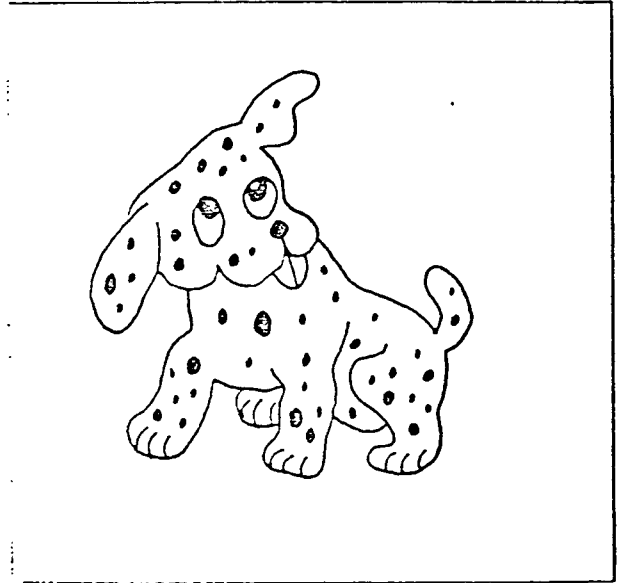
Now



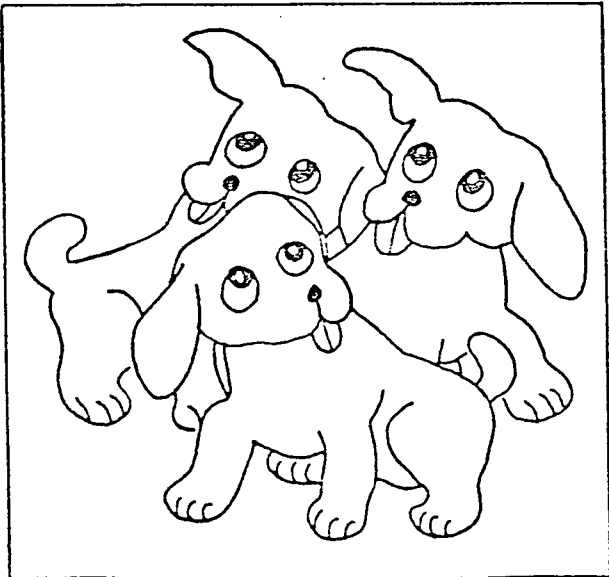
The dog is sitting.



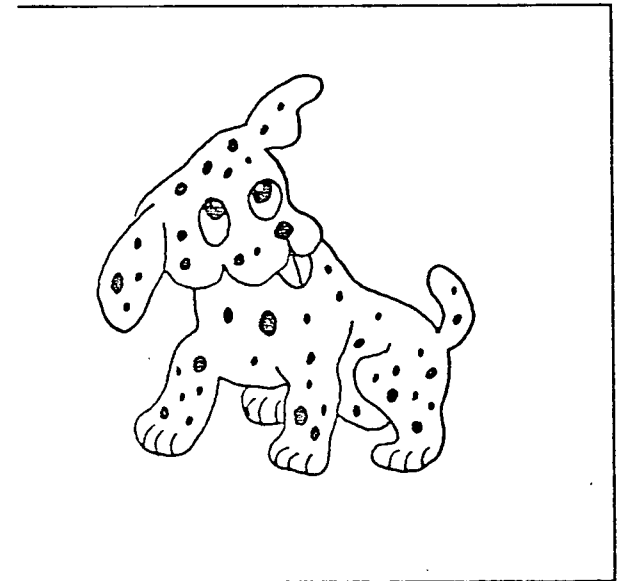
Now



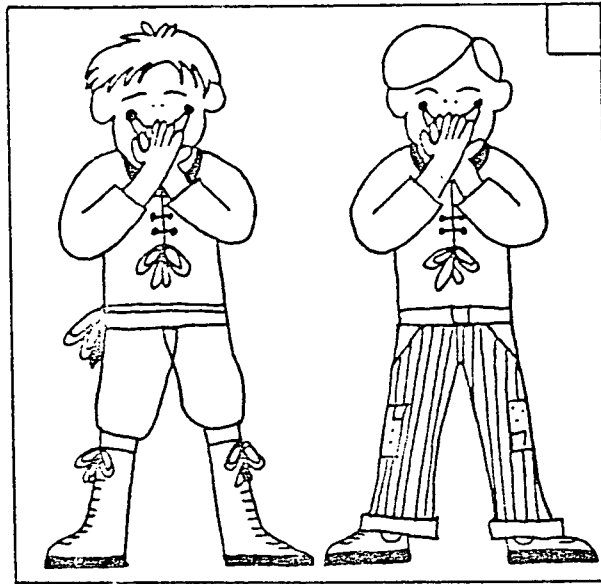
Before



Before

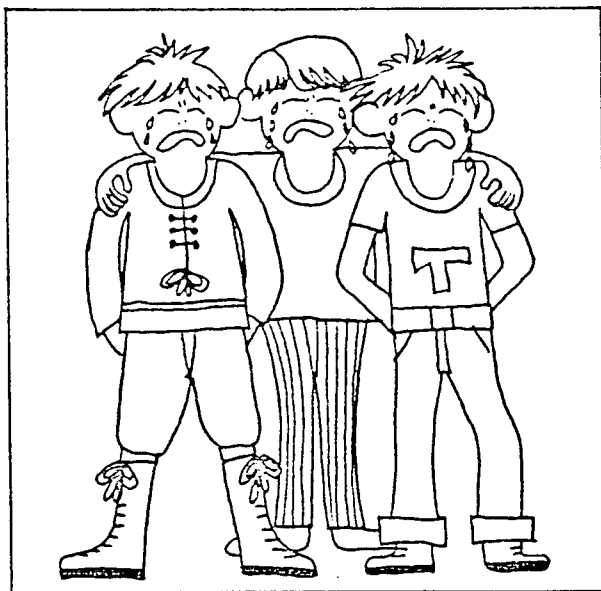


Now



Now

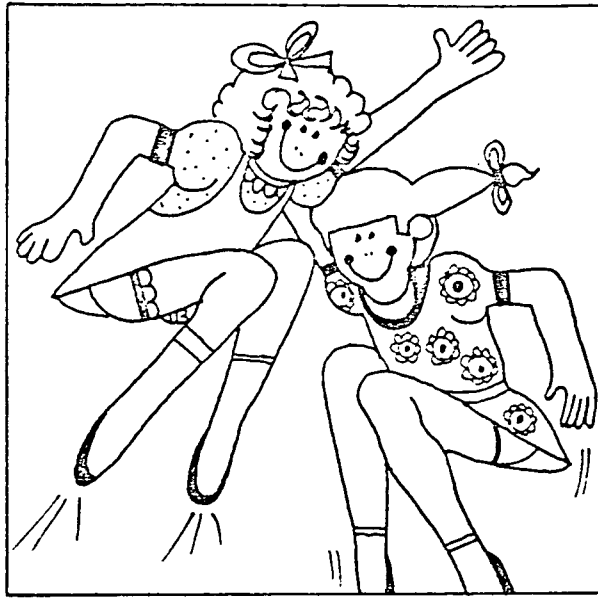
- ☒ The boys were laughing.
- ☐ The boys is laughing.
- ☐ The boys are laughing.
- ☐ The boys was laughing.



Before

The _____ crying.

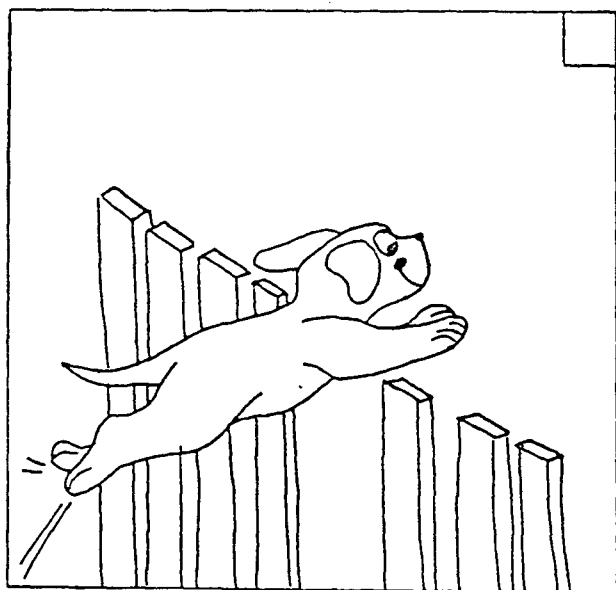
boy
is
are
was
were
boys



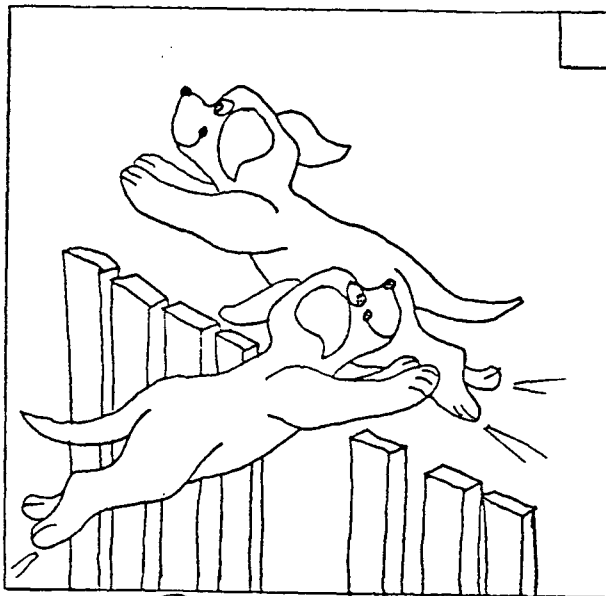
Before

2.

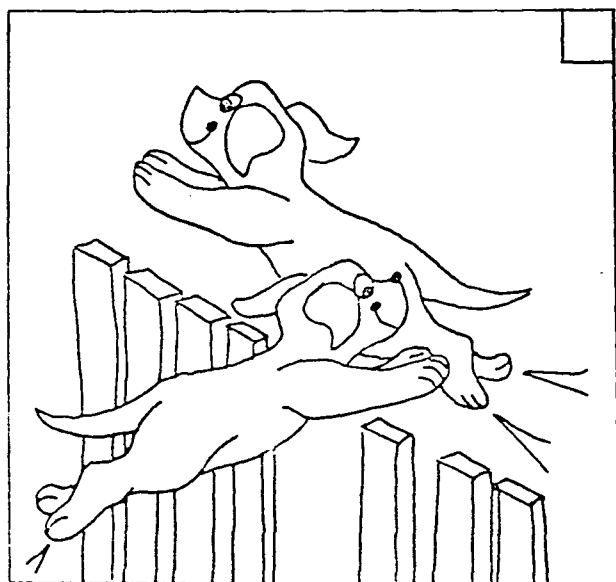
Is the dog jumping?



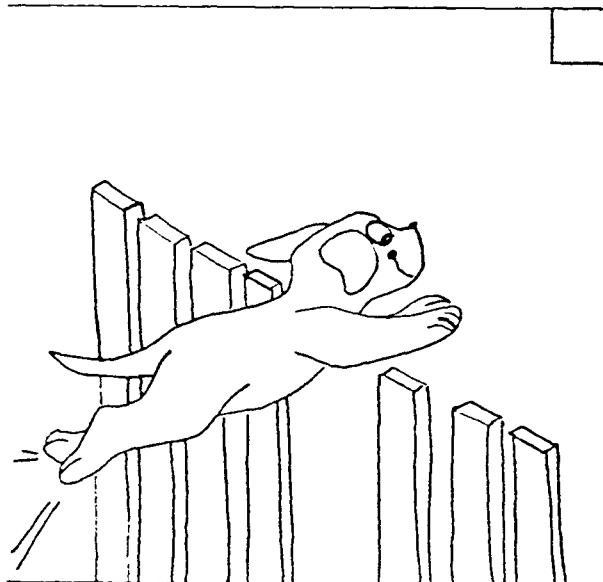
Now



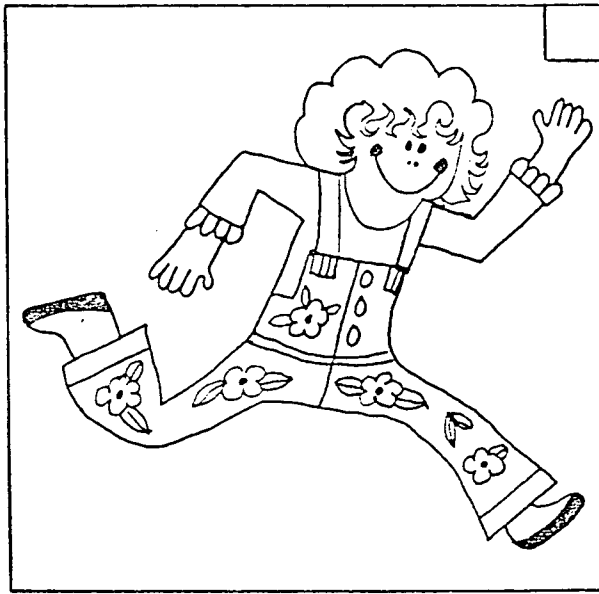
Before



Now

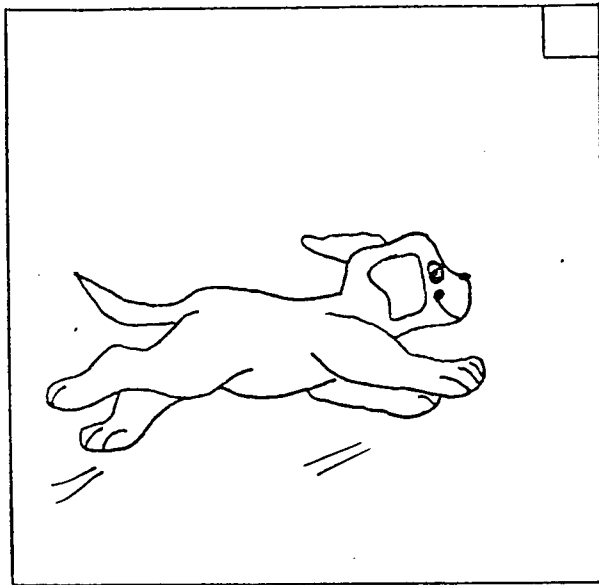


Before



Before

- ☐ Were the girl running?
- ☐ Is the girl running?
- ☐ Are the girl running?
- ☐ Was the girl running?



Before

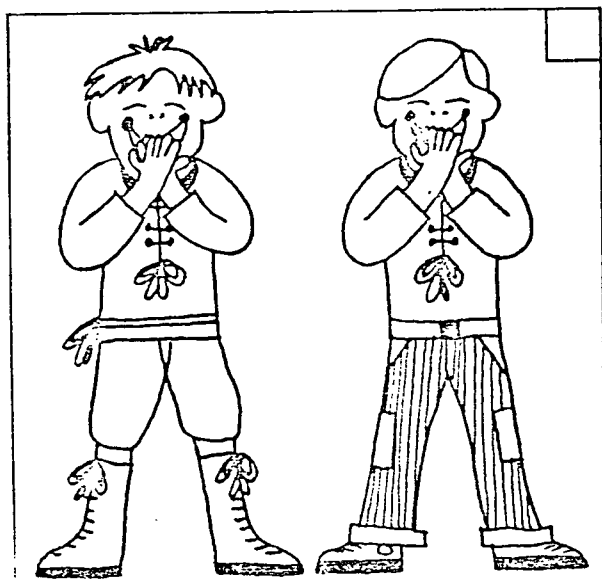
The _____ running.

dog
is
are
was
dogs
were



Before

The boy was laughing.



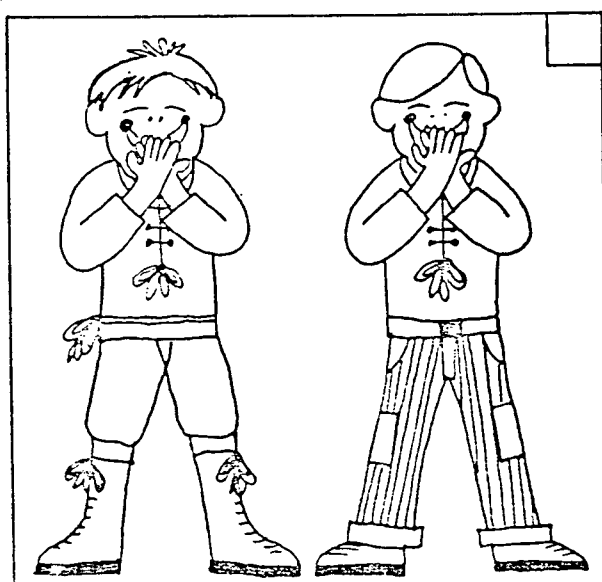
Before



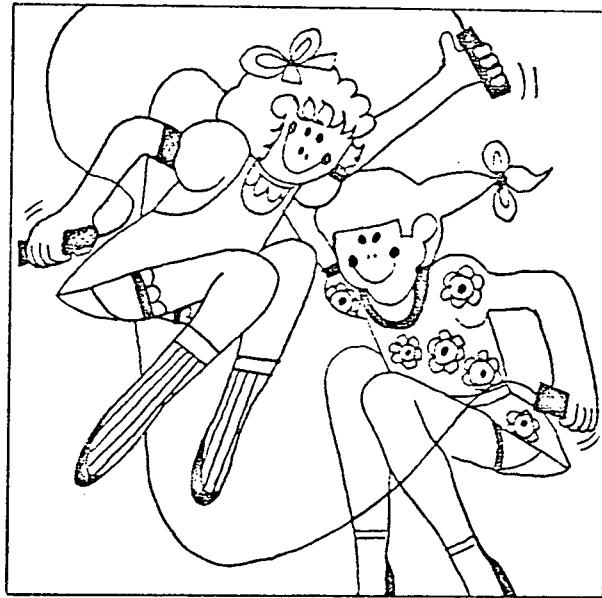
Before



Now



Now



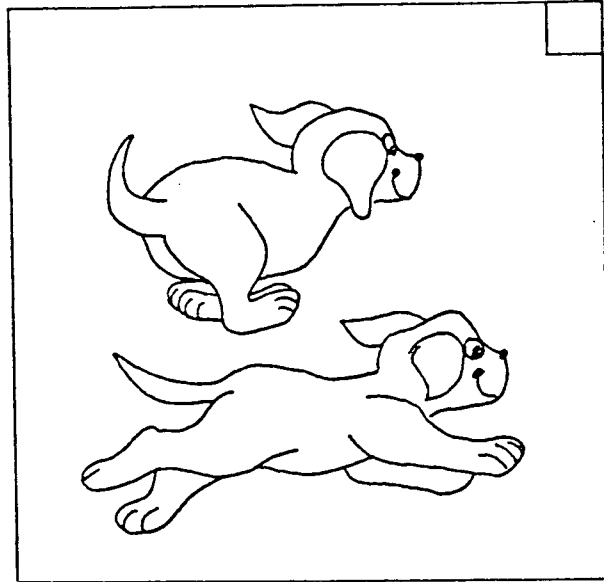
Now

! ' Are the girls skipping?

! ' Is the girls skipping?

! ' Was the girls skipping?

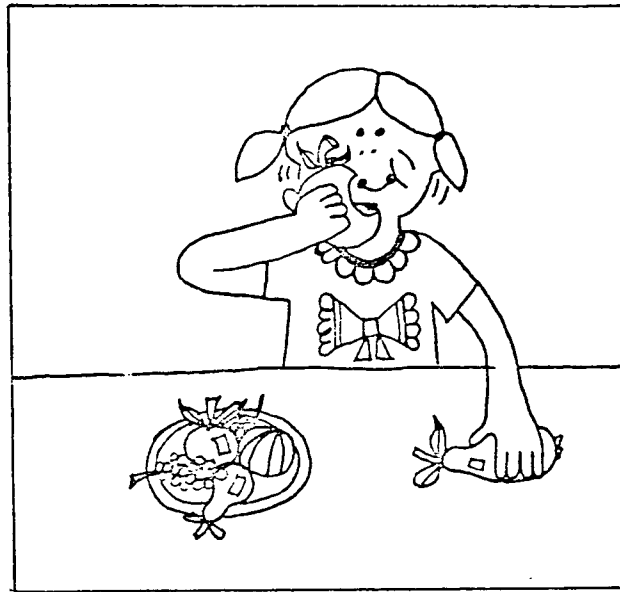
! ' Were the girls skipping?



Now

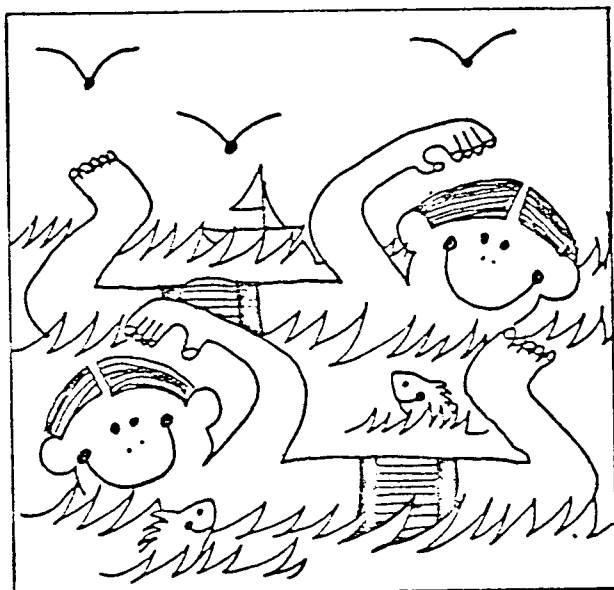
_____ the _____ running?

are
were
was
dogs
is
dog

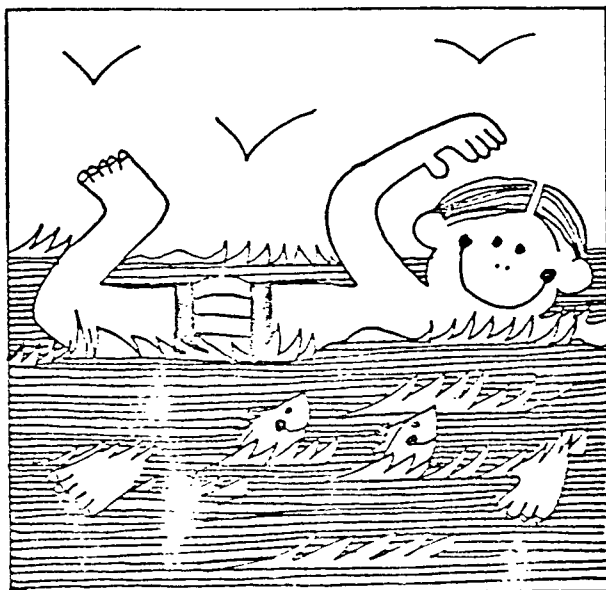


Now

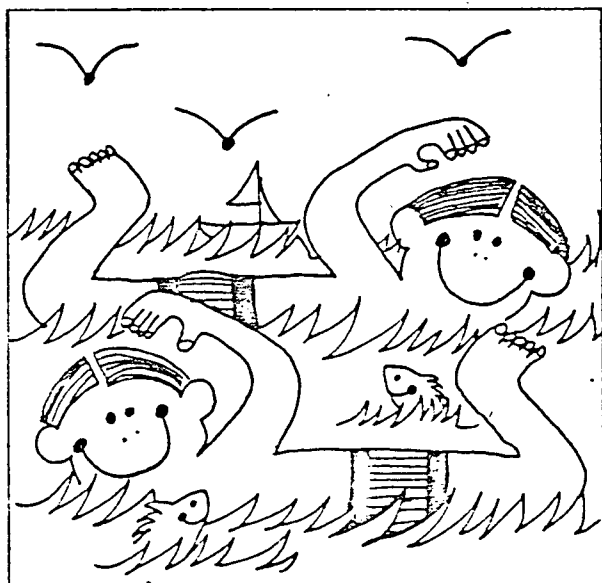
The boys are swimming.



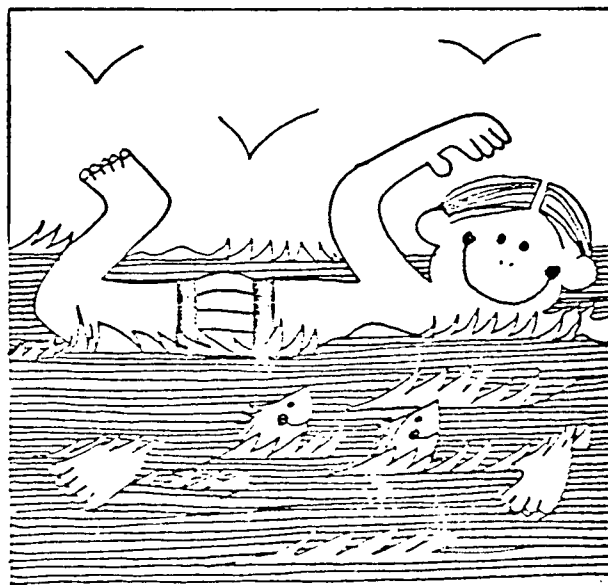
Now



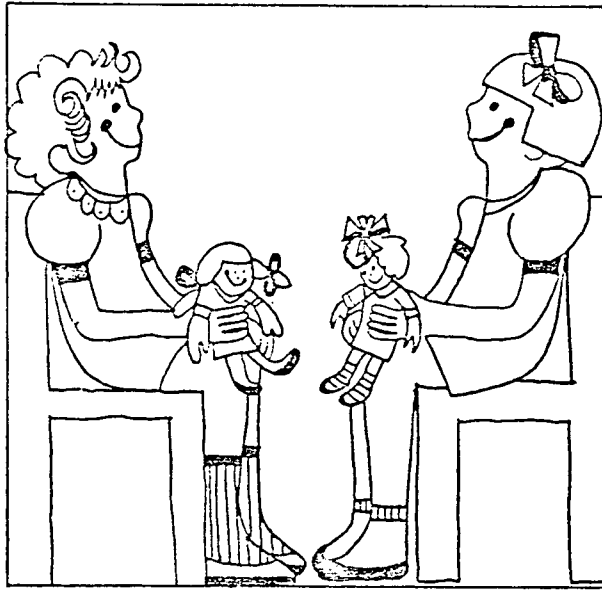
Before



Before

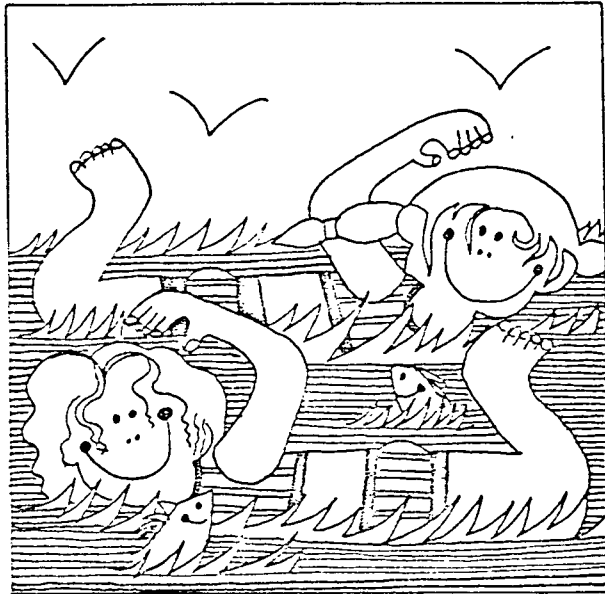


Now



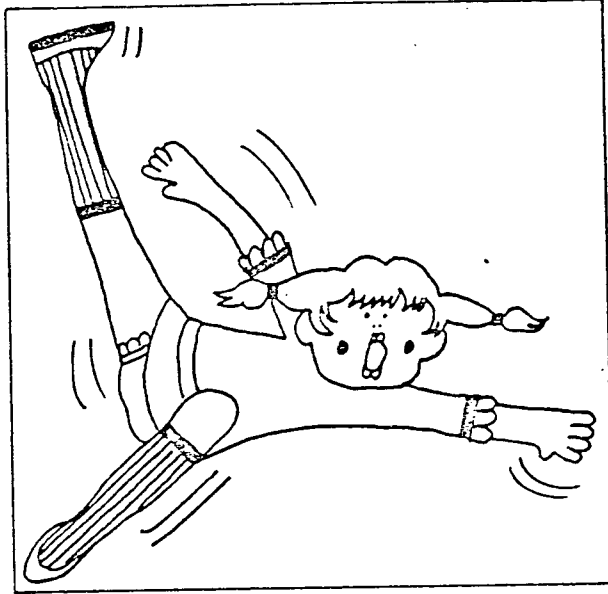
Before

- ☐ The girls is sitting.
- ☐ The girls are sitting.
- ☐ The girls was sitting.
- ☐ The girls were sitting.



Now

The _____ swimming. is girls were are was girl



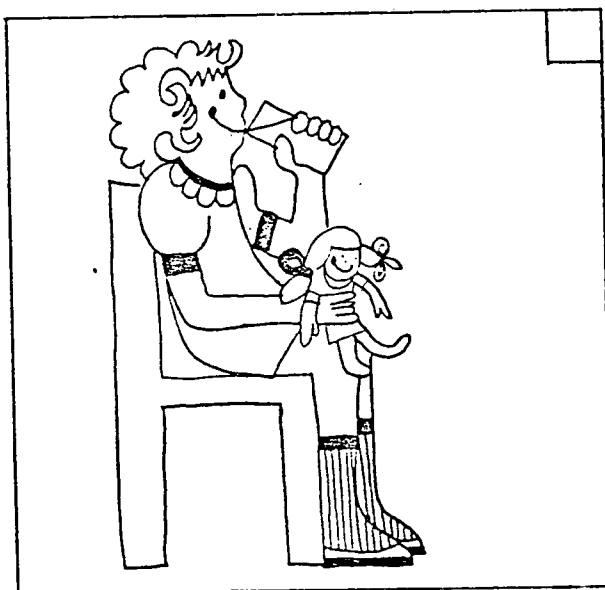
Now



Was the girl drinking?



Before



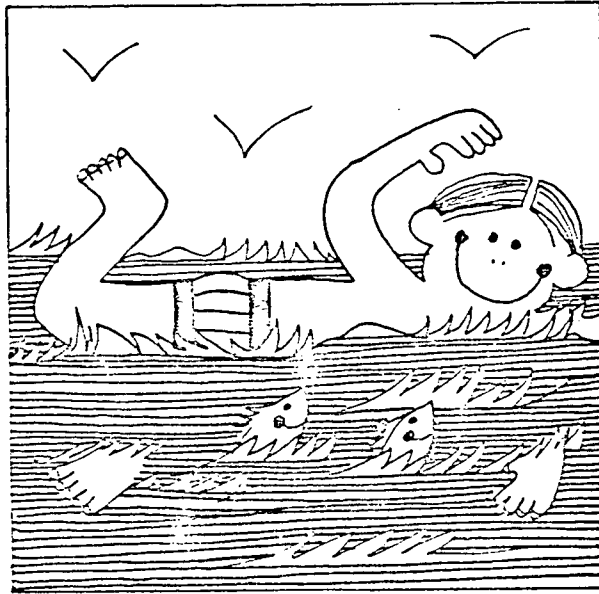
Now



Before

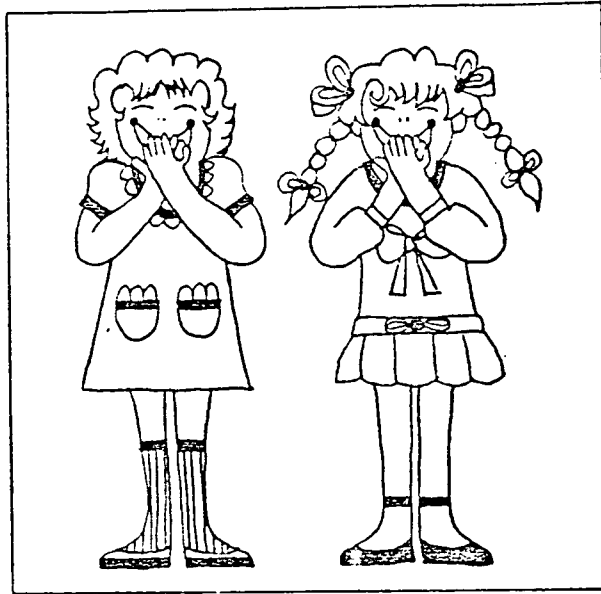


Now



Now

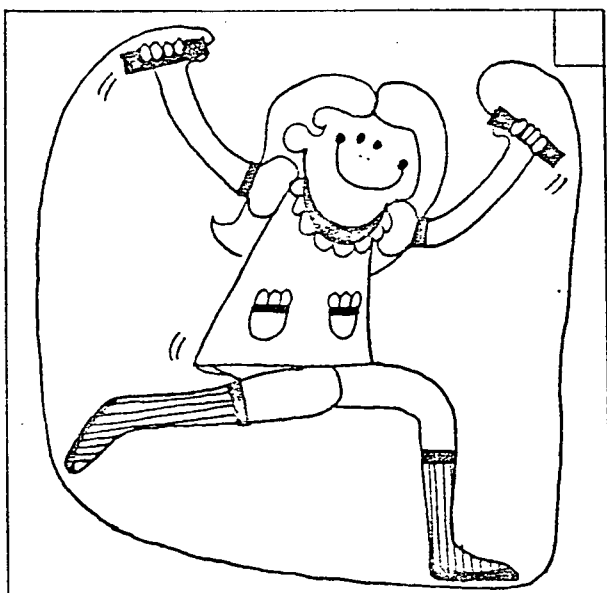
- ☐ Is the boy swimming?
- ☐ Were the boy swimming?
- ☐ Are the boy swimming?
- ☐ Was the boy swimming?



Before

_____ the _____ laughing?

girls
was
are
is
were
girl

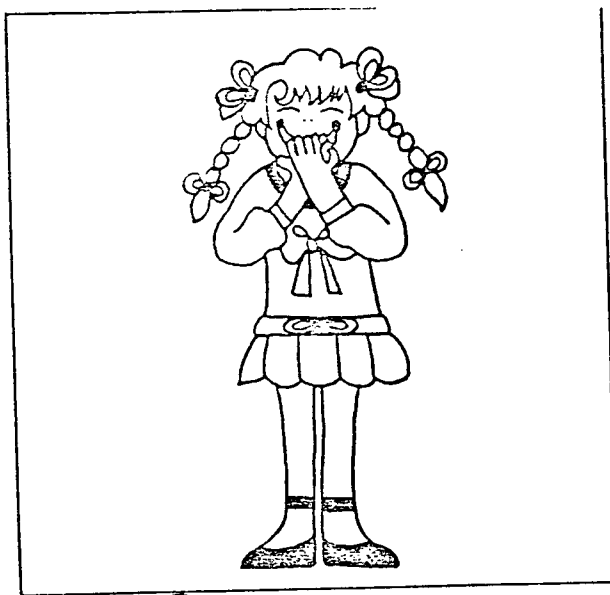


Before

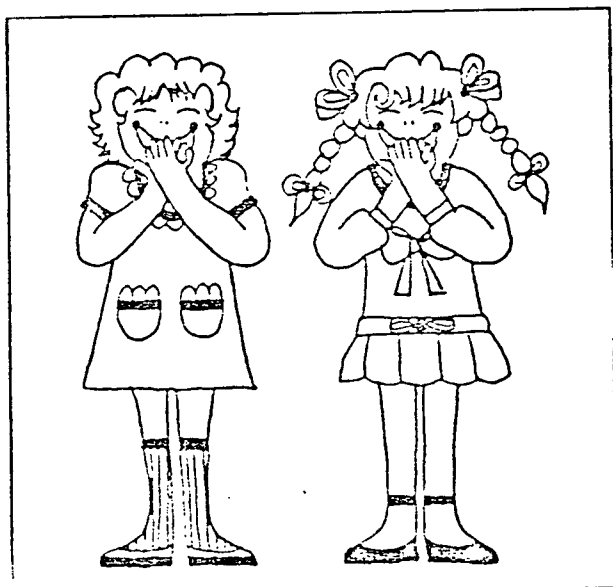
Is the girl laughing?



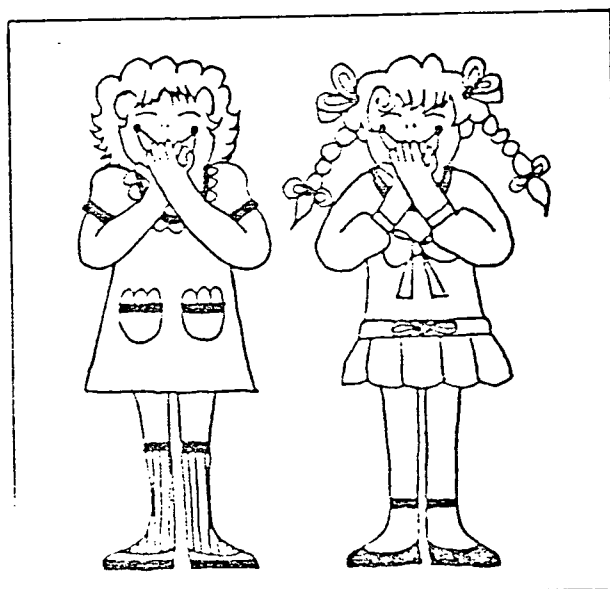
Now



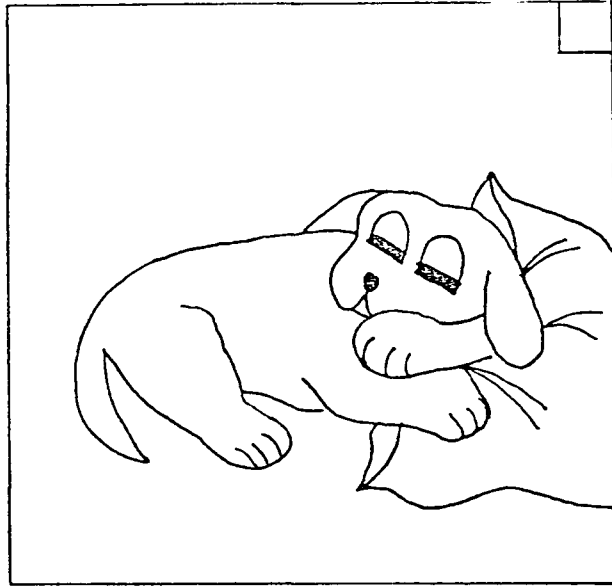
Before



Before



Now



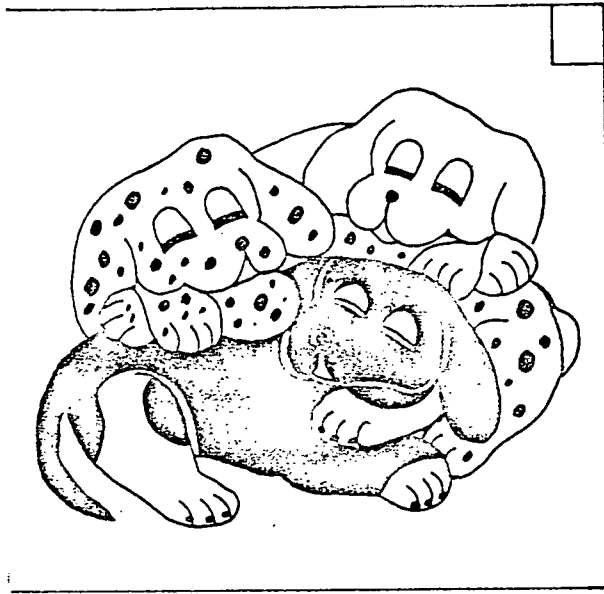
Before

| | The dog were sleeping.

| | The dog was sleeping.

| | The dog are sleeping.

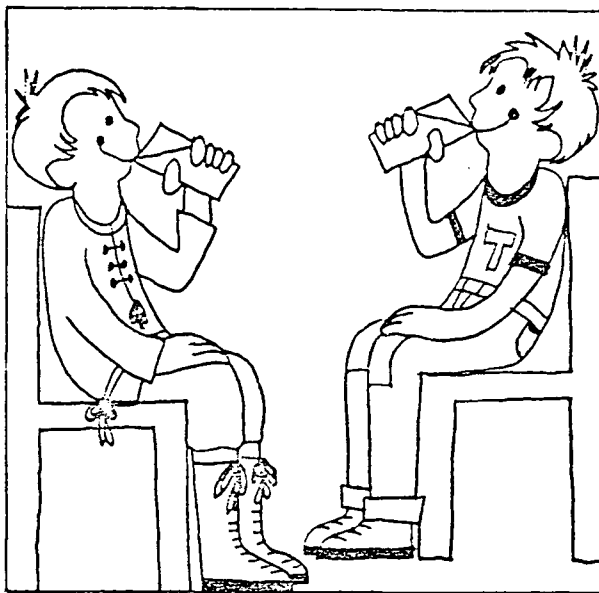
— The dog is sleeping.



Before

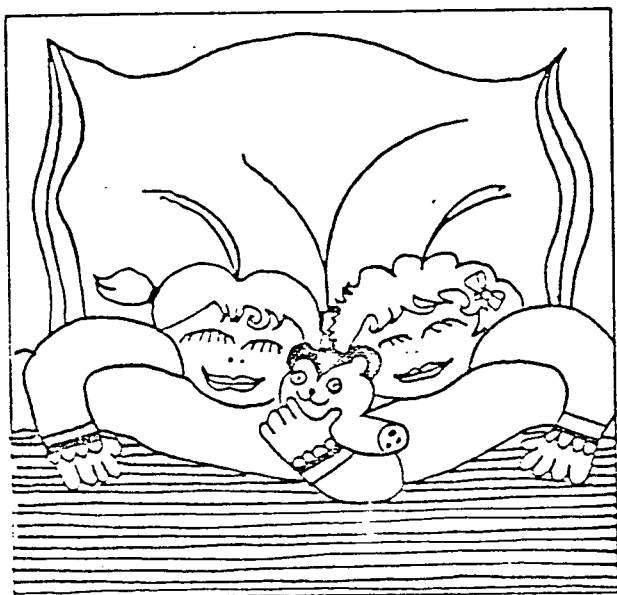
The _____ sleeping.

dogs
is
were
are
dog
was

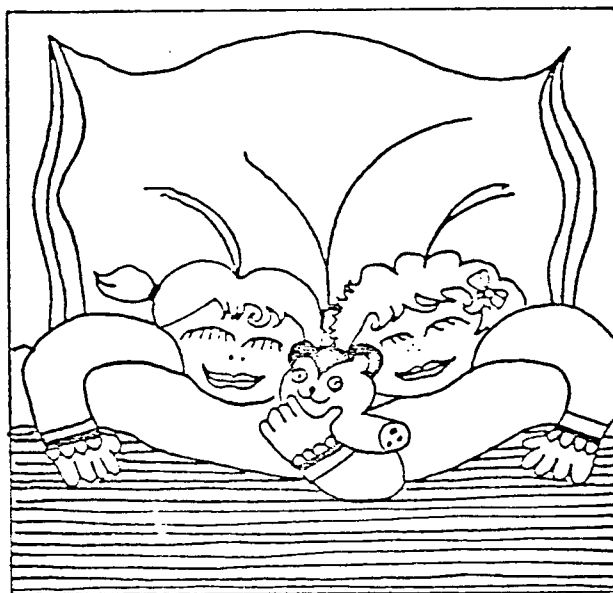


Now

Was the girl sleeping?



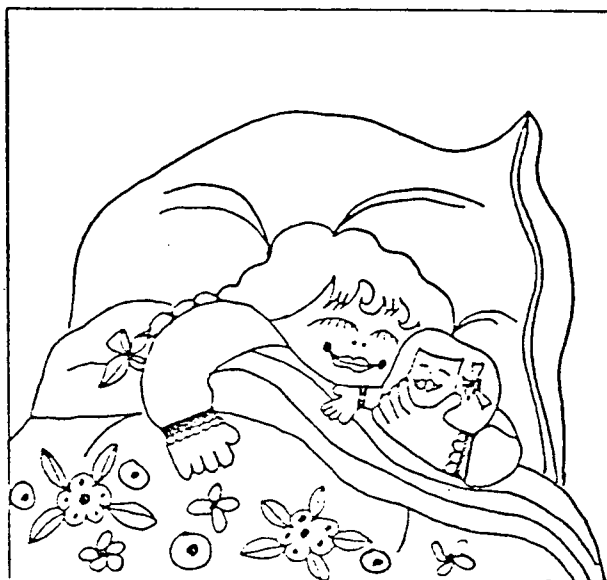
Before



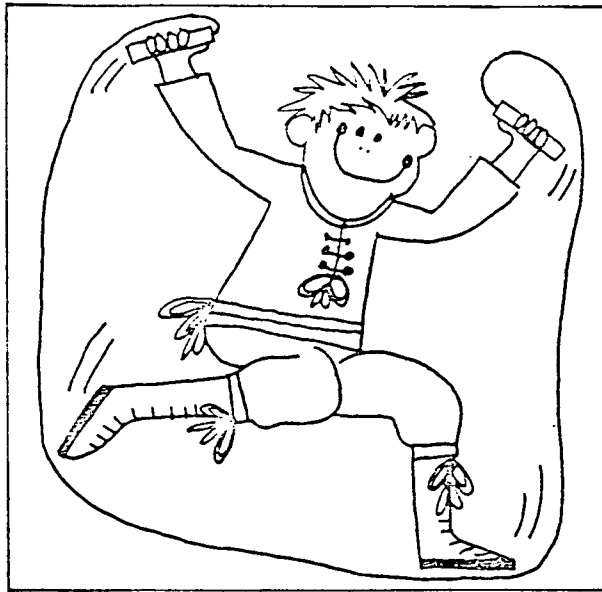
Now



Now

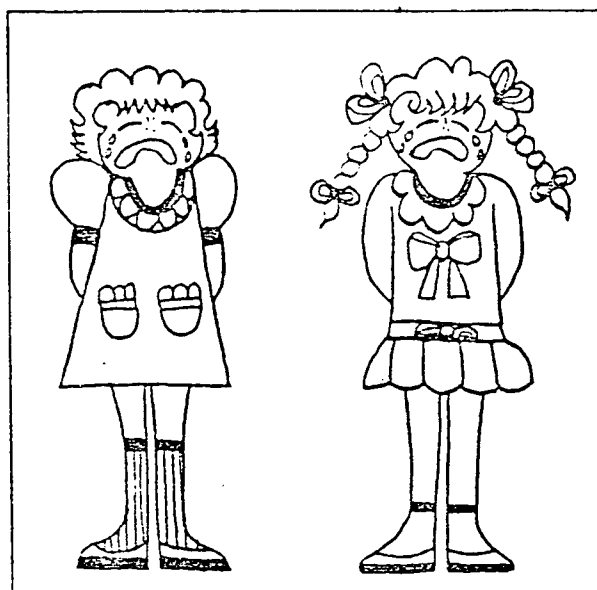


Before



Now

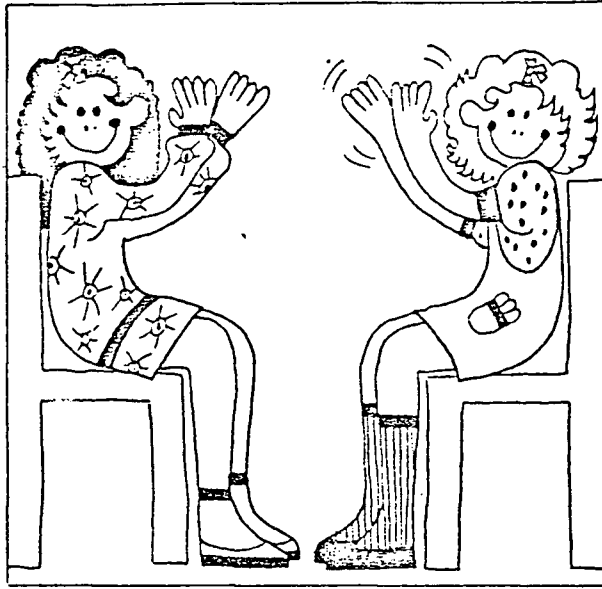
- ☐ The boy were skipping.
- ☐ The boy was skipping.
- ☐ The boy are skipping.
- ☐ The boy is skipping.



Now

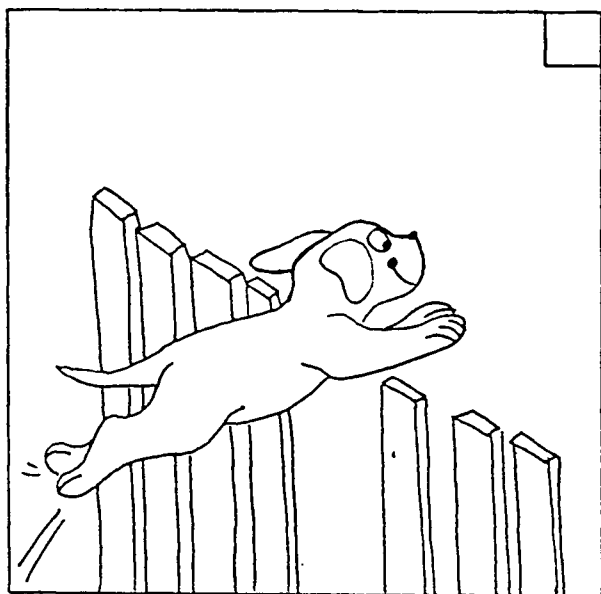
_____ the _____ crying?

was
were
girl
is
girls
are

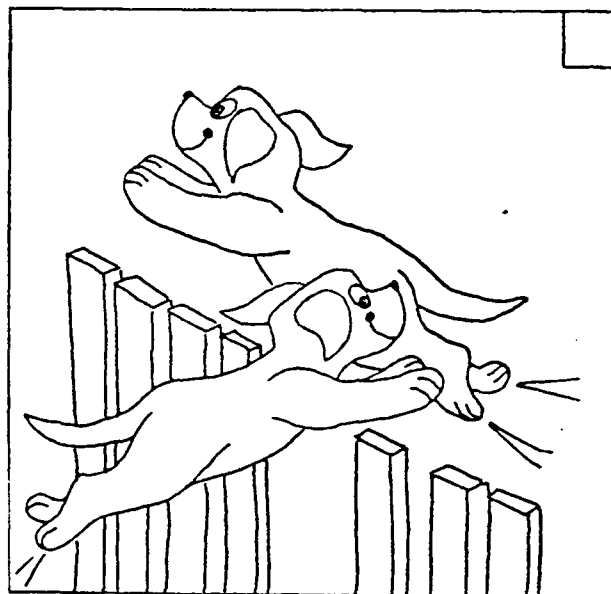


Now

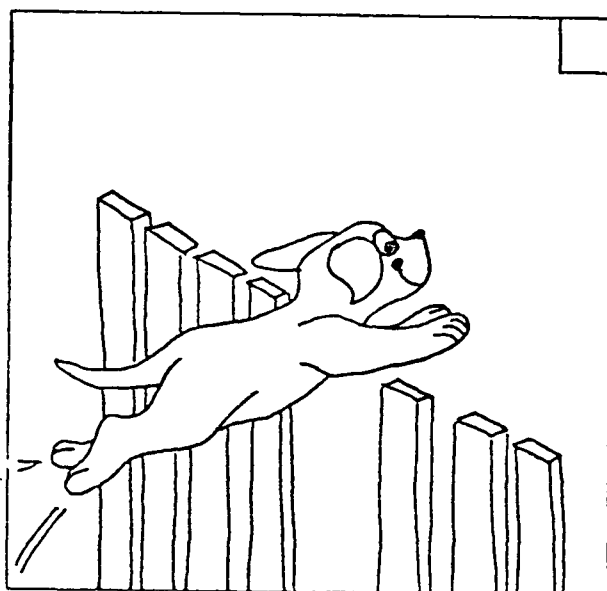
Are the dogs jumping?



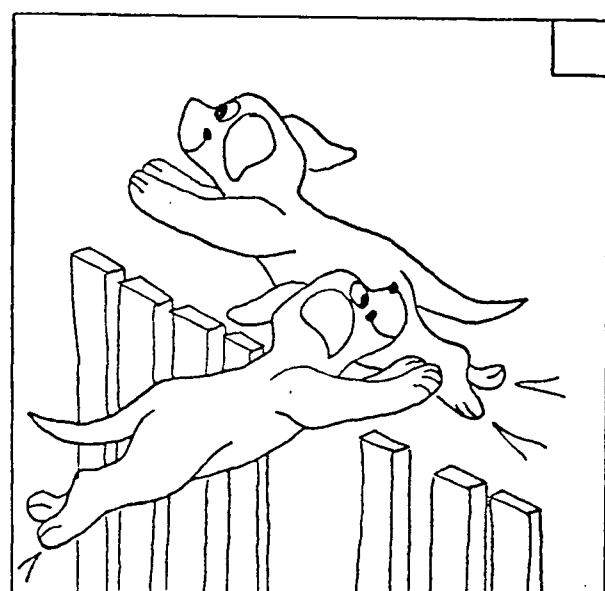
Now



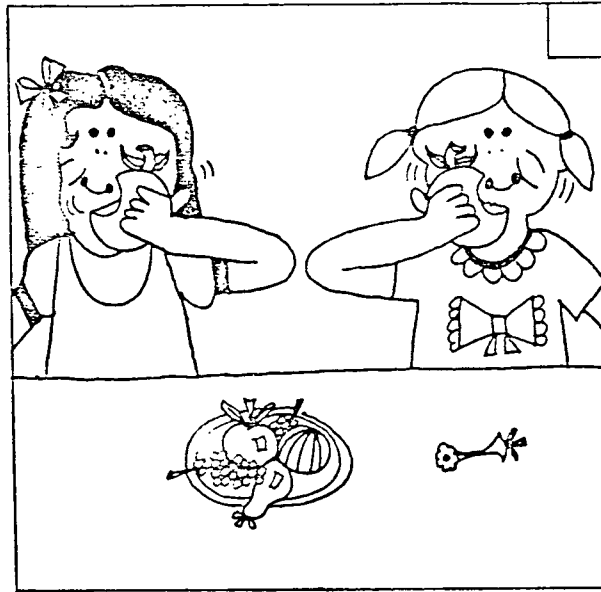
Now



Before

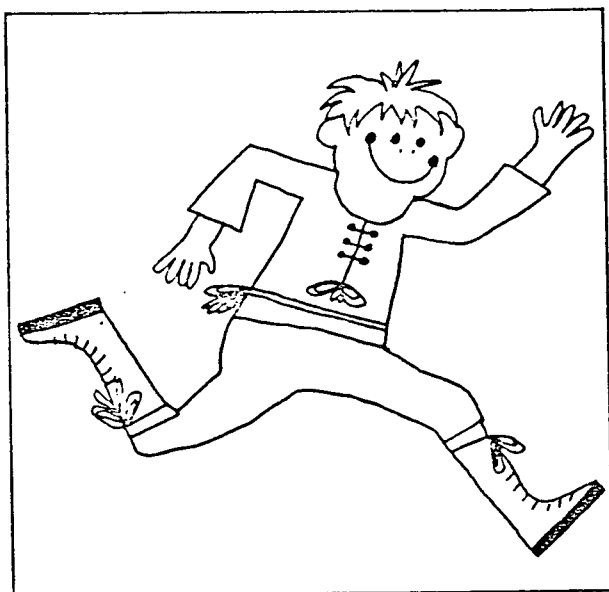


Before



Before

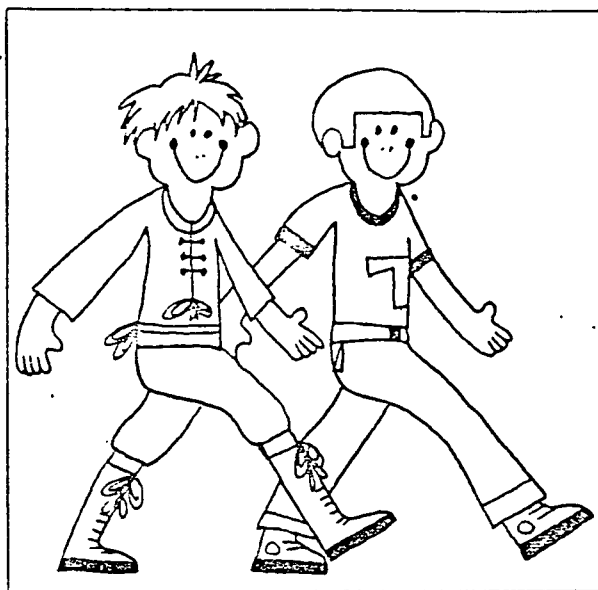
- ☐ Are the girls eating?
- ☐ Were the girls eating?
- ☐ Is the girls eating?
- ☐ Was the girls eating?



Now

_____ the _____ running?

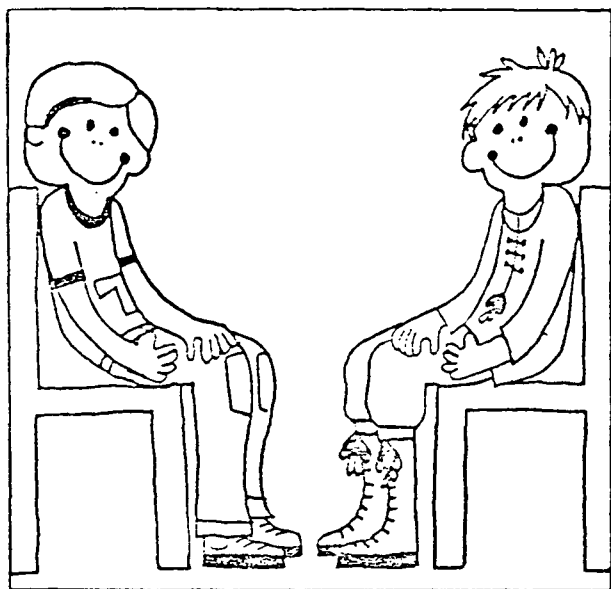
boy
were
was
are
is
boys



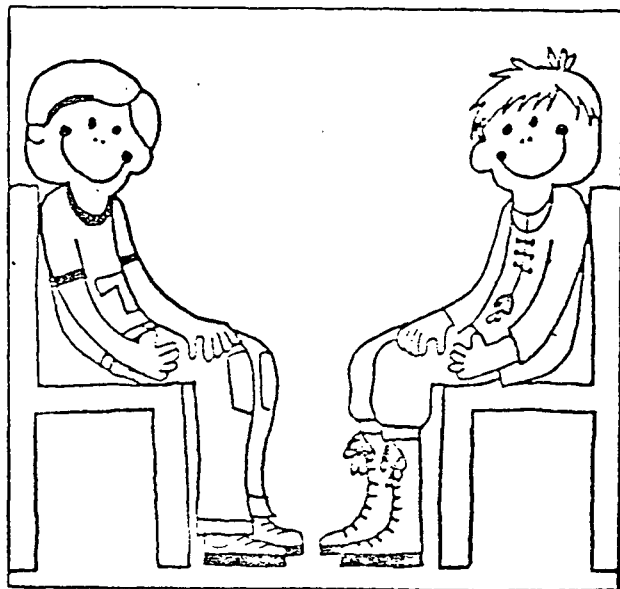
Before

?

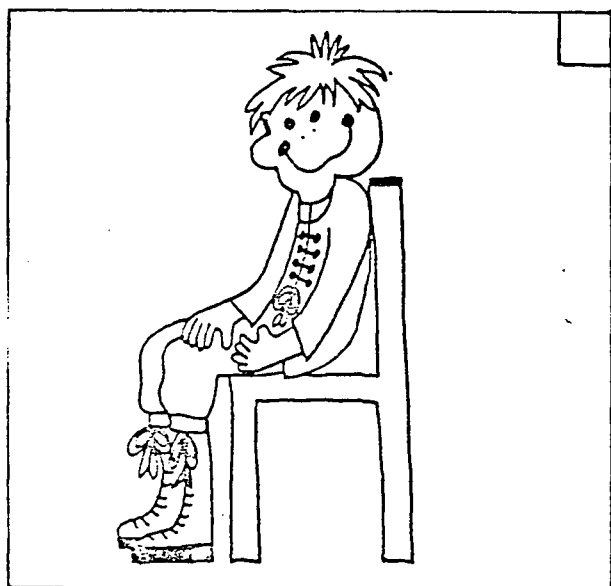
The boy is sitting.



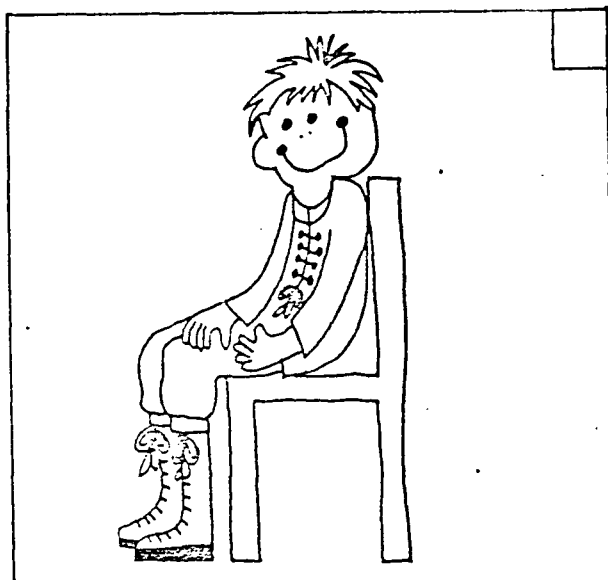
Before



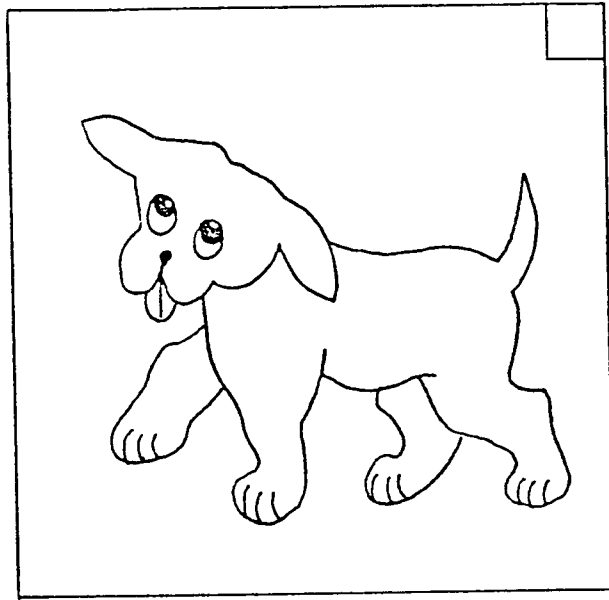
Now



Before

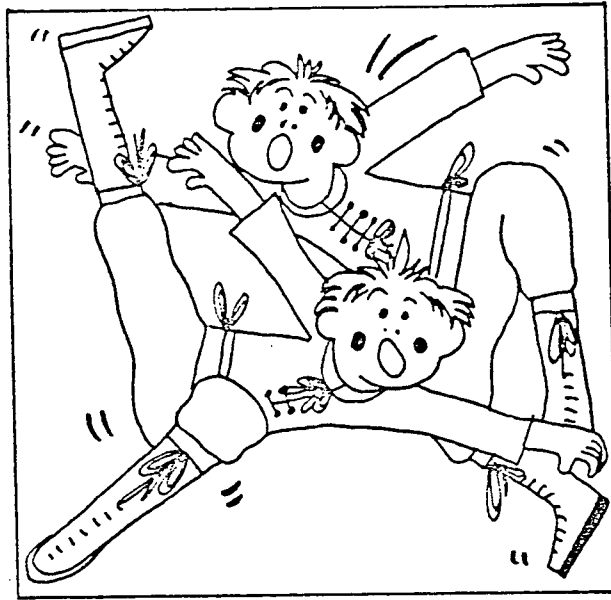


Now



Now

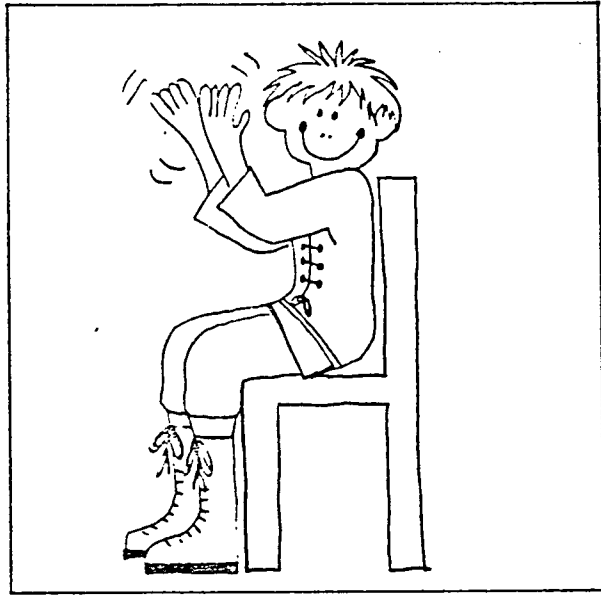
- ☐ Was the dog walking?
- ☐ Is the dog walking?
- ☐ Are the dog walking?
- ☐ Were the dog walking?



Now

The _____ falling.

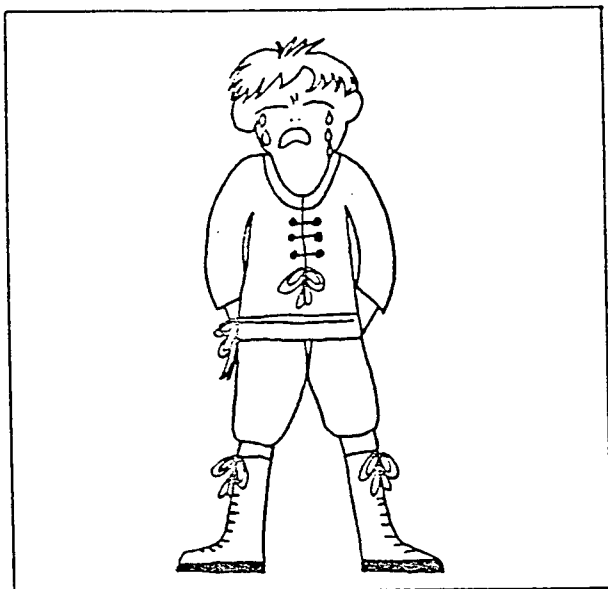
were
was
are
boy
boys
is



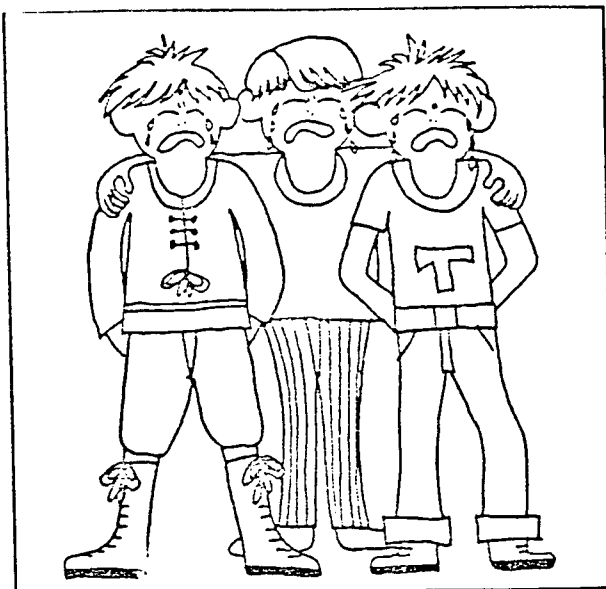
Before



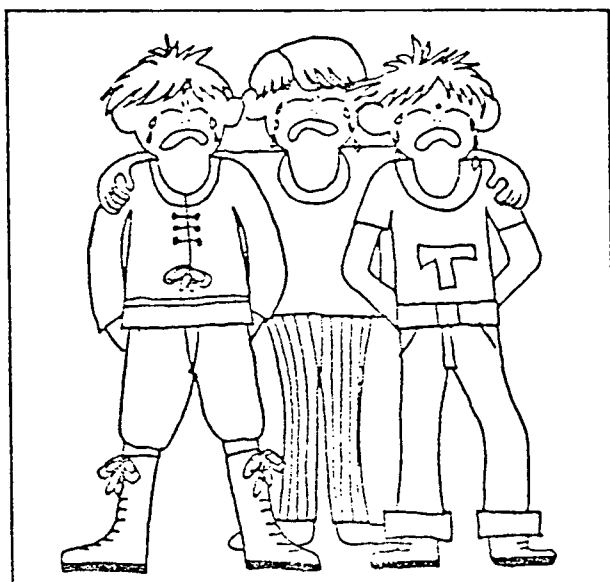
The boy was crying.



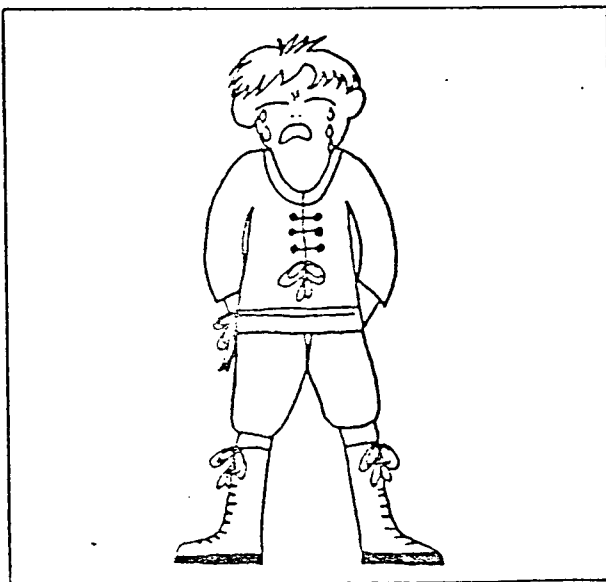
Now



Now



Before

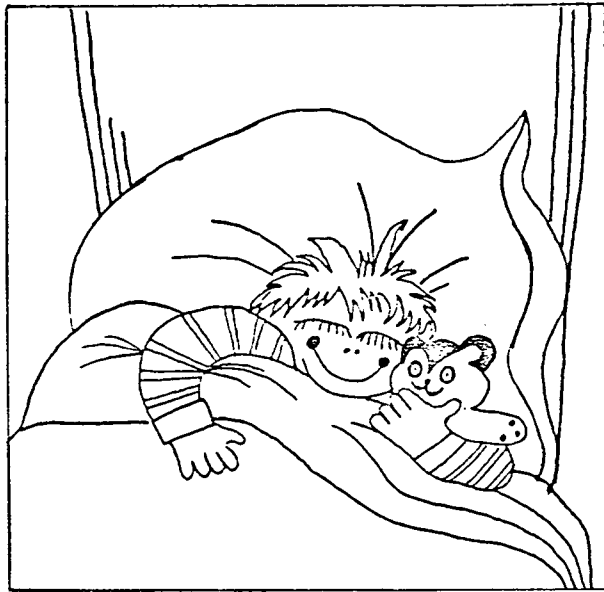


Before



Before

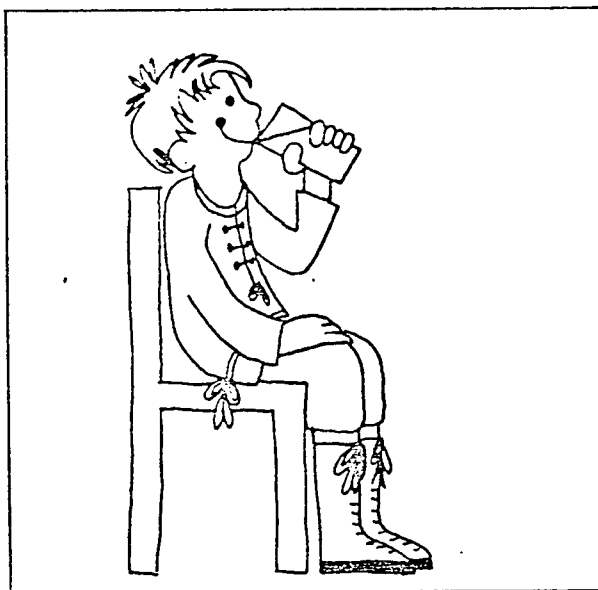
- ☐ Was the girl walking?
- ☐ Were the girl walking?
- ☐ Are the girl walking?
- ☐ Is the girl walking?



Before

The _____ sleeping.

was
are
were
boys
boy
is



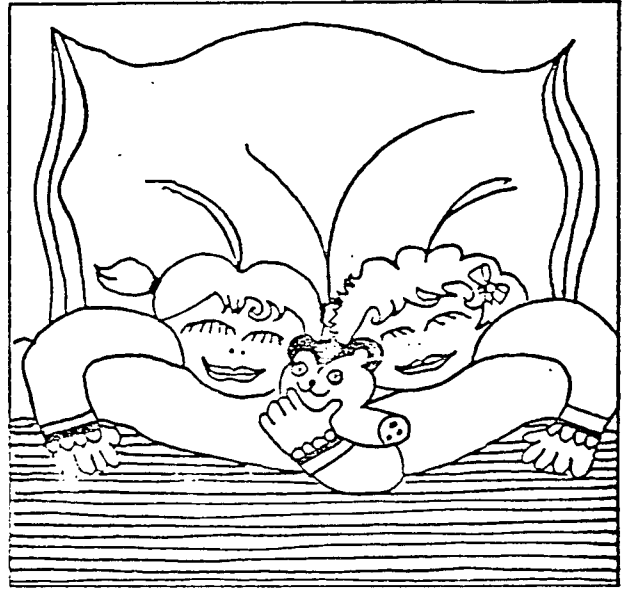
Now



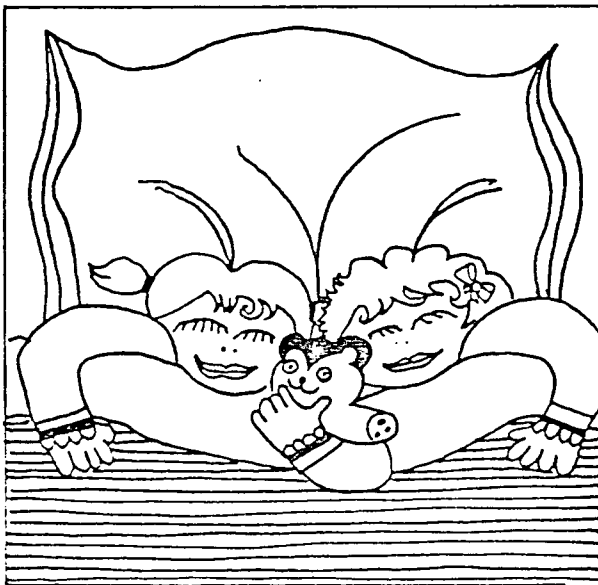
Were the girls sleeping?



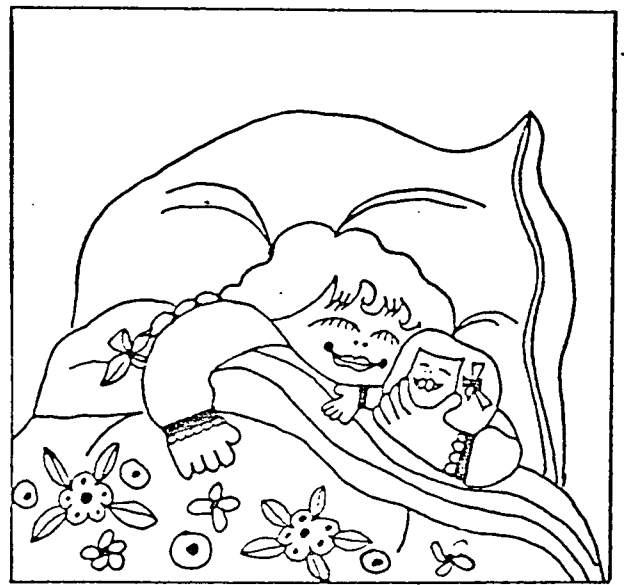
Before



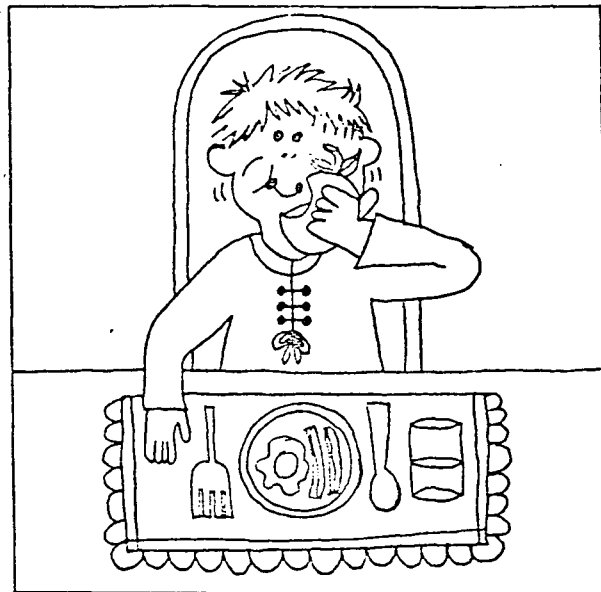
Now



Before

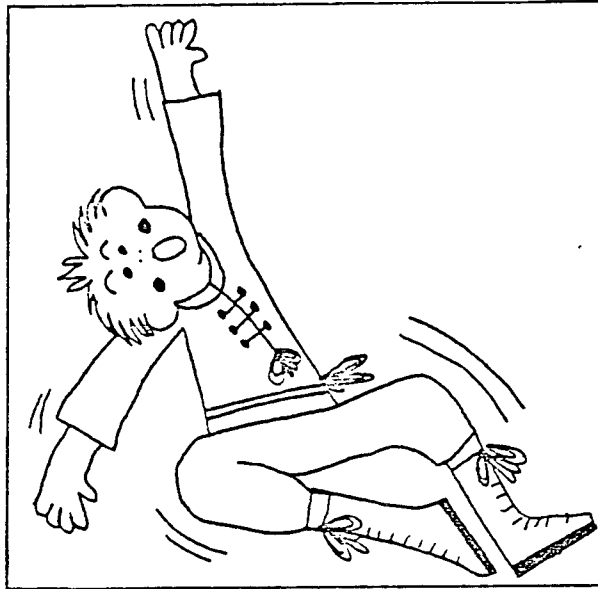


Now



Now

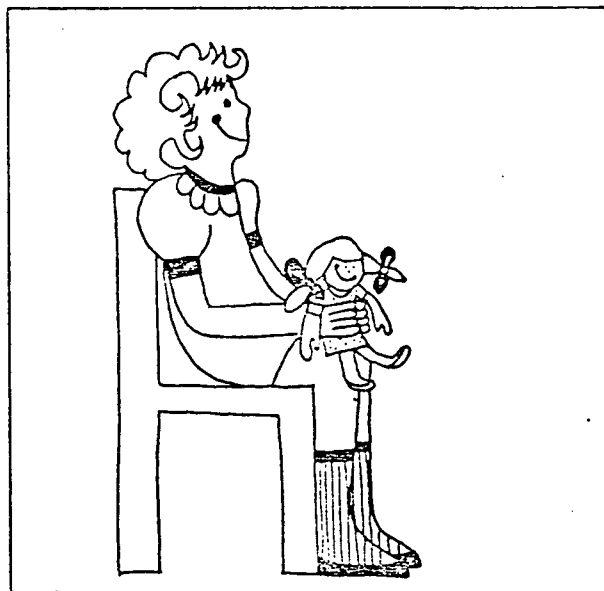
- ☐ The boy are eating.
- ☐ The boy was eating.
- ☐ The boy is eating.
- ☐ The boy were eating.



Before

_____ the _____ falling?

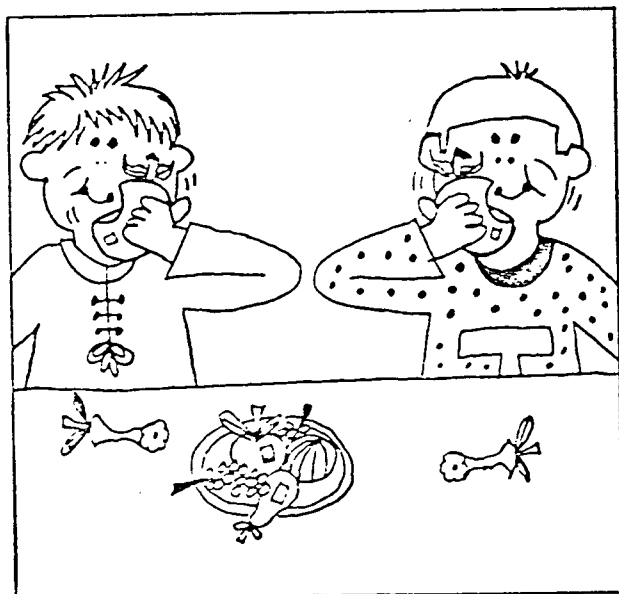
are
is
was
were
boy
boys



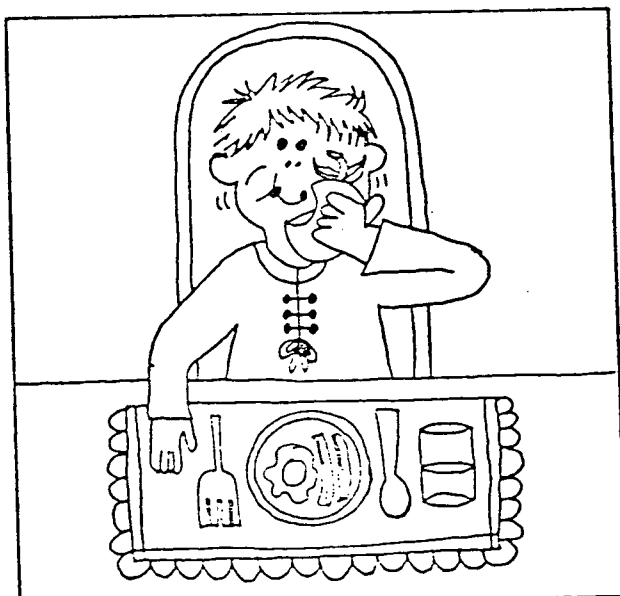
Before

2

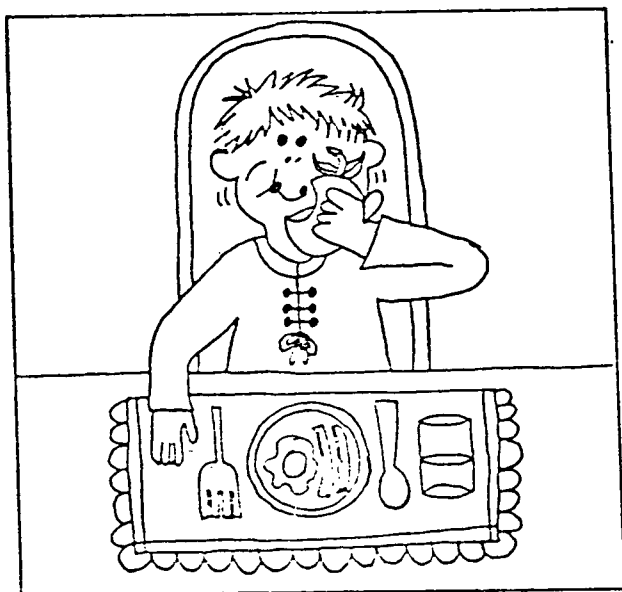
The boys are eating.



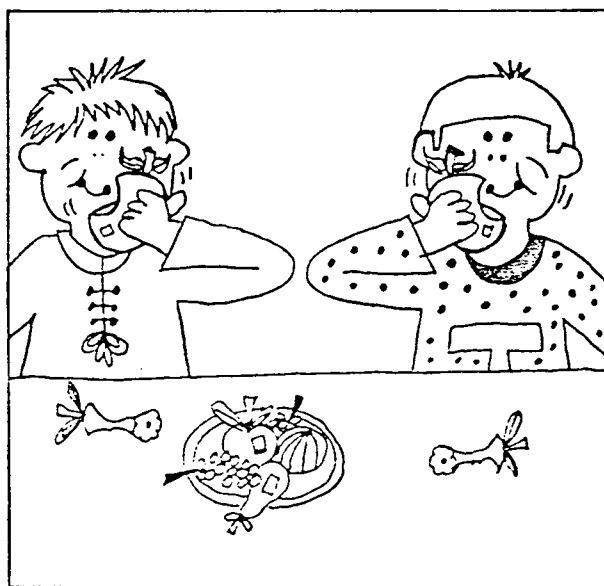
Before



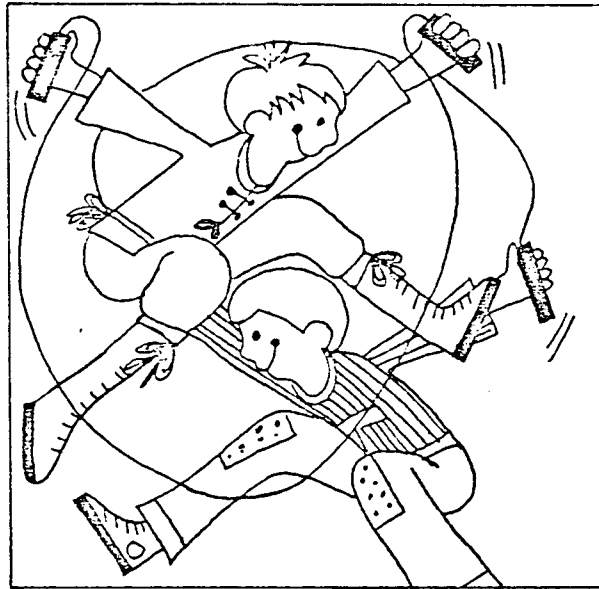
Now



Before

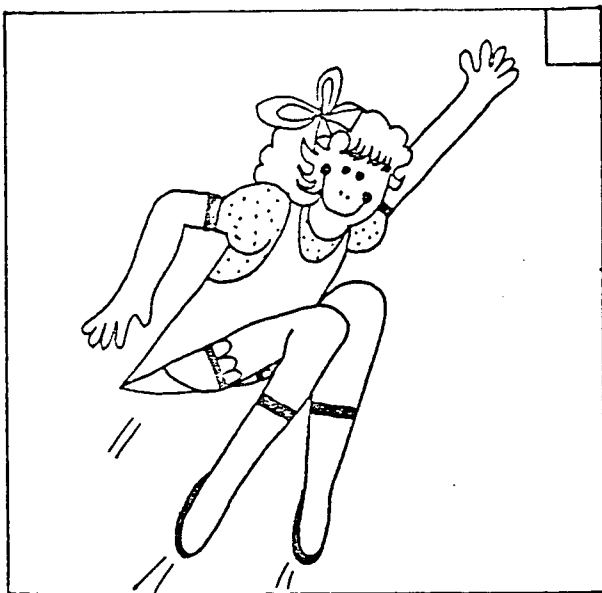


Now



Now

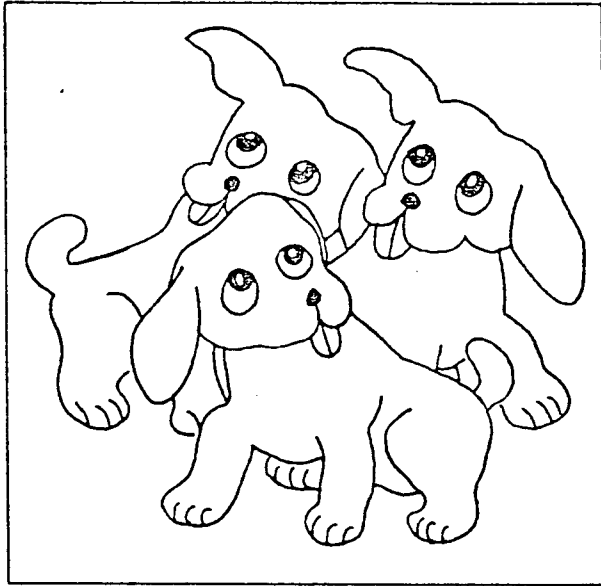
- ☐ The boys was skipping.
- ☐ The boys is skipping.
- ☐ The boys were skipping.
- ☐ The boys are skipping.



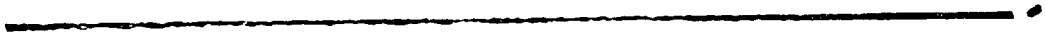
Now

_____ the _____ jumping?

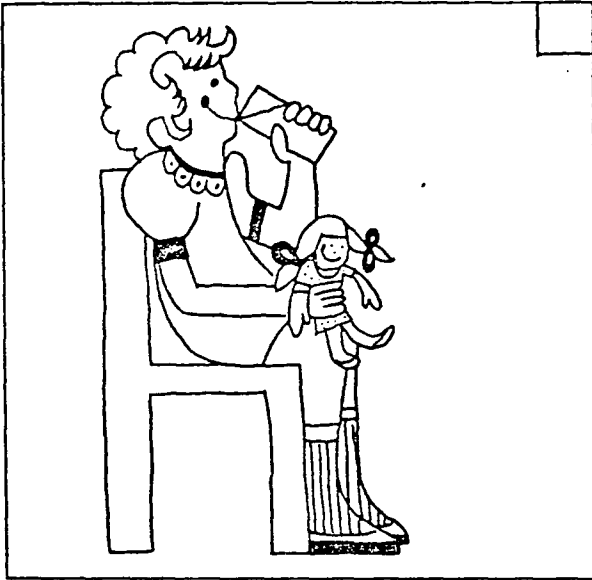
girl
girls
was
were
are
is



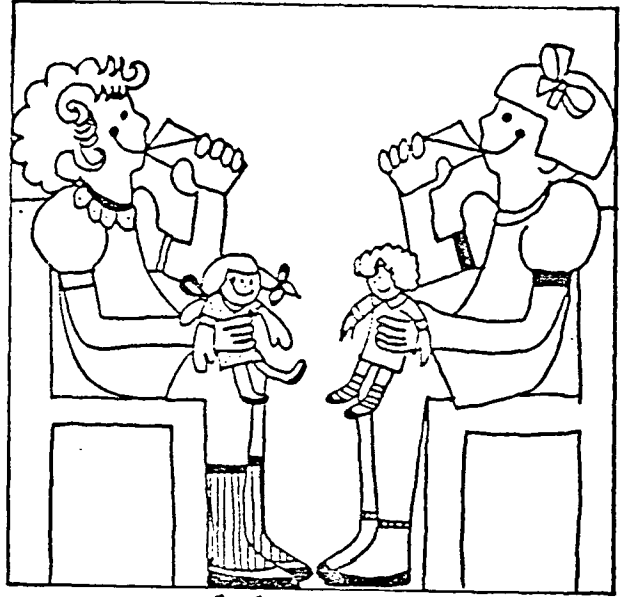
Before



The girls were drinking.



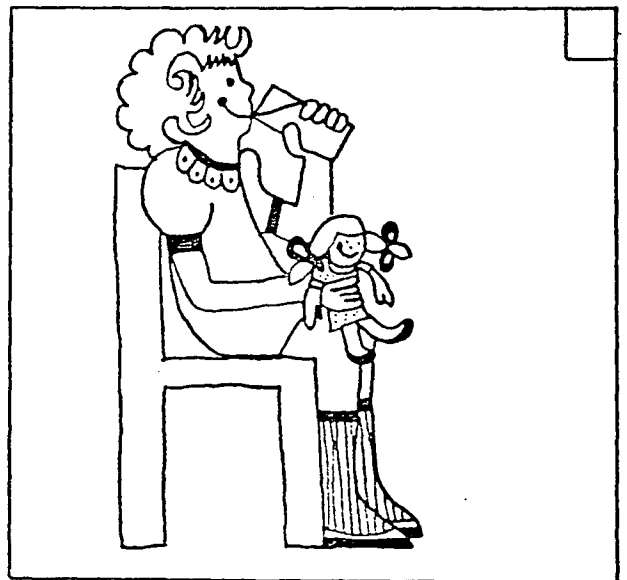
Now



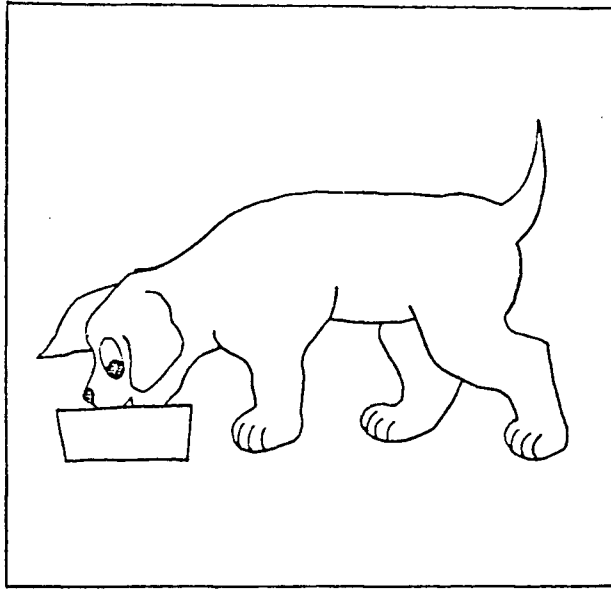
Now



Before

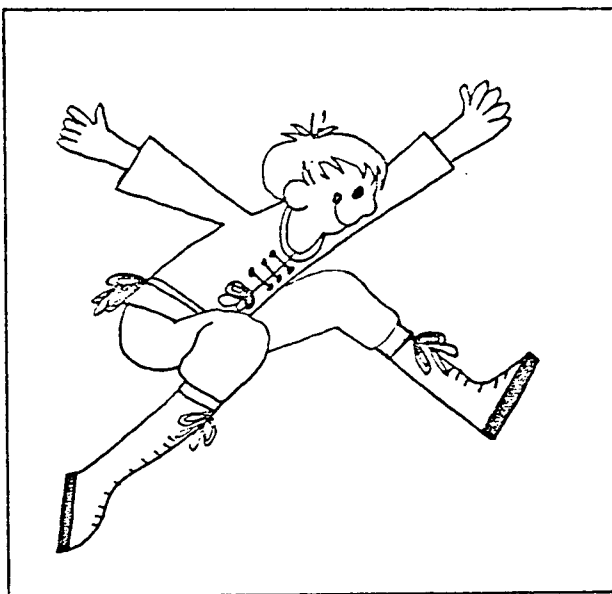


Before



Before

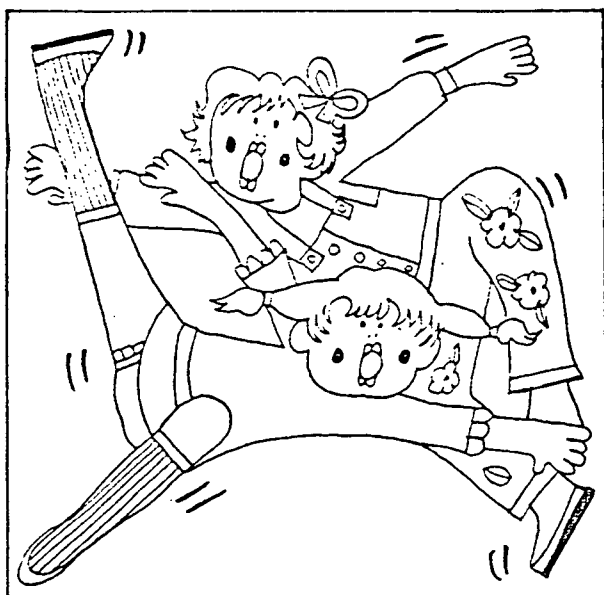
- ☐ The dog are eating.
- ☐ The dog is eating.
- ☐ The dog was eating.
- ☐ The dog were eating.



Now

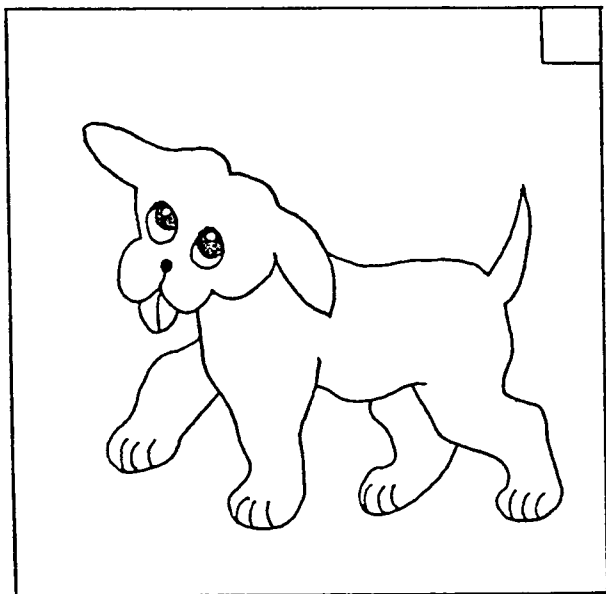
The _____ jumping.

are
is
was
boys
were
boy

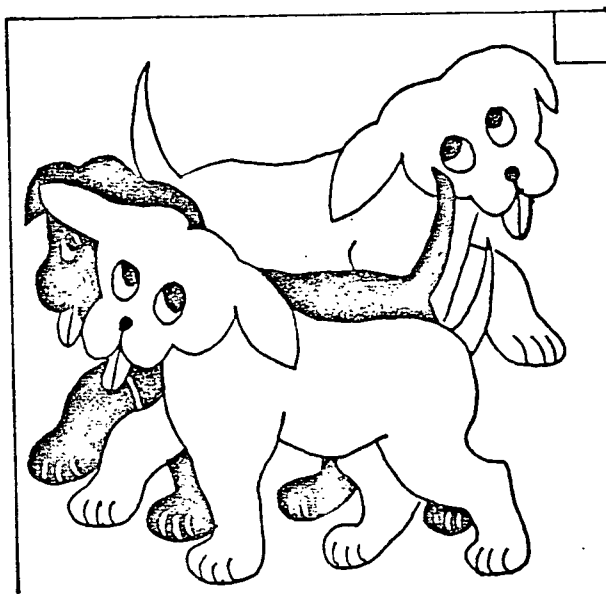


Now

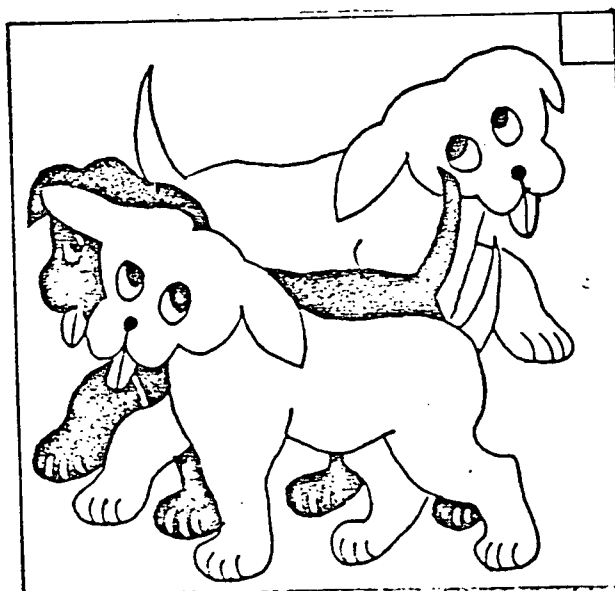
The dogs were walking.



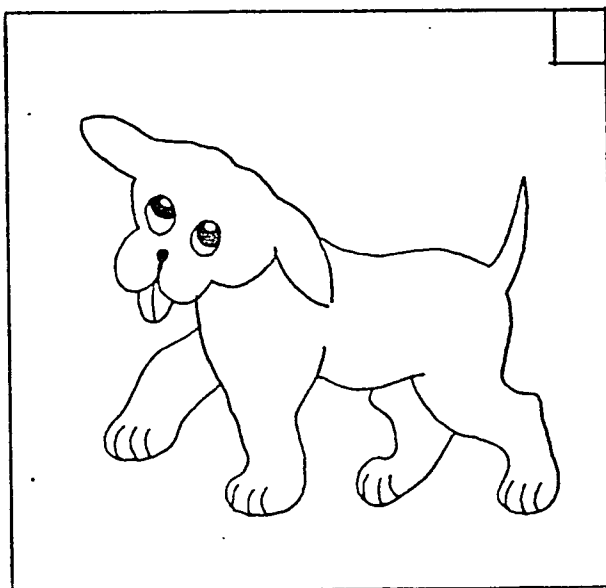
Before



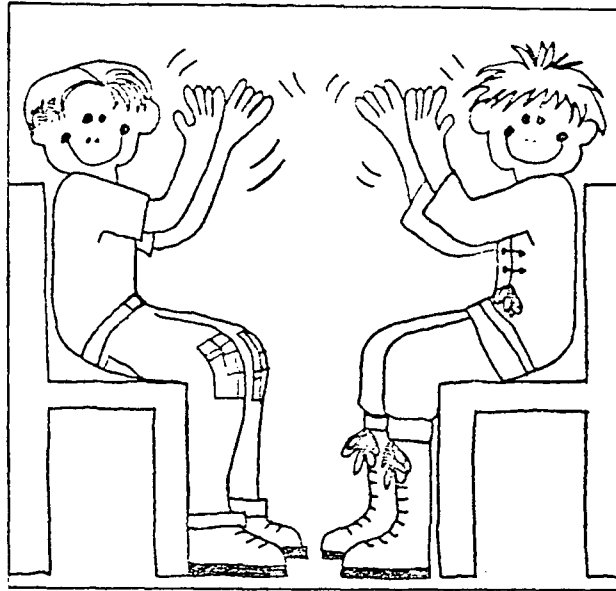
Now



Before

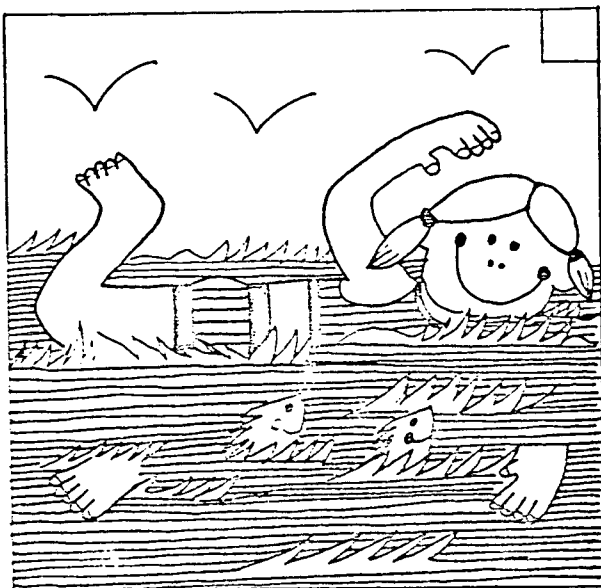


Now



Before

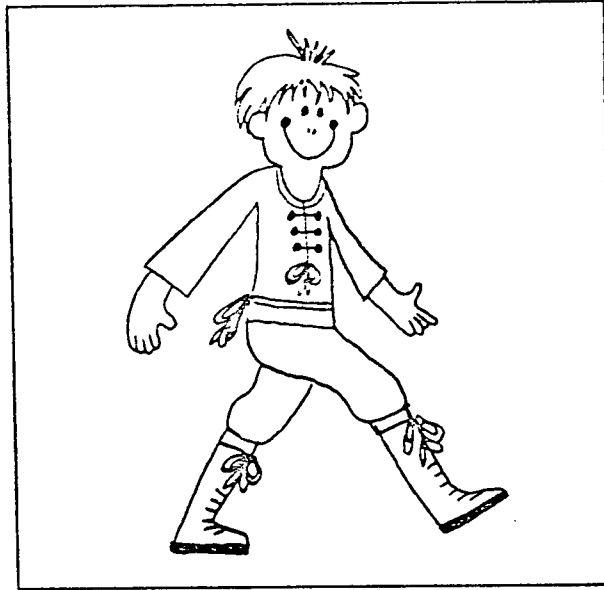
- ☐ Is the boys clapping?
- ☐ Was the boys clapping?
- ☐ Were the boys clapping?
- ☐ Are the boys clapping?



Before

_____ the _____ swimming?

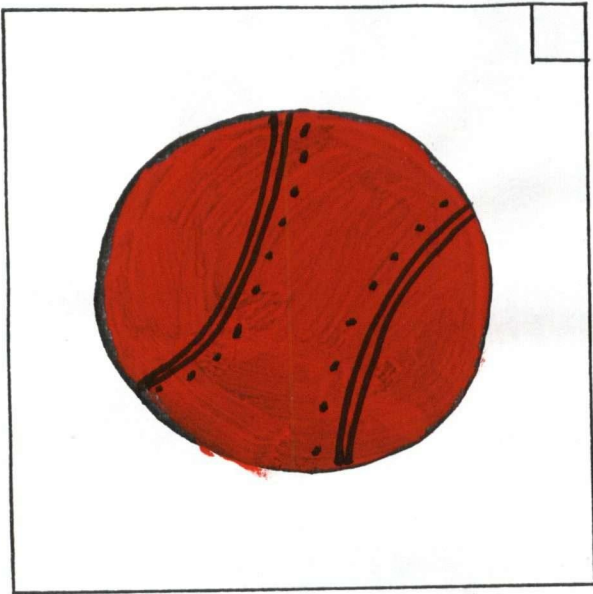
girls
were
girl
was
are
is



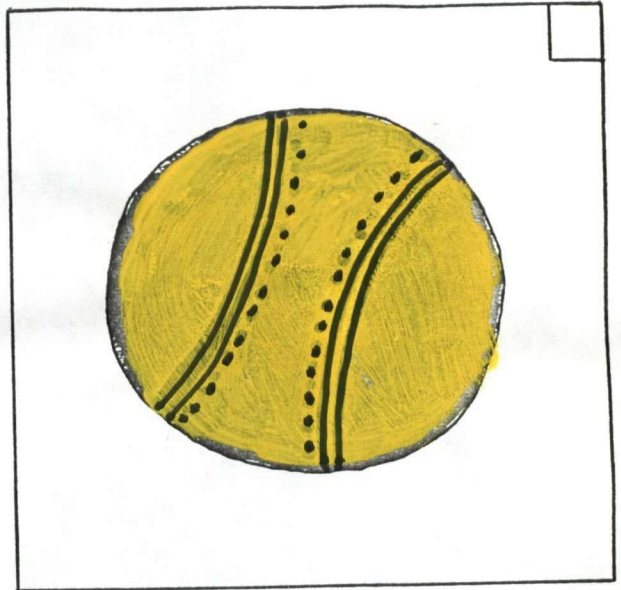
Now

APPENDIX B
DEMONSTRATION ITEMS

The ball is red.



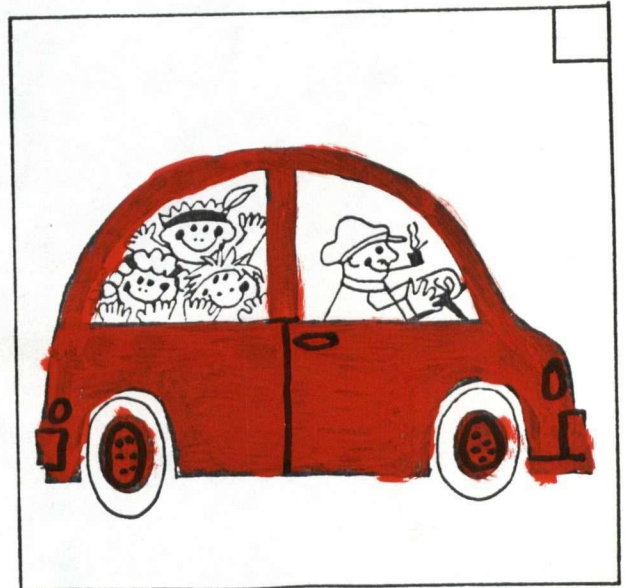
Now



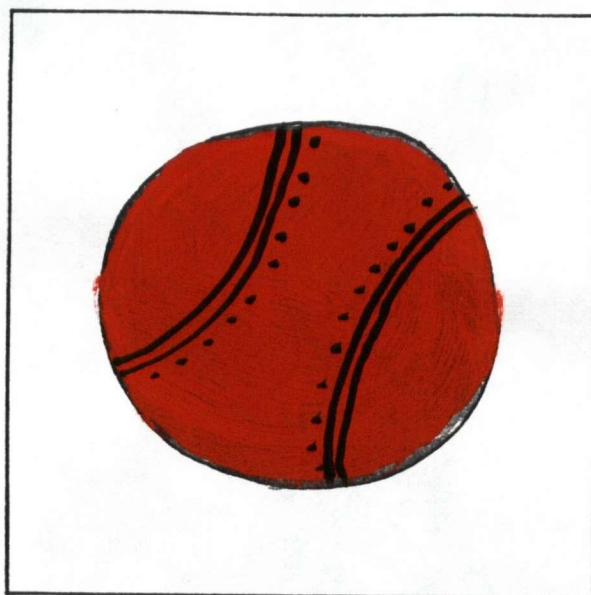
Now



Now

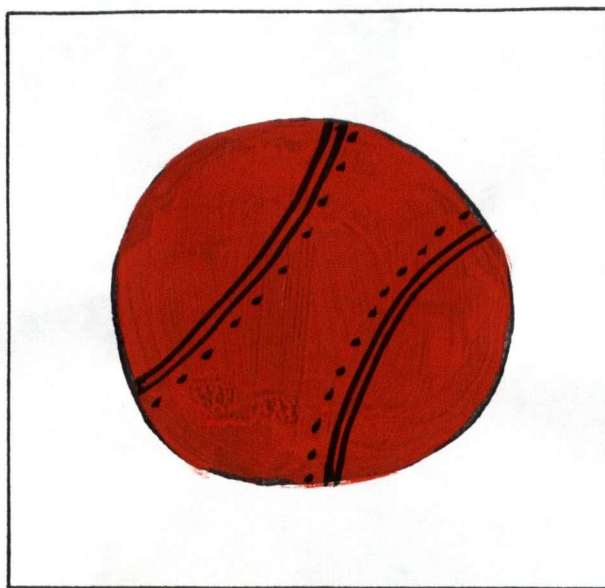


Now



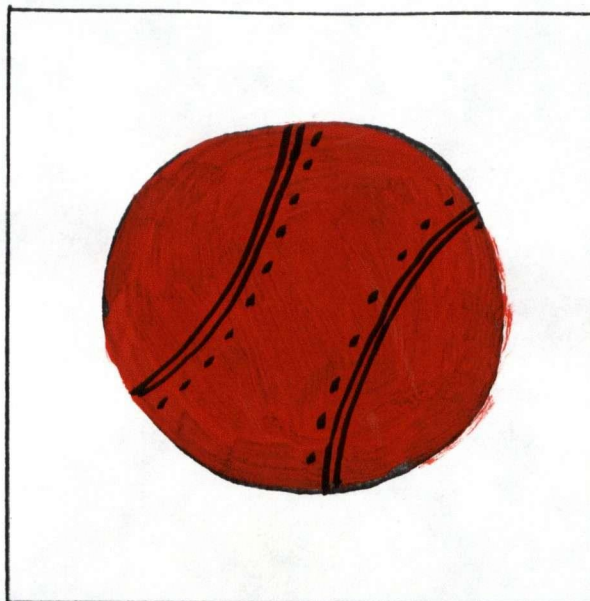
Now

- ☐ The car is green.
- ☐ The ball is red.
- ☐ The ball is blue.
- ☐ The coat is red.



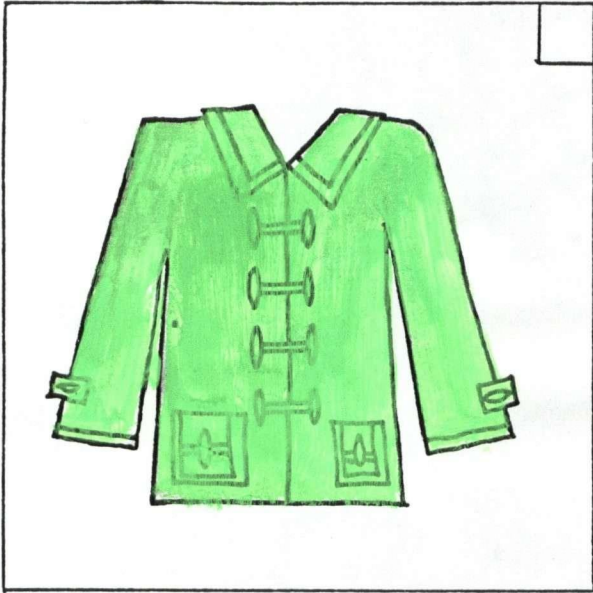
Now

The ball _____ is
was
green
red

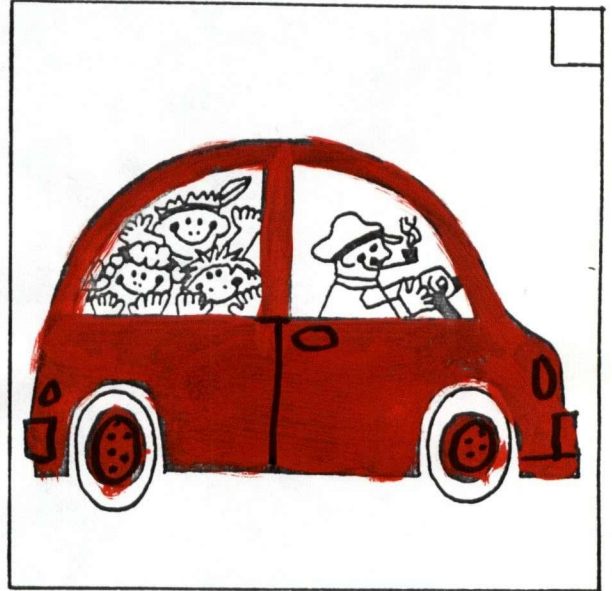


Now

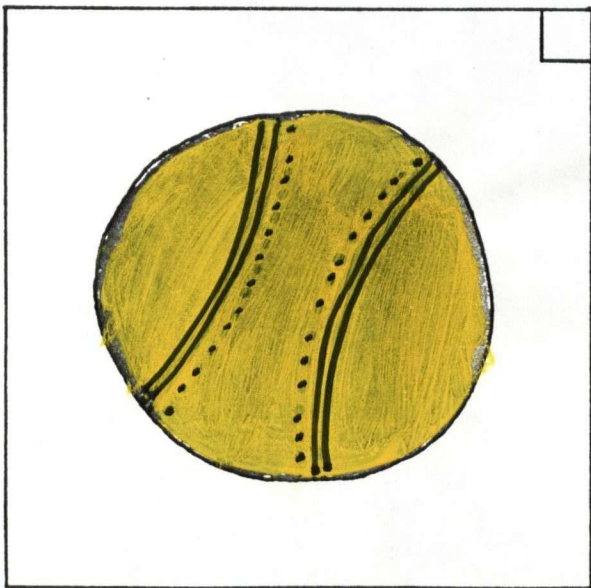
The ball was green.



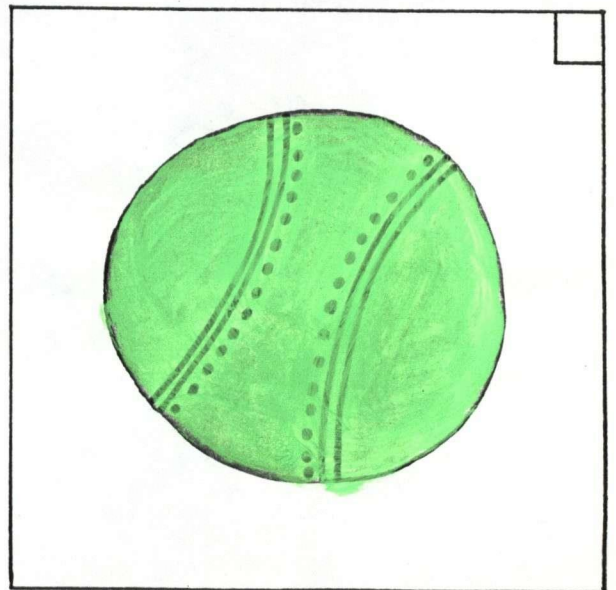
Before



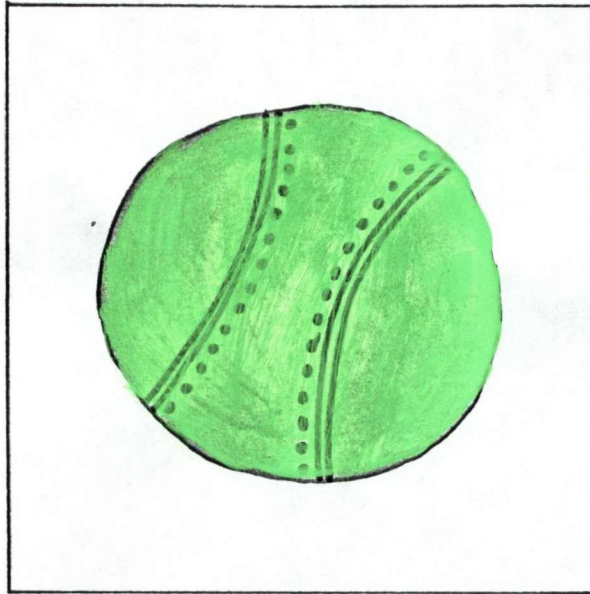
Before



Before

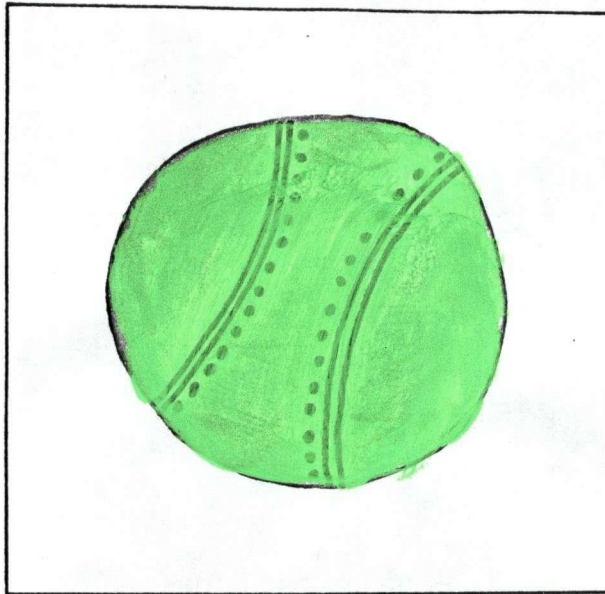


Before



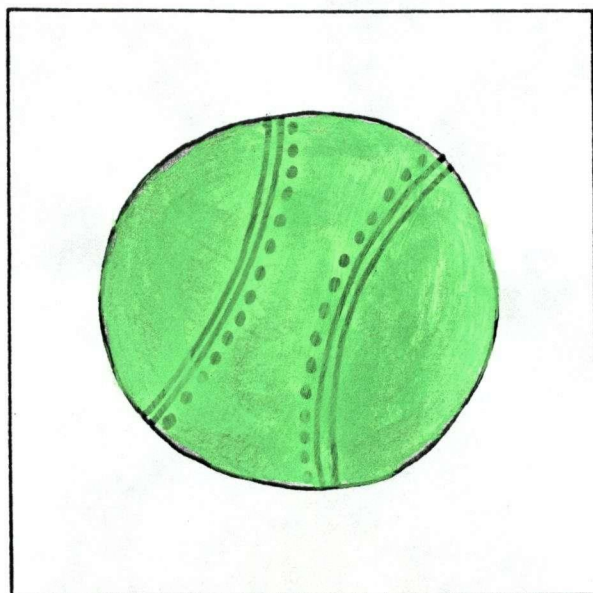
Before

- ☐ The ball was green.
- ☐ The car was green.
- ☐ The coat is green.
- ☐ The ball is yellow.



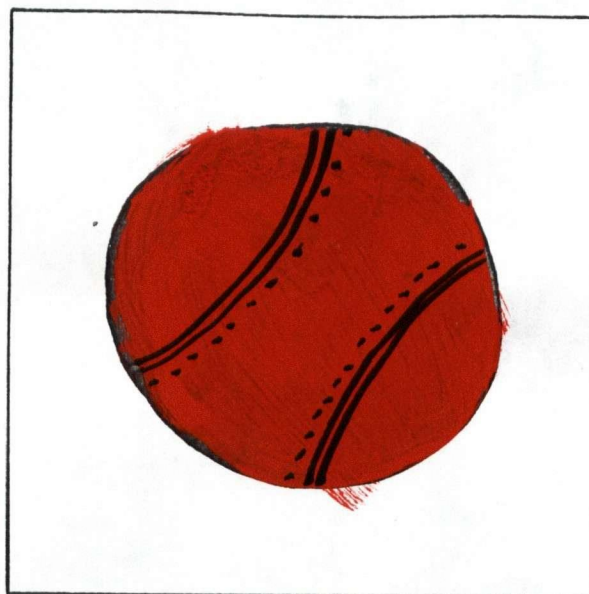
Before

The ball _____ yellow
was
green
is



Before



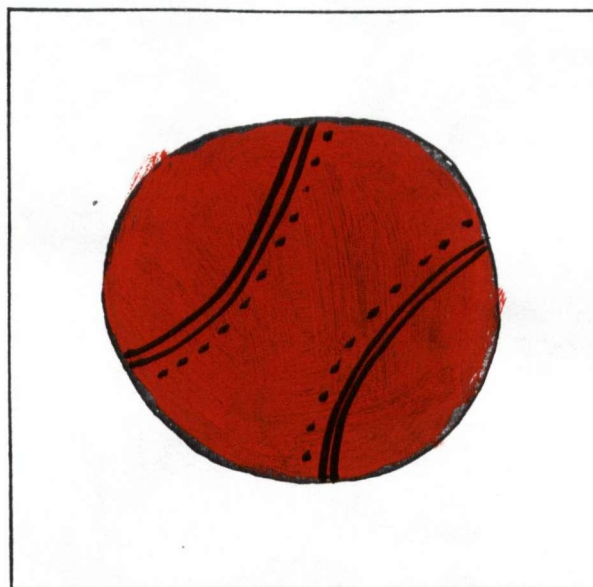


Now

Is the ball red?

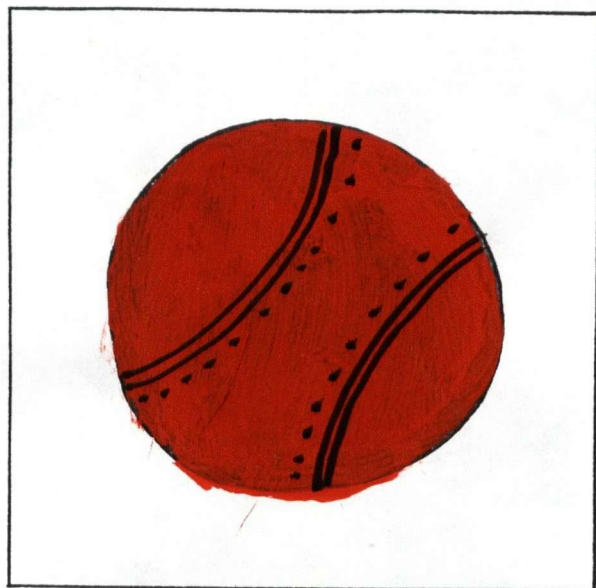
☐ Yes

☐ No



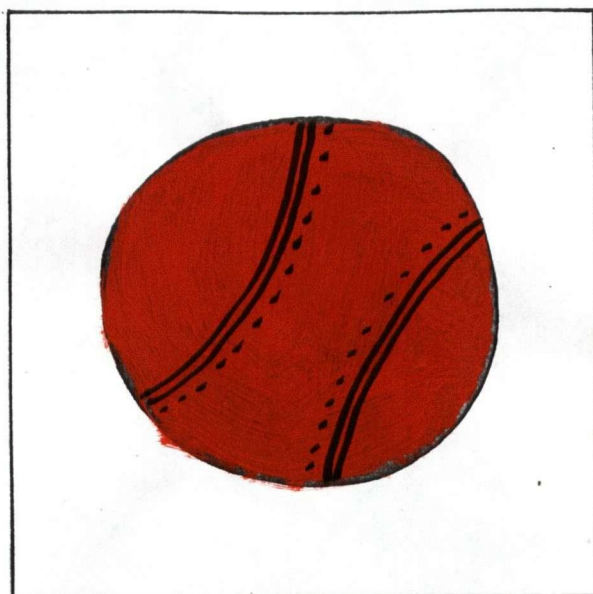
Now

- ☐ Is the car red?
- ☐ Is the ball red?
- ☐ Is the car green?
- ☐ Is the ball yellow?



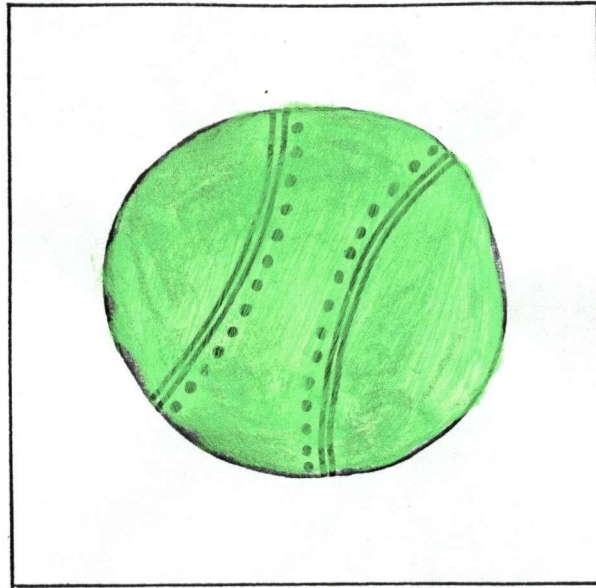
Now

_____ the ball _____ ? is
green
was
red



Now

_____?

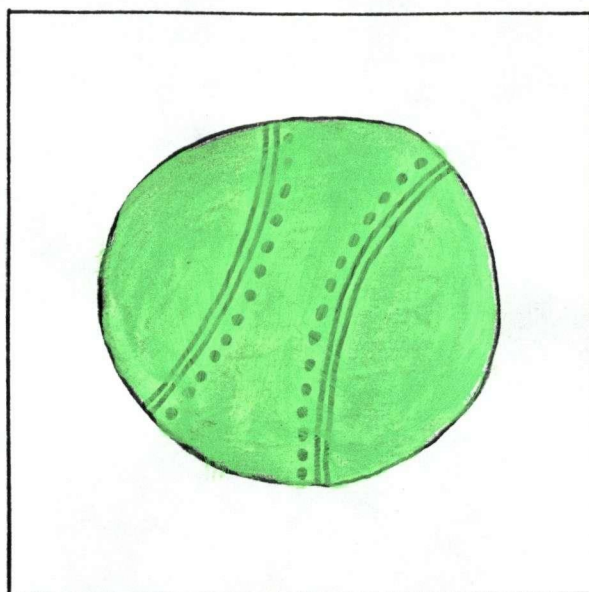


Before

Was the ball green?

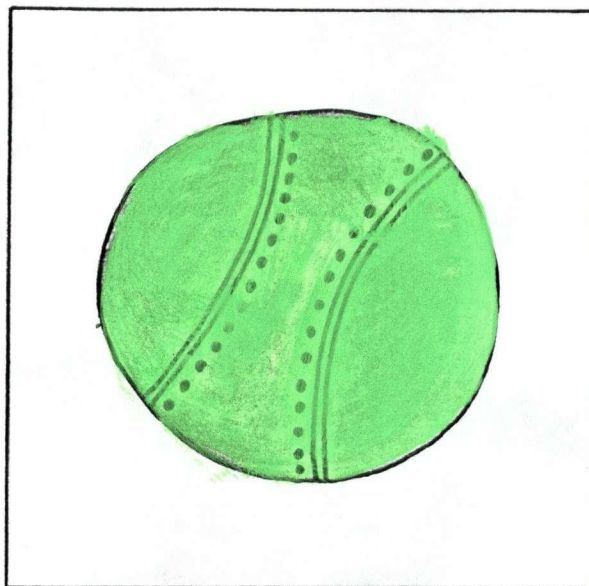
☐ Yes

☐ No



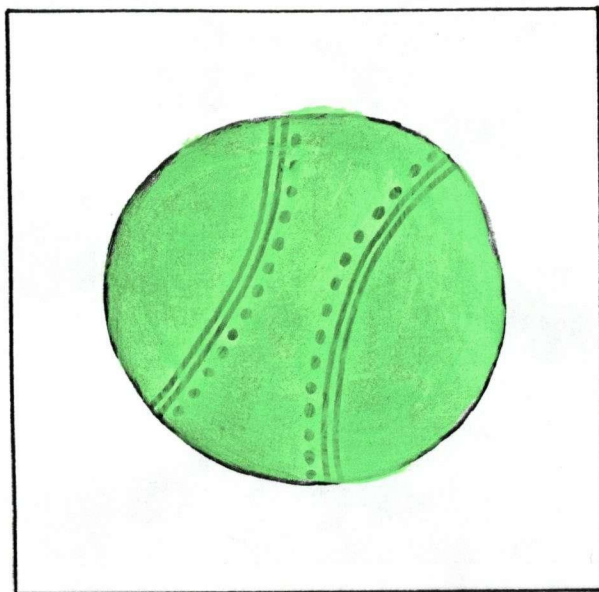
Before

- ☐ Was the ball green?
- ☐ Is the car green?
- ☐ Was the bus green?
- ☐ Is the ball yellow?



Before

_____ the ball _____ ? yellow
green
was
is

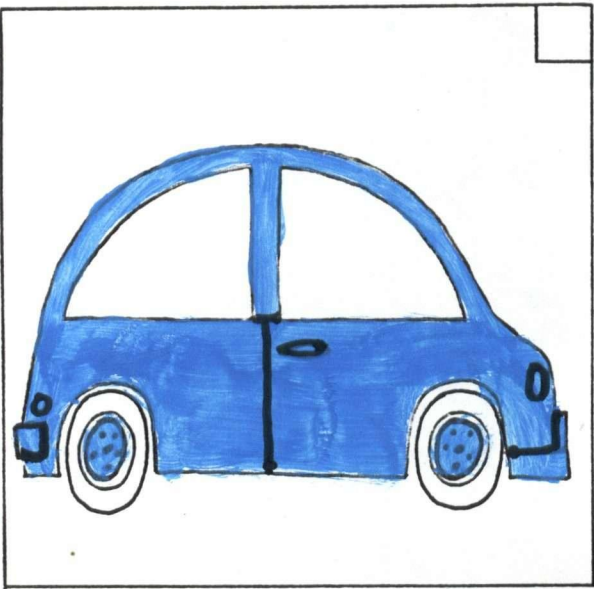


Before

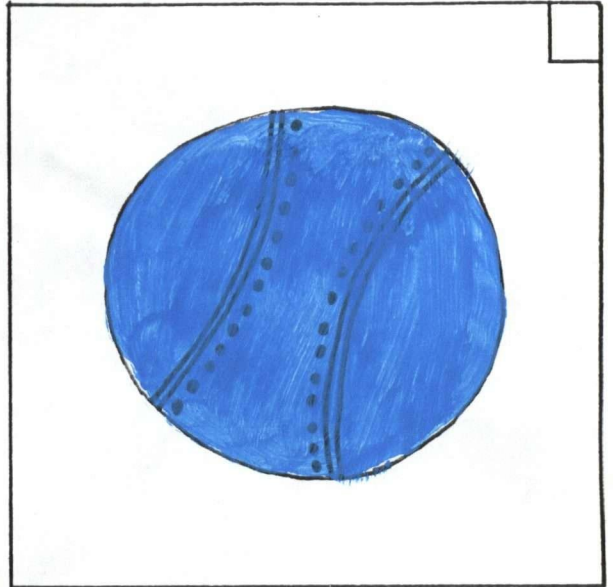
?

?

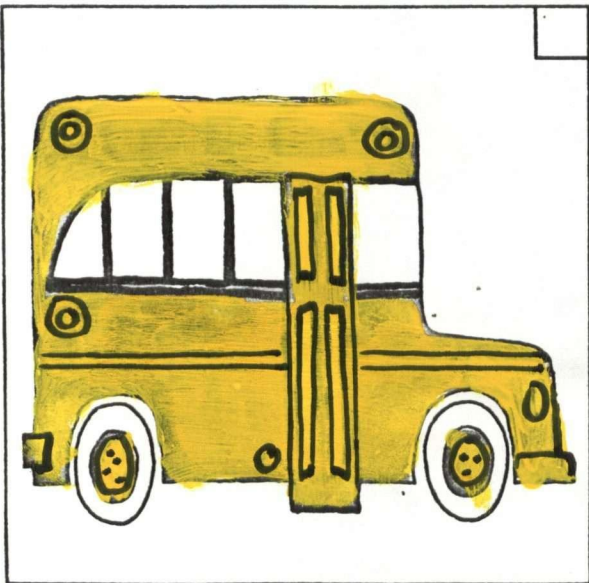
The Car is blue.



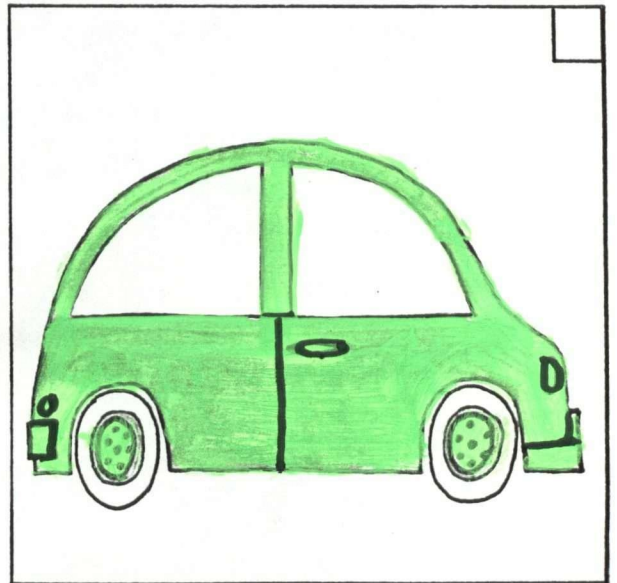
Now



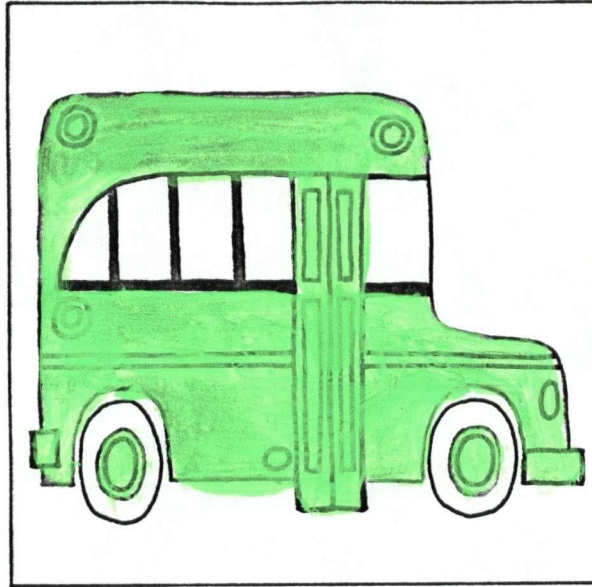
Now



Now

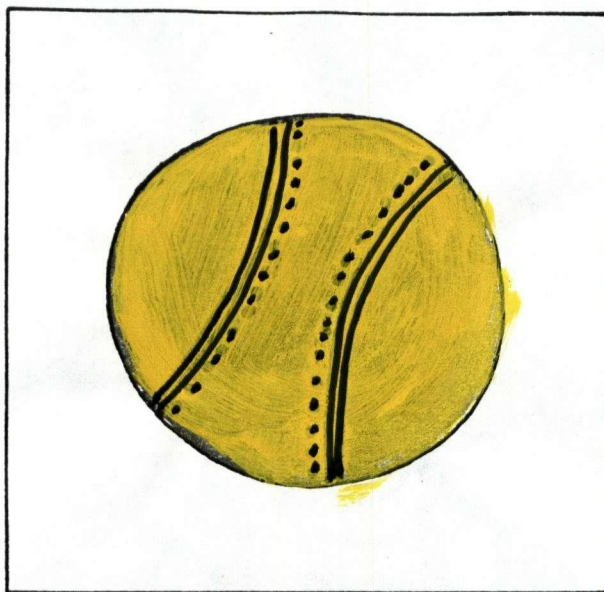


Now



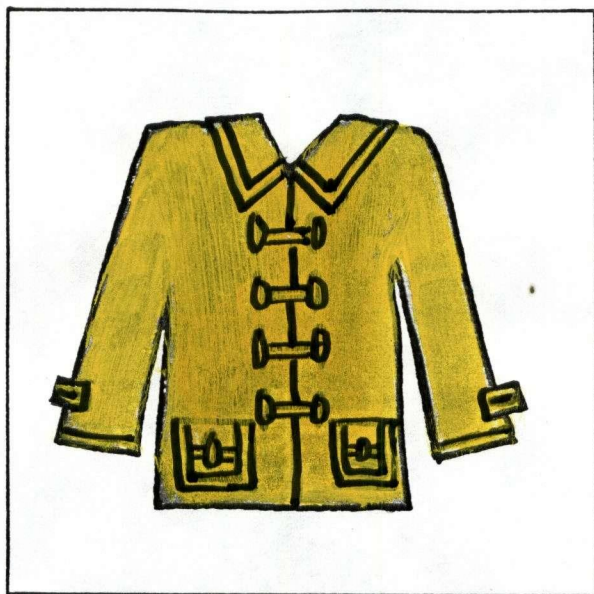
Before

- ☐ The ball is yellow.
- ☐ The bus is green.
- ☐ The bus was green.
- ☐ The car is green.

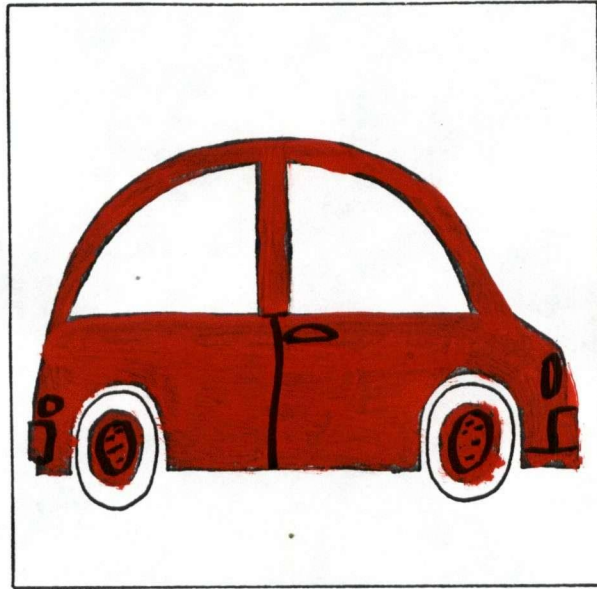


Now

The ball _____ red
was
yellow
is



Before

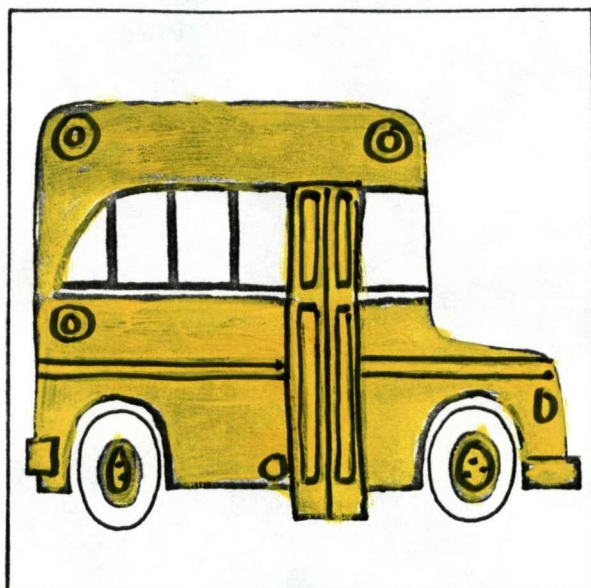


Before

Was the car red?

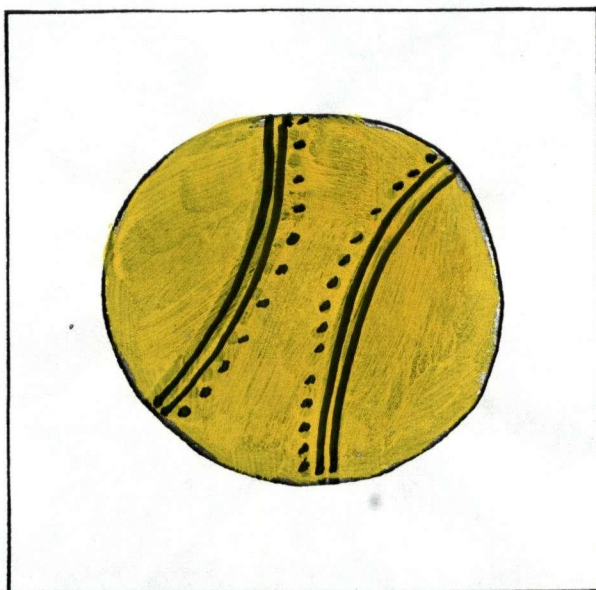
☐ No

☐ Yes



Now

- ☐ Is the ball yellow?
- ☐ Was the bus yellow?
- ☐ Is the bus yellow?
- ☐ Is the car green?



Before

_____ the ball _____ ? red
was
is
yellow



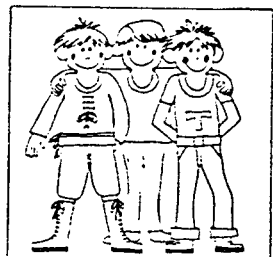
Now

_____?

APPENDIX C
VOCABULARY CHARTS



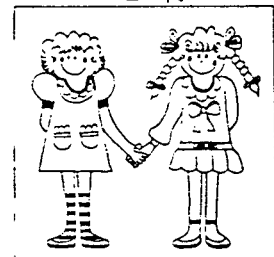
Boy



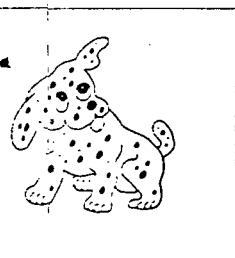
Boys



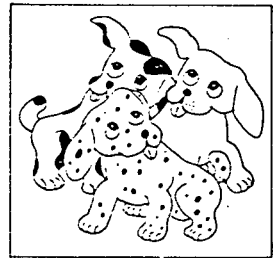
Girl



Girls



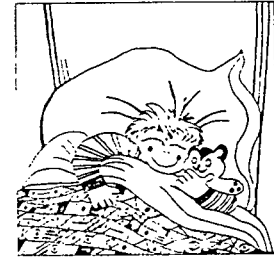
Dog



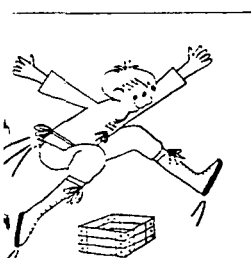
Dogs



Walking



Sleeping



Jumping



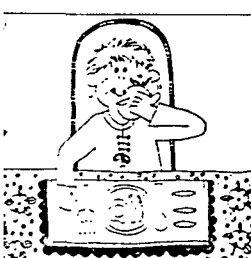
Laughing



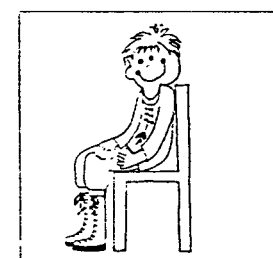
Crying



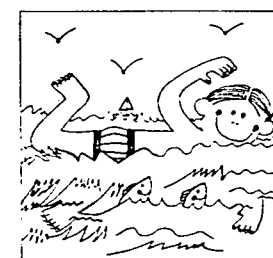
Running



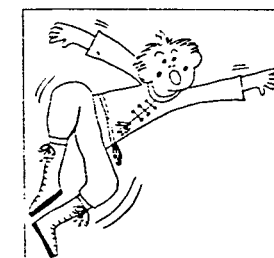
Eating



Sitting



Swimming



Falling



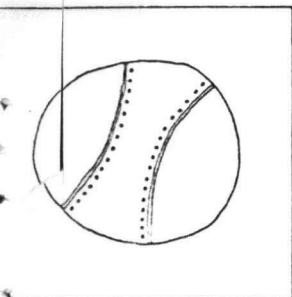
Drinking



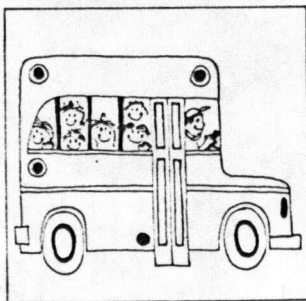
Skipping



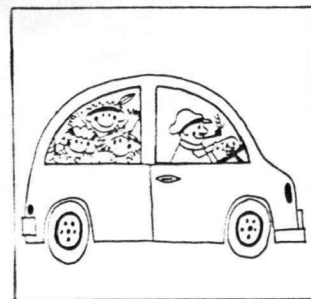
Clapping



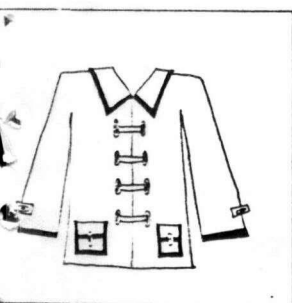
Ball



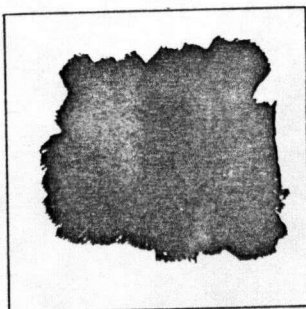
Bus



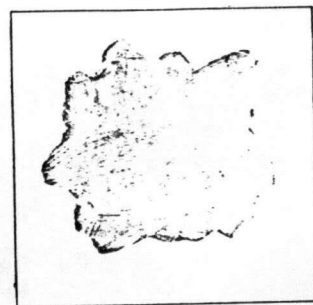
Car



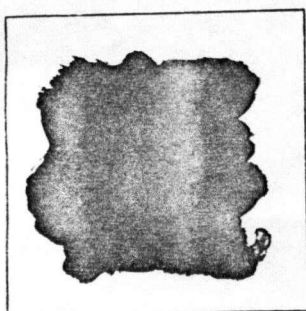
Coat



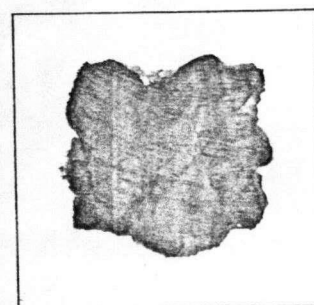
Blue



Green



Red



Yellow

APPENDIX D

STANDARD ADMINISTRATION PROCEDURES

Note: All responses requiring a pointing behaviour will be recorded on a check list (Appendix D).

Any reference to the examiner "expressing" anything is defined as speech and signing or fingerspelling.

Vocabulary for Demonstration Items

Each vocabulary item shall be exposed to the subject - one frame at a time. The examiner will point to the picture and then to the printed word below the picture. The examiner will then express the word. The subject will then be asked to say and/or sign or fingerspell the word. This procedure is to be repeated for each of the vocabulary items on the chart.

Demonstration Items

Item 1 The first of the demonstration items shall be exposed to the subject. The examiner will point to the sentence, "The ball is red.", and ask the subject to "Pick the picture that is the same.". The examiner will then give the subject an unsharpened pencil with an intact eraser for pointing. The subject will be reinforced, "Good Boy!" or other appropriate remark for a correct response. The examiner will then point to and express the word "ball" and the word "red" and to the picture selected saying "same-Good boy". If the response is incorrect, the examiner will point to and express the word "ball" and the word "red" and again ask the subject to "Pick the picture that is the same.". It is expected that the error will be corrected and the examiner will reinforce the response appropriately. Once a correct response is made and the words "ball" and "red" have been pointed out, the examiner points to and expresses the word "is" and then expressed "now" - pointing to the word "now" below the picture. The association of "is" and "now" will be repeated once using the same procedure

described above.

Item 2 The second item will be exposed to the subject. The examiner will point to the picture and the word "now" and ask the subject to "Pick the sentence that is the same.". The subject will be appropriately reinforced for a correct response. The examiner will point to the picture and express the words "ball" and "red" and associate them with the same words in the sentence selected, expressing - "same". If an incorrect choice is made the examiner will point to the picture and express the words "ball" and "red" and then ask the subject to "Pick the sentence that is the same.". The correct response should be made at that time or the examiner may repeat the same procedure. Once the correct response is made, the subject is appropriately reinforced and the words "ball" and "red" are associated with the same words in the sentence, expressing - "same". The examiner then points to and expresses the word "now" (below the picture) and then points to and expresses the word "is" (in the sentence). This association will be repeated once using the same procedure.

Item 3 The third item will be exposed to the subject. The examiner will point to the picture and word "now" and then present the subject with a sharpened pencil. The examiner will express "Pick words from here (pointing to the list of words to the right of the sentence) and finish the sentence:". If a correct response is made, the examiner will reinforce the subject appropriately and then re-expose the previous (second) item. The examiner will then point to the picture and tense marker of the second item and associate these with the correct response of the second item, expressing- "The sentence is finished.". The examiner will then return to the third item, point to the picture and the tense marker and associate these with the correct completion, expressing - "The sentence is finished.". If an

incorrect response is made on item three, the examiner will re-expose item two and point to the picture and tense marker and associate these with the correct sentence, expressing - "The sentence is finished.". The examiner will then return to item three, leaving item two exposed, and point to the picture and tense marker and express - "Pick words from here (pointing to the list of words to the right of the sentence) and finish the sentence.". The subject may, if necessary, refer to item two to complete the sentence. This procedure may be repeated, if necessary, to enable completion of the task item. Once the correct response is made, the examiner will reinforce the subject appropriately and refer back to item two pointing to the picture, tense marker, and correct sentence, expressing - "The sentence is finished." and repeating this procedure for item three.

Item 4 The fourth item will be exposed to the subject. The examiner will point to the picture and the tense marker and express - "Write the sentence.". If a correct response is made, the examiner will reinforce the subject appropriately and refer to the previous item (item three) and follow procedures identical to those outlined above (Item three). If an incorrect response is made, the examiner will re-expose the previous item (Item three and follow identical procedures to those outlined for incorrect responses in Item three. The examiner will remove the sharpened pencil.

Items 5-8 Similar procedures will be followed as for items 1-4 respectively, with two exceptions: 1) the tense marker referred to will be "before". 2) After the tense marker is referred to, the picture will be temporarily covered to avoid concept confusion. The examiner will place a plain white square of tag board over the picture to effect this change.

Item 9 Item nine will be exposed to the subject. The examiner will point to the picture stimulus and the tense marker and then to the yes/no transform. The examiner will give the subject the unsharpened pencil with an intact eraser and express - "Pick the right one." referring to the "yes" and "no" selection choices. Responses will be recorded on the check list. The examiner will point to the sentence and the question mark at the end of the statement and express "question".

Items 10-12 Identical procedures to those outlined for items 2-4 will be followed with one addition. The review of picture, tense marker, and sentence will be expanded to include the pointing to the question mark at the end of the structure. At that time the examiner will express "question".

Items 13-16 Identical procedures to those outlined for items 9-12 will be followed. It is to be noted that the tense marker will be different.

Items 17-20 Identical procedures to those outlined for items 1-8 will be used dependent upon tense marker. The only exception to this procedure will be that past tense markers will not require that the picture be covered as it is assumed at this point that the concept of the difference between "now" and "before" is established.

Items 21-24 Identical procedures to those outlined for items 9-16 will be followed, dependent upon tense marker. As in items 17-20, the past tense marker will not require that the picture be covered.

Vocabulary for Task Items

Each vocabulary item shall be exposed to the subject - one frame at a time. The examiner will point to the picture and then to the printed word below the picture. The examiner will then express the word and the

subject will be asked to say, sign, or fingerspell, and where possible perform the action indicated by the word. This procedure is to be repeated for each of the vocabulary items on the chart.

Task Items

Sixteen items will be exposed to the child in each sitting. For the first sitting the child will proceed through the Vocabulary for Demonstration Items, Demonstration Items, Vocabulary for Task Items, and the first sixteen task items. Each of the sixteen task items will be presented as a separate unit. That is, the subject will have only one item before him at a time. On the second day the demonstration items will be reviewed with a five second exposure for each of the 24 items. At that time the examiner will point to the picture, tense marker, sentence, and punctuation marker for each item. The subject will then proceed through the second sitting of sixteen task items. An identical procedure will be followed for the third and fourth sittings. The examiner will have no interaction with the subject during task administrations. The examiner will record all responses on the check lists provided and also note any behaviour considered relevant to the study.

APPENDIX E
CHECK LISTS

Check List

Name: _____

Admin. D, 1, 2, 3, 4

<u>Item</u>	<u>Response</u>					
1	1	2	3	4		
2	1	2	3	4		
3	1	2	3	4	5	6
4						
5	1	2	3	4		
6	1	2	3	4		
7	1	2	3	4	5	6
8						
9	1	2	3	4		
10	1	2	3	4		
11	1	2	3	4	5	6
12						
13	1	2	3	4		
14	1	2	3	4		
15	1	2	3	4	5	6
16						
17	1	2	3	4		
18	1	2	3	4		
19	1	2	3	4	5	6
20						
21	1	2	3	4		
22	1	2	3	4		
23	1	2	3	4	5	6
24						

○ = 1st;

□ = 2nd;

△ = 3rd;

☆ = 4th

APPENDIX F
SUMMARY OF CORRECT RESPONSES

FACTOR
B

Task 1										Task 2										Task 3										Task 4									
Singular					Plural					Singular					Plural					Singular					Plural					Singular					Plural				
Front	Back	1/2	3/4	5/4	Front	Back	1/2	3/4	5/4	Front	Back	1/2	3/4	5/4	Front	Back	1/2	3/4	5/4	Front	Back	1/2	3/4	5/4	Front	Back	1/2	3/4	5/4										
510	1/2	3/4	5/4	1/2	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1										
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44																																							

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1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100

APPENDIX G

SUMMARY OF RESPONSE BY TASK LEVEL

TASK I		100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	720	740	760	780	800	820	840	860	880	900	920	940	960	980	1000	1020	1040	1060	1080	1100	1120	1140	1160	1180	1200	1220	1240	1260	1280	1300	1320	1340	1360	1380	1400	1420	1440	1460	1480	1500	1520	1540	1560	1580	1600	1620	1640	1660	1680	1700	1720	1740	1760	1780	1800	1820	1840	1860	1880	1900	1920	1940	1960	1980	2000	2020	2040	2060	2080	2100	2120	2140	2160	2180	2200	2220	2240	2260	2280	2300	2320	2340	2360	2380	2400	2420	2440	2460	2480	2500	2520	2540	2560	2580	2600	2620	2640	2660	2680	2700	2720	2740	2760	2780	2800	2820	2840	2860	2880	2900	2920	2940	2960	2980	3000	3020	3040	3060	3080	3100	3120	3140	3160	3180	3200	3220	3240	3260	3280	3300	3320	3340	3360	3380	3400	3420	3440	3460	3480	3500	3520	3540	3560	3580	3600	3620	3640	3660	3680	3700	3720	3740	3760	3780	3800	3820	3840	3860	3880	3900	3920	3940	3960	3980	4000	4020	4040	4060	4080	4100	4120	4140	4160	4180	4200	4220	4240	4260	4280	4300	4320	4340	4360	4380	4400	4420	4440	4460	4480	4500	4520	4540	4560	4580	4600	4620	4640	4660	4680	4700	4720	4740	4760	4780	4800	4820	4840	4860	4880	4900	4920	4940	4960	4980	5000	5020	5040	5060	5080	5100	5120	5140	5160	5180	5200	5220	5240	5260	5280	5300	5320	5340	5360	5380	5400	5420	5440	5460	5480	5500	5520	5540	5560	5580	5600	5620	5640	5660	5680	5700	5720	5740	5760	5780	5800	5820	5840	5860	5880	5900	5920	5940	5960	5980	6000	6020	6040	6060	6080	6100	6120	6140	6160	6180	6200	6220	6240	6260	6280	6300	6320	6340	6360	6380	6400	6420	6440	6460	6480	6500	6520	6540	6560	6580	6600	6620	6640	6660	6680	6700	6720	6740	6760	6780	6800	6820	6840	6860	6880	6900	6920	6940	6960	6980	7000	7020	7040	7060	7080	7100	7120	7140	7160	7180	7200	7220	7240	7260	7280	7300	7320	7340	7360	7380	7400	7420	7440	7460	7480	7500	7520	7540	7560	7580	7600	7620	7640	7660	7680	7700	7720	7740	7760	7780	7800	7820	7840	7860	7880	7900	7920	7940	7960	7980	8000	8020	8040	8060	8080	8100	8120	8140	8160	8180	8200	8220	8240	8260	8280	8300	8320	8340	8360	8380	8400	8420	8440	8460	8480	8500	8520	8540	8560	8580	8600	8620	8640	8660	8680	8700	8720	8740	8760	8780	8800	8820	8840	8860	8880	8900	8920	8940	8960	8980	9000	9020	9040	9060	9080	9100	9120	9140	9160	9180	9200	9220	9240	9260	9280	9300	9320	9340	9360	9380	9400	9420	9440	9460	9480	9500	9520	9540	9560	9580	9600	9620	9640	9660	9680	9700	9720	9740	9760	9780	9800	9820	9840	9860	9880	9900	9920	9940	9960	9980	10000	10020	10040	10060	10080	10100	10120	10140	10160	10180	10200	10220	10240	10260	10280	10300	10320	10340	10360	10380	10400	10420	10440	10460	10480	10500	10520	10540	10560	10580	10600	10620	10640	10660	10680	10700	10720	10740	10760	10780	10800	10820	10840	10860	10880	10900	10920	10940	10960	10980	11000	11020	11040	11060	11080	11100	11120	11140	11160	11180	11200	11220	11240	11260	11280	11300	11320	11340	11360	11380	11400	11420	11440	11460	11480	11500	11520	11540	11560	11580	11600	11620	11640	11660	11680	11700	11720	11740	11760	11780	11800	11820	11840	11860	11880	11900	11920	11940	11960	11980	12000	12020	12040	12060	12080	12100	12120	12140	12160	12180	12200	12220	12240	12260	12280	12300	12320	12340	12360	12380	12400	12420	12440	12460	12480	12500	12520	12540	12560	12580	12600	12620	12640	12660	12680	12700	12720	12740	12760	12780	12800	12820	12840	12860	12880	12900	12920	12940	12960	12980	13000	13020	13040	13060	13080	13100	13120	13140	13160	13180	13200	13220	13240	13260	13280	13300	13320	13340	13360	13380	13400	13420	13440	13460	13480	13500	13520	13540	13560	13580	13600	13620	13640	13660	13680	13700	13720	13740	13760	13780	13800	13820	13840	13860	13880	13900	13920	13940	13960	13980	14000	14020	14040	14060	14080	14100	14120	14140	14160	14180	14200	14220	14240	14260	14280	14300	14320	14340	14360	14380	14400	14420	14440	14460	14480	14500	14520	14540	14560	14580	14600	14620	14640	14660	14680	14700	14720	14740	14760	14780	14800	14820	14840	14860	14880	14900	14920	14940	14960	14980	15000	15020	15040	15060	15080	15100	15120	15140	15160	15180	15200	15220	15240	15260	15280	15300	15320	15340	15360	15380	15400	15420	15440	15460	15480	15500	15520	15540	15560	15580	15600	15620	15640	15660	15680	15700	15720	15740	15760	15780	15800	15820	15840	15860	15880	15900	15920	15940	15960	15980	16000	16020	16040	16060	16080	16100	16120	16140	16160	16180	16200	16220	16240	16260	16280	16300	16320	16340	16360	16380	16400	16420	16440	16460	16480	16500	16520	16540	16560	16580	16600	16620	16640	16660	16680	16700	16720	16740	16760	16780	16800	16820	16840	16860	16880	16900	16920	16940	16960	16980	17000	17020	17040	17060	17080	17100	17120	17140	17160	17180	17200	17220	17240	17260	17280	17300	17320	17340	17360	17380	17400	17420	17440	17460	17480	17500	17520	17540	17560	17580	17600	17620	17640	17660	17680	17700	17720	17740	17760	17780	17800	17820	17840	17860	17880	17900	17920	17940	17960	17980	18000	18020	18040	18060	18080	18100	18120	18140	18160	18180	18200	18220	18240	18260	18280	18300	18320	18340	18360	18380	18400	18420	18440	18460	18480	18500	18520	18540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#12	#13	#14	#15	#16	#17	#18	#19	#20	#21	#22	#23
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793	794	795	796	797	798	799	800	801	802	803	804
805	806	807	808	809	810	811	812	813	814	815	816
817	818	819	820	821	822	823	824	825	826	827	828
829	830	831	832	833	834	835	836	837	838	839	840
841	842	843	844	845	846	847	848	849	850	851	852
853	854	855	856	857	858	859	860	861	862	863	864
865	866	867	868	869	870	871	872	873	874	875	876
877	878	879	880	881	882	883	884	885	886	887	888
889	890	891	892	893	894	895	896	897	898	899	900
901	902	903	904	905	906	907	908	909	910	911	912
913	914	915	916	917	918	919	920	921	922	923	924
925	926	927	928	929	930	931	932	933	934	935	936
937	938	939	940	941	942	943	944	945	946	947	948
949	950	951	952	953	954	955	956	957	958	959	960
961	962	963	964	965	966	967	968	969	970	971	972
973	974	975	976	977	978	979	980	981	982	983	984
985	986	987	988	989	990	991	992	993	994	995	996
997	998	999	1000	1001	1002	1003	1004	1005	1006	1007	1008
1009	1010	1011	1012	1013	1014	1015	1016	1017	1018	1019	1020
1021	1022	1023	1024	1025	1026	1027	1028	1029	1030	1031	1032
1033	1034	1035	1036	1037	1038	1039	1040	1041	1042	1043	1044
1045	1046	1047	1048	1049	1050	1051	1052	1053	1054	1055	1056
1057	1058	1059	1060	1061	1062	1063	1064	1065	1066	1067	1068
1069	1070	1071	1072	1073	1074	1075	1076	1077	1078	1079	1080
1081	1082	1083	1084	1085	1086	1087	1088	1089	1090	1091	1092
1093	1094	1095	1096	1097	1098	1099	1100	1101	1102	1103	1104
1105	1106	1107	1108	1109	1110	1111	1112	1113	1114	1115	1116
1117	1118	1119	1120	1121	1122	1123	1124	1125	1126	1127	1128
1129	1130	1131	1132	1133	1134	1135	1136	1137	1138	1139	1140
1141	1142	1143	1144	1145	1146	1147	1148	1149	1150	1151	1152
1153	1154	1155	1156	1157	1158	1159	1160	1161	1162	1163	1164
1165	1166	1167	1168	1169	1170	1171	1172	1173	1174	1175	1176
1177	1178	1179	1180	1181	1182	1183	1184	1185	1186	1187	1188
1189	1190	1191	1192	1193	1194	1195	1196	1197	1198	1199	1200
1201	1202	1203	1204	1205	1206	1207	1208	1209	1210	1211	1212
1213	1214	1215	1216	1217	1218	1219	1220	1221	1222	1223	1224
1225	1226	1227	1228	1229	1230	1231	1232	1233	1234	1235	1236
1237	1238	1239	1240	1241	1242	1243	1244	1245	1246	1247	1248
1249	1250	1251	1252	1253	1254	1255	1256	1257	1258	1259	1260
1261	1262	1263	1264	1265	1266	1267	1268	1269	1270	1271	1272
1273	1274	1275	1276	1277	1278	1279	1280	1281	1282	1283	1284
1285	1286	1287	1288	1289	1290	1291	1292	1293	1294	1295	1296
1297	1298	1299	1300	1301	1302	1303	1304	1305	1306	1307	1308
1309	1310	1311	1312	1313	1314	1315	1316	1317	1318	1319	1320
1321	1322	1323	1324	1325	1326	1327	1328	1329	1330	1331	1332
1333	1334	1335	1336	1337	1338	1339	1340	1341	1342	1343	1344
1345	1346	1347	1348	1349	1350	1351	1352	1353	1354	1355	1356
1357	1358	1359	1360	1361	1362	1363	1364	1365	1366	1367	1368
1369	1370	1371	1372	1373	1374	1375	1376	1377	1378	1379	1380
1381	1382	1383	1384	1385	1386	1387	1388	1389	1390	1391	1392

TASK 3 - PART 1

#103	#411
TASK 3	TASK 3
Singular	Singular
Present	Present
SAD	SAD
The _____ clapping. was is were girls are girl	The _____ jumping. are is was boys were boy
1 The girls clapping. 2 The was is clapping. 3 The wha girl clapping. 4 The) clapping. 5 The girl was clapping. 6 The girl clapping. 7 The girl are was clapping. 8 The girl is clapping. 9 The girl clapping. 10 The is girl chair clapping.	(boys) The mos jumping. (The is jumping.) (boy is) The dog is jumping The boys jumping. The boy jumping. The boys is jumping. The running jumping. The is boy Jumping jumping.
11 The girl is clapping. 12 The girl was clapping. 13 The girl is clapping. 14 The was clapping. clapping. 15 The is was clapping clapping. 16 The girl clapping 17 The the girl is clapping. 18 The girl clapping clapping. 19 The girl clapping. 20 The gir is clapping	The is boy jumping. The si boy jumping. The boy is jumping. The was boy jumping. jumping. The was junping jumping. The was boy jumping. The is boy jumping. The is boys jumping. The boy jumping. The Jumping jumping.

() - pointed to particular words in list.

TASK 3 - PART 1

#103	#411
TASK 3	TASK 3
Singular	Singular
Present	Present
SAD	SAD
The _____ clapping. was is were girls are girl	The _____ jumping. are is was boys were boy
21 The clapping clapping.	The Jumping jumping.
22 The is girl clapping.	The boy jumping.
23 The girl is clapping.	The the doy jumping.
24 The is girl clapping.	The is boy jumping.
25 The girl is clapping.	The boy were jumping.
26 The was clapping.	The is Boy jumped jumping.
27 The girl is clapping.	The boy is jumping.
28 The hna is girls clapping.	The a bog jumping.
29 The gil clapping.	The is boys jumping.
30 The girl is clapping.	The boy is jumping.
31 The girl is clapping.	The is boy jumping.
32 The was girl clapping.	The was boy jumping.
33 The girl is clapping.	The boy is jumping.
34 The girl is clapping.	The boy are jumping.
35 The is girl clapping.	The boy jumping.
36 The girl was clapping.	The boy is jumping.
37 The is clapping clapping.	The boy is jumping.
38 The girl is clapping.	The boy is jumping.
39 The girl is clapping.	The boy is jumping.
40 The gril is clapping.	The boy is jumping.

() - pointed to particular words in list.

TASK 3 - PART 1

#307	#407
TASK 3	TASK 3
Singular	Singular
Present	Present
Y/N	Y/N
<p>_____ the _____ running? boy were are is boys</p>	<p>_____ the _____ jumping? girl girls was were are is</p>
<p>1 (is) 2 boy the _____ running? 3 (_____ the is running?) 4 (boy is) 5 <u>The boy is running the boy is running?</u> 6 boys the boy running? 7 Running the is boys running? 8 was running the _____ running? 9 Running the _____ running? 10 is the doy running?</p>	<p>(were) momom the _____ jumping? wha the Jumping jumping? (girls is) The girl is jumping the girl is jumping? girls the girl jumping? is are w the were jumping? girl was is the jumping? jumping? aawtt the _____ jumping? is the girl jumping?</p>
<p>11 boy the is running? 12 boys the boy running? 13 is the boy running? 14 was boys the running? running? 15 _____ the is dog running? 16 was the boy running? 17 _____ the is boy running? 18 _____ the is boys running? 19 Running the _____ running? 20 boy the _____ running?</p>	<p>girl the is jumping? was the girl jumping? is the girl jumping? was girl the jumping? jumping? _____ the is jumping? was the girl jumping? _____ the is girl jumping? _____ the is girls jumping? girl the _____ jumping? girls the _____ jumping?</p>

() - pointed to particular words in list

TASK 3 - PART 1

#307	#407
TASK 3	TASK 3
Singular	Singular
Present	Present
Y/N	Y/N
<div>boy</div> <div>were</div> <div>_____the_____running? was</div> <div>are</div> <div>is</div> <div>boys</div>	<div>girl</div> <div>girls</div> <div>_____the_____jumping? was</div> <div>were</div> <div>are</div> <div>is</div>
21 Running the _____ running? 22 Are the boy running? 23 Is the boy running? 24 is the boy running? 25 Is the boy running? 26 I the run running? 27 Are the boy running? 28 the the run dog running? 29 is the boys running? 30 Is the boy running	Jumping the _____ jumping? is the girl jumping? Is the girl jumping? is the girl jumping? was the girl jumping? Is the girl jumping? Is the girl jumping? Is the a girl jumping? is the girls jumping? Is the girl jumping?
31 The the is running? 32 was the boy running? 33 Is the boy running? 34 Are the boy running? 35 was the boy running? 36 Is the boy running? 37 was the boy running? 38 Is the boy running? 39 Is the boys running? 40 Is the boy running?	The the w is girl jumping? Is the girl jumping? Is the girl jumping? Are the girl jumping? was the girl jumping? Is the girl jumping? girl the is jumping? Is the girl jumping? Are the girl jumping? Is the girl jumping?

() - pointed to particular words in list

TASK 3 - PART 2

#315	#115
TASK 3	TASK 3
Singular	Singular
Past	Past
SAD	SAD
<p>The _____ sleeping. was arc were boys boy is</p>	<p>The _____ running. dog is arc was dogs were</p>
<p>1 (is) 2 The gom sleeping. 3 (was) 4 (was) 5 The boy was sleeping. 6 The boy sleeping. 7 The is boy si sleeping. 8 The boy sleeping sleeping. 9 The sleeping sleeping. 10 The was doy were sleeping.</p>	<p>(dog) The dog is running. The wha dog running. The d running. The dog was running. The dogs running. The dogs running. The dog was r running. The dog running. The was dog running.</p>
<p>11 The is boy sleeping 12 The is boy sleeping. 13 The boy was sleeping. 14 The was boys sleeping. sleeping. 15 The is boy sleeping. 16 The was boy sleeping. 17 The is boy sleeping. 18 The is girl sleeping. 19 The sleeping sleeping. 20 The was sleeping.</p>	<p>The is dogs running. The Dog running. The dog was running. The was running. running. The is was running running. The Dog running. The bog is running. The dogs was running. The dogs running. The dog running.</p>

TASK 3 - PART 2

#315	#115
TASK 3	TASK 3
Singular	Singular
Past	Past
SAD	SAD
<div> <div>was</div> <div>are</div> <div>were</div> <div>boys</div> <div>boy</div> <div>is</div> </div> <div>The _____ sleeping.</div>	<div> <div>dog</div> <div>is</div> <div>are</div> <div>was</div> <div>dogs</div> <div>were</div> </div> <div>The _____ running?</div>
<div>21 The sleeping sleeping.</div> <div>22 The boy sleeping.</div> <div>23 The the doy is sleeping.</div> <div>24 The was boy sleeping.</div> <div>25 The boy was sleeping.</div> <div>26 The Boy ^{milk} MllK cry sleeping.</div> <div>27 The boy was sleeping.</div> <div>28 The a bog sleeping.</div> <div>29 The is were sleeping.</div> <div>30 The boy was sleeping.</div>	<div>The walking running.</div> <div>The are dog running.</div> <div>The dog is running.</div> <div>The was bog running.</div> <div>The dog was running.</div> <div>The was running running.</div> <div>The was dog running.</div> <div>The was bog running.</div> <div>The is running.</div> <div>The dog was running.</div>
<div>31 The was boy sleeping.</div> <div>32 The is boy sleeping.</div> <div>33 The boy was sleeping.</div> <div>34 The boy were sleeping.</div> <div>35 The boy sleeping.</div> <div>36 The boy was sleeping.</div> <div>37 The is boy sleeping.</div> <div>38 The boy was sleeping.</div> <div>39 The boy was sleeping.</div> <div>40 The boy was sleeping.</div>	<div>The dog was running.</div> <div>The is dog running.</div> <div>The dog was running.</div> <div>The dog was running.</div> <div>The dog running.</div> <div>The dog was running.</div> <div>The was dog running.</div> <div>The dog was running.</div> <div>The dog is running.</div> <div>The dog was running.</div>

TASK 3 - PART 2

#415	#403
TASK 3	TASK 3
Singular	Singular
Past	Past
Y/N	Y/N
<p>_____ the _____ swimming? girls were girl was are is</p>	<p>_____ the _____ falling? are is was were boy boys</p>
<p>1 (girl) 2 moa the _____ swimming? 3 (is) 4 (girl) 5 The girl was swimming the girl was swimming? 6 Swimming the _____ swimming? 7 Bo the fole swimming? 8 girl was in the swimming swimming? 9 swimm the _____ swimming? 10 was the girl swimming?</p>	<p>(was) Bobobo the _____ falling? (was) (is) The boy was falling the boy was falling? boy the boys falling? is Falling the is is falling? is was the boy falling? Brda the _____ falling? was the doy fell falling?</p>
<p>11 girl the is swimming? 12 girl the was swimming? 13 was the girl swimming? 14 was girl the swimming? swimming? 15 _____ the is swimming swimming? 16 was the girl swimming? 17 _____ the is girl swimming? 18 _____ the is girls swimming? 19 girls the _____ swimming? 20 girls the _____ swimming?</p>	<p>boy the is falling? is the boy falling? was the boy falling? was boy the falling? falling? _____ the was falling? was the boy falling? _____ the is boy falling? _____ the is boys falling? Falling the _____ falling? Falling the _____ falling?</p>

TASK 3 - PART 2

[illegible]

TASK 3 - PART 3

#203	#303
TASK 3	TASK 3
Plural	Plural
Present	Present
Y/N	Y/N
<p>_____ the _____ running? are were was dogs is dog</p>	<p>_____ the _____ crying? was were girl is girls are</p>
<p>1 (dogs) 2 dog the me running? 3 wha the dog running? 4 bogs the dog running? 5 The dog is running the _____ running? 6 dog the dogs running? 7 dog is are the dogs were running? 8 was dog the _____ running? 9 the the _____ running? 10 is the dog running?</p>	<p> (is) was the _____ crying? (is) (was) The girl is crying the girl is crying? girls the girl crying? are girls were the is girl crying? was girl the _____ crying? crying the _____ crying? is the girl crying?</p>
<p>11 dog the is running? 12 _____ the dogs running? 13 is the dogs running? 14 was dogs the running running? 15 _____ the is dogs running? 16 was the dog running? 17 is the dog running? 18 _____ the is dogs running? 19 doy the _____ running? 20 dog the _____ running?</p>	<p>girl the is crying? girl the is crying? is the girls crying? was girl the cryings crying? _____ the is girl crying? war the girl crying? _____ the is girl crying? _____ the is girls crying? crying the _____ crying? weri the _____ crying?</p>

TASK 3 - PART 3

# 203	# 303
TASK 3	TASK 3
Plural	Plural
Present	Present
Y/N	Y/N
<p>_____ the _____ running? are were was dogs is dog</p>	<p>_____ the _____ crying? was were girl is girls are</p>
<p>21 Was the are running? 22 was the bogs running? 23 Is the was running? 24 is the dog running? 25 was the dogs running? 26 Is the was dogs running? 27 Is the dog running? 28 Wra the was dog running? 29 is the dog running? 30 Is the dogs running?</p>	<p>Boys the _____ crying? Is the giril crying? Is the gril crying? is the girl crying? was the girl crying? Is the cry crying? ARE the GIRL crying? was the girl crying? is the were crying? Is the girls crying?</p>
<p>31 dogs the is running? 32 was the bog running? 33 Is the dog running? 34 Is the dogs running? 35 was the dog running? 36 was the dog running? 37 is the dog running? 38 is the dog running? 39 is the dog running? 40 Is the dog running.</p>	<p>The is the girls crying? Is the girl crying? Is the girls crying? Is the girls crying? was the girls crying? were the girls crying? is the girls crying? Is the girls crying? Is the girls crying? Is the grils crying?</p>

TASK 3 - PART 3

# 207	# 311
TASK 3	TASK 3
Plural	Plural
Present	Present
SAD	SAD
<p>The _____ swimming. is girls were are was girl</p>	<p>The _____ falling. were was are boy boys is</p>
<p>1 (girl)</p> <p>2 The Door swimming.</p> <p>3 The girl swimming.</p> <p>4 The w re girl swimming.</p> <p>5 The girls is swimming.</p> <p>6 The girl swimming.</p> <p>7 The swimming swimming.</p> <p>8 The girl swimming swimming.</p> <p>9 The swimming swimming.</p> <p>10 The is girl swimming swimming.</p>	<p>(is)</p> <p>The Falll falling.</p> <p>(is)</p> <p>(is)</p> <p>The boy is falling.</p> <p>The boy falling.</p> <p>The is boys boy falling.</p> <p>The [boy falling falling.</p> <p>The tBBrna falling.</p> <p>The is doy fell falling.</p>
<p>11 The is girl swimming.</p> <p>12 The is was girl swimming.</p> <p>13 The girls is swimming.</p> <p>14 The was girls swimming.</p> <p>15 The is was swimming.</p> <p>16 The was goirl swimming.</p> <p>17 The is girl swimming.</p> <p>18 The girls is swimming.</p> <p>19 The Swimming swimming.</p> <p>20 The girls swimming.</p>	<p>The is boy falling.</p> <p>The was boy falling.</p> <p>The boys is falling.</p> <p>The was boys falling. falling.</p> <p>The is was falling.</p> <p>The was boy falling.</p> <p>The is boy falling.</p> <p>The is bays falling.</p> <p>The Falling falling.</p> <p>The boys falling.</p>

TASK 3 - PART 3

#207	#311
TASK 3	TASK 3
Plural	Plural
Present	Present
SAD	SAD
The _____ swimming. is girls were are was girl	The _____ falling. were was are boy boys is
21 The swimming swimming.	The Falling falling.
22 The girl swimming.	The boy falling.
23 The girls is swimming.	The doys is falling.
24 The is girl swimming.	The is boy falling.
25 The grils were swimming.	The boys is falling.
26 The was are swimming.	The Is Boy falling.
27 The Is girl swimming.	The Are boy falling.
28 The was girl swimming.	The ar a dog falling.
29 The is swimming.	The is boy falling.
30 The girls is swimming.	The boys is falling.
31 The girl was swimming.	The is Falling falling.
32 The is girl swimming.	The was boy falling.
33 The girls is swimming.	The boys is falling.
34 The girls are swimming.	The boy are falling.
35 The girls swimming.	The boys falling.
36 The girls are swimming.	The boys is falling.
37 The is girls swimming.	The is boys falling.
38 The girls was swimming.	The boys is falling.
39 The girls are swimming.	The boys is falling.
40 The gril is swimming.	The boys is falling.

TASK 3 - PART 4

#107	#211
TASK 3	TASK 3
Plural	Plural
Past	Past
Y/N	Y/N
<p>_____ the _____ sleeping? boys is are were boy was</p>	<p>_____ the _____ laughing? girls was is were girl</p>
<p>1 sleeping the nonon sleeping? 2 DDBR the MTB sleeping? 3 was the boy are sleeping? 4 _____ the _____ s sleeping? 5 The boys was sleeping the boy was sleeping? 6 boys the _____ sleeping? 7 was boy the were is boys sleeping? 8 boy girl the was sleeping? 9 _____ the (boys) syob sleeping? 10 was the doys sleeping?</p>	<p>(girl were) ol the ol laughing? wha the girl laughing? ars the is laughing? _____ the girls was laughing? girl the girls laughing? girl were the is are was laughing? girl was the _____ laughing? girls the _____ laughing? was the girl laughing?</p>
<p>11 was the boy sleeping? 12 Is the sleeping sleeping? 13 was the boys sleeping? 14 was the sleeping sleeping? 15 _____ the is sleeping sleeping? 16 was the boys sleeping? 17 I the boy sleeping? 18 was the boys sleeping? 19 is the are sleeping? 20 were the _____ sleeping?</p>	<p>girl the is laughing? was the sitting laughing? was the girls laughing? was girl the _____ laughing? _____ the was laughing? was the girl laughing? is the girl laughing? was the is girls laughing? Laughing the _____ laughing? girls the _____ laughing?</p>

TASK 3 - PART 4

#107	#211
TASK 3	TASK 3
Plural	Plural
Past	Past
Y/N	Y/N
<p>_____ the _____ sleeping? boys is are were boy was</p>	<p>_____ the _____ laughing? girls was are is were girl</p>
<p>21 sleeping the _____ sleeping? 22 A the was boys sleeping? 23 Is the sleeping sleeping? 24 was the boy sleeping? 25 were the boys sleeping? 26 is the _____ sleeping? 27 was the boys sleeping? 28 was the boy sleeping? 29 is the _____ sleeping? 30 was the boys sleeping?</p>	<p>is the are laughing? (are) are the girls laughing? Is the girl laughing? was the girl laughing? was the girls laughing? Is the girl laughing? was the girl laughing? lonah the girl laughing? is the _____ laughing? was the girls laughing?</p>
<p>31 boy was the _____ sleeping? 32 Is the boy sleeping? 33 was the boys sleeping? 34 was the boys sleeping? 35 was the boy sleeping? 36 were the boy was sleeping? 37 boys the is sleeping? 38 are the boys sleeping? 39 Is the boys sleeping? 40 Are the boys sleeping?</p>	<p>The the girl is laughing? was the girl laughing? was the girls laughing? was the girls laughing? was the girls laughing? was the girls laughing? was the boy laughing? was the girl laughing? was the girls laughing? Was the grils laughing?</p>

TASK 3 - PART 4

#215	#111
TASK 3	TASK 3
Plural	Plural
Past	Past
SAD	SAD
The _____ sleeping. dogs is were are dog was	The _____ crying. boy is are was were boys
1 (dog) 2 The ODR sleeping. 3 The wha dog sleeping. 4 The were was sleeping. 5 The dog was sleeping. 6 The dog dog sleeping. 7 The dogs is sleeping. 8 The dog is sleeping. 9 The Dog sleeping. 10 The was bog were sleeping.	The nonnono crying. The O10B crying. The wha crying. The 3 crying. The boys was crying. The boys crying. The Boys crying. The was boys crying. The crying crying. The was doy crying crying.
11 The is dog sleeping. 12 The was dog sleeping. 13 The dog was sleeping. 14 The was sleeping sleeping. 15 The is dogs sleeping. 16 The was dogs sleeping. 17 The is dog sleeping. 18 The dog was sleeping. 19 The dog sleeping. 20 The dog sleeping.	The is boy crying. The crying crying. The boys was crying. The was boys crying crying. The is boy crying crying. The was boy crying. The _____ crying. The boys was crying. The crying crying. The boy crying.

TASK 3 - PART 4

#215	#111
TASK 3	TASK 3
Plural	Plural
Past	Past
SAD	SAD
The _____ sleeping. dogs is were are dog was	The _____ crying. boy is are was were boys
21 The is bol ^(dog) sleeping.	The boys crying.
22 The bog are sleeping.	The is boys crying.
23 The dogs is sleeping.	The boy is crying crying.
24 The was dog sleeping.	The was boy crying.
25 The dog are sleeping.	The boys were crying.
26 The is are dog sleeping.	The is Boy crying.
27 The was dog sleeping.	The was boys crying.
28 The was bogs sleeping.	The is han boy crying.
29 The is sleeping.	The is crying.
30 The dogs was sleeping.	The boys was crying.
31 The was dogs sleeping.	The boys was crying.
32 The was dog sleeping.	The is boy crying.
33 The dogs was sleeping.	The boys was crying.
34 The dogs was sleeping.	The boys was crying.
35 The dogs sleeping.	The is boys crying.
36 The dogs was sleeping.	The boys was crying.
37 The is dogs sleeping.	The was boys crying.
38 The dogs was sleeping.	The boys was crying.
39 The dogs was sleeping.	The boys was crying.
40 The dogs were sleeping.	The boy was crying.

TASK 4 - PART 1

#316	#416
TASK 4	TASK 4
Singular	Singular
Present	Present
Y/N	Y/N
Is the boy drinking?	Is the boy walking?
1 (drinking) 2 OPO ? 3 Wha Drinking? 4 (drinking) 5 The boy is Drinking? 6 Drimking? 7 is Drinking? 8 Drinking Is? 9 Drinking? 10 is the doy Drinking?	(boy walking) MOD ? Wha walking? walking? The boy is walked? walking? NOW walking is was? walking? is the boy walk?
11 The is boy? 12 The was Drinking? 13 is boy Drinking? 14 was Drinking? 15 the is Drinking? 16 was boy? 17 the Drinking is boy? 18 The is Dririnkgl? 19 Drinking? 20 Drinking?	The is boy? The is boy walking? is boy walking? was boy walking? The is walking? was boy? The walking is boy? The is walking? walking? Walking?

TASK 4 - PART 1

#316	#416
TASK 4	TASK 4
Singular	Singular
Present	Present
Y/N	Y/N
Is the boy drinking?	Is the boy walking?
21 Drinking? 22 the boy Drinking? 23 Is the boy Drinking? 24 is the boy Drinking? 25 Is the boy Drinking? 26 Is Boy Mike Milk? 27 The boy is Drinking? 28 The a bog? 29 is were 30 Is boy Drinking?	walking? the boy walking? Is the boy walking? the boy is Walking? Is the boy walking? Is Malk Boy? (walk) The boy is walking? The a bog? ? is worl (work)(walk) Is boy walking?
31 The is Drinking? 32 was the boy Drinking? 33 The boy is Drinking? 34 Are the boy Drinking? 35 The boy Drinking? 36 the boy is clapping? 37 The is boy Drinking? 38 is the boy Drinking? 39 Is The boy Drinking? 40 Is the boy drinking?	The walking boy is? was the boy walking? The boy is walking? Is the boy walking? The boy is walking? the boy walking? is the boy walking? is the boy walking? Is The boy walking? Is the boy walking?

TASK 4 - PART 1

#204	#208
TASK 4	TASK 4
Singular	Singular
Present	Present
SAD	SAD
The girl is eating	The girl is falling.
1 (eating) 2 morro 3 Wha Eating. 4 Now 5 The girl is Eating. 6 Girls 7 Eating. 8 Is is Eating. 9 Eating. 10 is the girl eating.	(falling) OOP Wha Falling. Falling. The girl is Falling. Girls Falling is. Falling. Ciri is the girl fell.
11 The is girl. 12 Tha 13 The apple is Eating. 14 Was Eating. 15 The is Eating. 16 was qoy (girl) 17 the Eating is 18 Is The gir Eating. 19 Eating. 20 Eating.	The is girl. The wsa Falling. The girl is Falling. was Falling. The is Falling. was gourl. the Falling is girl. the girl Falling. Falling. Girl

TASK 4 - PART 1

#204	#208
TASK 4	TASK 4
Singular	Singular
Present	Present
SAD	SAD
The girl is eating.	The girl is falling.
21 Eating. 22 the Eating girls. 23 The Eating girl. 24 is The girl. 25 Is the gril Eating. 26 Was The ate. 27 Is the girl Eating. 28 The wes Eating. 29 is Eating. 30 The girl is Eating.	Falling. the girl Falling. The girl Falling. is The girl. Is the gril Falling. The jump. Is the girl Falling. The bnu girl. is p The girl is Falling.
31 (g) Girl was. 32 was the girl eating. 33 The girl is eating. 34 The girl is eating. 35 The girl Eating. 36 The girl eating. 37 is the girl eating. 38 the girl is foot. 39 The girl is eating. 40 The gril is eating.	Falling was. The is girl falling. The girl is falling. The girl is falling. The girl Falling. the girl is falling. The is girl Falling. the girl was fell. The girl is falling. The gril is falling.

TASK 4 - PART 2

#312	#212
TASK 4	TASK 4
Singular	Singular
Past	Past
SAD	SAD
The boy was clapping.	The girl was skipping.
1 (clapping) 2 nolol 3 (clapping) 4 (clapping) 5 The boy was Clapping. 6 clapping. 7 clapping. 8 clapping was. 9 clapping. 10 was the doy clapping.	(skipping) oBdo wha skipping. skpping. The girl was skipping. skipping. skipping. skipping. skipping. was the girl skipping.
11 The is boy. 12 The is clapping. 13 The boys sitting. 14 was clapping. 15 The is clapping. 16 was boy. 17 The clapping is boy. 18 The is clapping. 19 Clapping. 20 clopping.	The is girl. The is skipping. The girl was skipping. was skipping. The is skipping. was girl. the gril skipping. The is girl was skipping. SKipping. skipping.

TASK 4 - PART 2

#312	#212
TASK 4	TASK 4
Singular	Singular
Past	Past
SAD	SAD
The boy was clapping.	The girl was skipping.
21 clapping. 22 the boy clapping. 23 The the doy is clapping. 24 was the boy clapping. 25 The boy was clapping. 26 Is Malk ^(walk) Milk Boy. 27 The boy was clapping. 28 The a bog. 29 is boy 30 The boy was clapping.	skipping. the girl skipping. Is girl skipping. was The girl The gril was skipping. Is was skipping. was the girl skipping. Is olnuri girl. is The girl was skipping.
31 The was clapping. 32 Is The boy Falling. 33 The boy was clapping. 34 The boy was clapping. 35 The boy clapping. 36 the boy was clapping. 37 The was boy clpping. 38 The boy was capping. 39 The boy was clapping. 40 The boy was clapping.	The is girl swimming. The is girl skipping. The girl was skipping. The girl was skipping. The girl SKipping. the girl was skipping. was the girl skipping. The girl was skipping. The girl was Skipping. Was the gril skipping.

TASK 4 - PART 2

#404	#104
TASK 4	TASK 4
Singular	Singular
Past	Past
Y/N	Y/N
Was the girl sitting?	Was the girl crying?
1 (skipping) 2 Boyd? 3 Wha Drinking? 4 (clapping) 5 the girl was sitting? 6 Girls? 7 is Before? 8 girl was is? 9 Burda? 10 was the girl sitting?	crying? doyob Wha Girl? o ? The girl was crying? Girls? me crying? girl was crying? Before? the was girl crying?
11 The is girl? 12 The is sitting? 13 was girl sitting? 14 was sitting? 15 The is Girl? 16 was goll (girl)? 17 The skillpping is girl? 18 The is girl? 19 NR 20 Girl?	The girl is crying? The crying? was the girl crying? was crying? The crying? crying? The girl is crying? was crying? girl crying? Girl?

TASK 4 - PART 2

#104	#104
TASK 4	TASK 4
Singular	Singular
Past	Past
Y/N	Y/N
Was the girl sitting?	Was the girl crying?
21 sitting? 22 the gril sitting? 23 Is the girl sitting? 24 the girl was sitting? 25 were the girl sitting? 26 is Boy? 27 Was the girl sitting? 28 the a girl? 29 is are 30 was girl sitting?	crying? the is girl crying? Is crying girl? the was girl? The girl was crying? The ? Was the girl crying? The is girl? Before was girl crying?
31 The sitting was? 32 Is the girl sitting? 33 The girl was sitting? 34 were the girl sitting? 35 The girl is sitting? 36 The girl was sitting? 37 was the gril sitting? 38 was the girl sitting? 39 was the girl sitting? 40 was the girl sitting?	was crying? was the crying? The girl was crying? The girl was crying? was the girl crying? The girl was crying? The was crying? The girl was crying? Was the girl crying? The gril was crying?

TASK 4 - PART 3

# 304	# 108
TASK 4	TASK 4
Plural	Plural
Present	Present
Y/N	Y/N
Are the girls clapping?	Are the boys running?
1 (clapping) 2 Bro 3 wha clapping? 4 (clapping) 5 The girls is Clapping? 6 Girls? 7 DrinkiAg is? 8 Claing is was? 9 Cla ^q ing 10 is the girl clapping?	no nnoun BMOOM wha Jumping? A ? The bays is running? Running? 108 was is boy Running? Walking? is the doy Running?
11 The is girl? 12 The was clapping? 13 is girls sitting? 14 was clapping? 15 The is clapping? 16 tho god 17 The clapping is girl? 18 The is girls clapping? 19 Clapping. 20 Boy?	The is boy? The Running? is The boys running? was Running? The is Jumping? Is boy? the boy Running? Running? Running? Boy?

TASK 4 - PART 3

#304	#108
TASK 4	TASK 4
Plural	Plural
Present	Present
Y/N	Y/N
Are the girls clapping?	Are the boys running?
21 Clapping? 22 the girl clapping? 23 Is the girl clapping? 24 the is girl Clapping? 25 Is the girls clapping? 26 Is was Girl? 27 ARE THE GIRL CLAPPING? 28 The lauaul girl? 29 is were? 30 Is girls Clapping?	Running? the is boys running? was boy running? the is boy? were the boys running? The is Running? Is the boys Running? Is The ran? is? Is boys running?
31 The is Girls sitting? 32 was the girl clapping? 33 The girls is clapping? 34 Is the girls clapping? 35 The girls Clapping? 36 the girls is clapping? 37 is the girls clapping? 38 Is the girls clapping? 39 Is the girls clapping? 40 Is the grils clapping?	boy Running? was the boy running? The boys is Running? was The boys running? Was The doy? The Boys is running? boys the is Running? the boy was the Running? Is the boys running? Are boy running?

TASK 4 - PART 3

#216	#412
TASK 4	TASK 4
Plural	Plural
Present	Present
SAD	SAD
The boys are drinking.	The girls are falling.
1 (drinking) 2 doDo 3 wha Drinking. 4 Drinkig Boys. 5 The boy is Drinking. 6 Drinking. 7 Drinking is Lorraine. 8 boy Is Drinking. 9 Drinking. 10 is the doy Drinking.	(clapping) TOVO wha Falling. (falling) The girl is Falling. Girls. NOW girl is was Falling. BBrraa is the girl fell.
11 The is boy. 12 The is Drinking. 13 The boys is sitting. 14 was Drinking. 15 The is Drinking. 16 was boy. 17 The boy Drinking. 18 The is Drinking 19 Drinking. 20 Drinking.	The is girl. The girl Falling. The girl is falling. was Falling. The is Falling. (girl) was goul boy. The is girl. The is grls. Falling. Girls.

TASK 4 - PART 3

#216	#412
TASK 4	TASK 4
Plural	Plural
Present	Present
SAD	SAD
The boys are drinking.	The girls are falling.
21 Drinking. 22 the boy Are Drinking. 23 The doys is Drinking. 24 is the boy. 25 were the boys drinking. 26 Is is Milk Boy. 27 Is the boy Drinking. 28 Is was boy. 29 is 30 The boys is Drinking.	Falling. the gril Falling. The the girls Falling. The girl is Falling. The girls is Falling. Is the Boy Girl. The girl is Falling. Is girls. is byoic The girls is Falling.
31 The is Drinking Boys. 32 The is boy Drinking. 33 The boys is Drinking. 34 The boys is Drinking. 35 The boys Drinking. 36 The boys drinking. 37 The is boy Drinking. 38 the boy was Drinking. 39 The boys is drinking. 40 The boy was Drinking.	The Falling is. The was filling. The girls is falling. The girl is falling. The girls Falling. the girls is falling. The girls is falling. The girls is falling. The girl is falling. The grils is falling.

TASK 4 - PART 4

#116	#408
TASK 4	TASK 4
Plural	Plural
Past	Past
SAD	SAD
The girls were running.	The dogs were sitting.
1 bonononono 2 ADbbb 3 wha running. 4 A 5 The girls was running. 6 Girls 7 Boys 8 girl was running. 9 Girl 10 Was girl Running.	(dogs) Ojoodlm wha Dog. (dogs) The dogs was. Dogs Before dog is was sittin DOAS was the bogs.
11 The is girl 12 The Running. 13 The girls was running. 14 The was Girl Running. 15 The is Jumping. 16 skplng. 17 The girl Running. 18 was Running. 19 Running. 20 Girls.	The is dag. The dogs sitting. The dogs was three. was Dogs. The was boys. was Dogs. The Dogs is three. The is Dogs. Dogs. Dogs.

TASK 4 - PART 4

#116	#408
TASK 4	TASK 4
Plural	Plural
Past	Past
SAD	SAD
The girls were running.	The dogs were sitting.
21 Running. 22 the ars girls running. 23 Is girl is Running. 24 Was the girl. 25 The girls were running. 26 The was girl. 27 was the girl Running. 28 The is girl. 29 Before 30 The girls was running.	Dogs. the bog Dogs. The the dog. the dog was. The dogs was sitting. Is the dogs. The dog was sitting. was bogs. is grils. The dogs was sitting.
31 Running girls. 32 The was girl Running. 33 The girls was Running. 34 The girl was running. 35 The girls is Jumping. 36 The girls was running. 37 The was Girls Running. 38 the girl Jumping. 39 The girl was running. 40 Was the grils running.	The Dogs was. The is Dogs sitting. The dogs was sitting. The dog was sitting. The dogs is sitting. The dogs sitting. Was the dog sitting. the dog was sitting. The dogs was sitting. The dog was sitting.

TASK 4 - PART 4

#308	#112
TASK 4	TASK 4
Plural	Plural
Past	Past
Y/N	Y/N
Were the boys walking?	Were the girls jumping?
1 (walking) 2 crying? 3 (walking) 4 (walking) 5 The boys was walking? 6 Boy? 7 Boys is? 8 walking is was? 9 walking? 10 was the doy walking?	Bononono? oblo wha running? Jumping? The girls was jumping? Girls? Jumping? was girl is? Girls? was the girl Jumping?
11 The is boy? 12 The is walking? 13 was boys walking? 14 was walking? 15 The is walking? 16 boy was? 17 The walking is boy? 18 The is walking? 19 Walking? 20 Boys?	The is girl? The Jumping? was the girls Jumping? The was Girl? The is Girl? goe ? the Running? was Jumping? Jumping? Girls?

TASK 4 - PART 4

#308	#112
TASK 4	TASK 4
Plural	Plural
Past	Past
Y/N	Y/N
Were the boys walking?	Were the girls jumping?
21 Walking? 22 the boy walking? 23 Is the doys walking? 24 was the boy walking? 25 was the boys walking? 26 Is Malk (walk)? 27 The boy was walking? 28 the wake Dog? 29 is boyy? 30 was boys walking?	Falling? the is girls jumping? Is girl Jumping? was the girl? Are the girls jumping? The is girl? Was the girl Jumping? Is girl? Before was girls Jumping?
31 the was walking? 32 was the boy walking? 33 The doys was walking? 34 were the boys walking? 35 the boys walking? 36 the boys was walking? 37 was the boys walking? 38 was the boys walking? 39 Was the boys walking? 40 The boy was walking?	Girl Jumping? was the girl Jumping? The girl was Jumping? was the girls jumping? The girls? The girls was jumping? The was Girls jumping? the girl was Jumping? Was the girl jumping? Was the grils jumping?

APPENDIX H

SUMMARY OF TASK 3 AND 4 RESPONSES

FOR SELECTED SUBJECTS

() - indicates subject pointed
to that particular word

Correct Model

	103	33	The girl is clapping.
	411	34	The boy is jumping.
	307	35	Is the boy running?
	407	36	Is the girl jumping?
T	315	37	The boy was sleeping.
	115	38	The dog was running.
A	415	39	Was the girl swimming?
S	403	40	Was the boy falling?
K	207	41	The girls are swimming.
	311	42	The boys are falling.
3	203	43	Are the dogs running?
	303	44	Are the girls crying?
	215	45	The dogs were sleeping.
	111	46	The boys were crying.
	107	47	Were the boys sleeping?
	211	48	Were the girls laughing?
	204	49	The girl is eating.
	208	50	The girl is falling.
	316	51	Is the boy drinking?
T	416	52	Is the boy walking?
A	312	53	The boy was clapping.
S	212	54	The girl was skipping.
	404	55	Was the girl sitting?
K	104	56	Was the girl crying?
4	216	57	The boys are drinking.
	412	58	The girls are falling.
	304	59	Are the girls clapping?
	108	60	Are the boys running?
	116	61	The girls were running.
	408	62	The dogs were sitting.
	308	63	Were the boys walking?
	112	64	Were the girls jumping?

#5			#6	
T A S K 3	103	33	The girl was clapping.	The girl clapping.
	411	34	The dog is jumping.	The boys jumping.
	307	35	the boy is running the boy is running?	boys the boy running?
	407	36	The girl is jumping the girl is jumping?	girls the girl jumping?
	315	37	The boy was sleeping.	The boy sleeping.
	115	38	The dog was running.	The dogs running.
	415	39	The girl was swimming the girl was swimming?	swimming the swimming?
	403	40	The boy was falling the boy was falling?	boys the boy falling?
	207	41	The girls is swimming.	The girl swimming.
	311	42	The boy is falling.	The boy falling.
	203	43	The dog is running the running?	dog the dogs running?
	303	44	The girl is crying the girl is crying?	girls the girl crying?
	215	45	The dog was sleeping.	The dog dog sleeping.
	111	46	The boys was crying.	The boys crying.
	107	47	The boys was sleeping the boy was sleeping?	boys the sleeping?
	211	48	_____ the girls was laughing?	girl the girls laughing?

T A S K 4	204	49	The girl is Eating.	Girls.
	208	50	The girl is Falling.	Girls.
	316	51	The boy is Drinking?	Drimking?
	416	52	The boy is walked?	Walking?
	312	53	The boy was Clapping.	clapping.
	212	54	The girl was skipping.	skipping.
	404	55	the girl was sitting?	Girls?
	104	56	The girl was crying?	Girls?
	216	57	The boy is Drinking.	Drinking.
	412	58	The girl is Falling.	Girls.
	304	59	The girls is clapping?	Girls?
	108	60	The bays is running?	Running?
	116	61	The girls was running.	Girls.
	408	62	The dogs was	Dogs.
	308	63	The boys was walking?	Boy?
	112	64	The girls was jumping?	Girls?

#16			#19
T A S K 3	103	33 The girl clapping.	The girl clapping.
	411	34 The was boy jumping.	The boy jumping.
	307	35 Was the boy running?	Running the running?
	407	36 Was the girl jumping?	girl the jumping.
	315	37 The was boy sleeping.	The sleeping sleeping.
	115	38 The Dog running.	The dogs running.
	415	39 Was the girl swimming?	girls the swimming?
	A 403	40 Was the boy falling?	Falling the falling?
	S 207	41 The was goirl swimming.	The Swimming swimming.
	K 311	42 The was boy falling.	The Falling falling.
	203	43 Was the dog running?	doy the running?
	303	44 War the girl crying?	crying the crying?
	215	45 The was dogs sleeping.	The dog sleeping.
	111	46 The was boy crying.	The crying crying.
	107	47 Was the boys sleeping?	is the are sleeping?
	211	48 Was the girl laughing?	Laughing the laughing?
T A S K 4	204	49 Was goul (girl)	Eating.
	208	50 Was gourl.	Falling.
	316	51 Was boy?	Drinking?
	416	52 Was boy?	Walking?
	312	53 Was boy.	Clapping.
	A 212	54 Was girl.	Skiping.
	S 404	55 Was goll? (girl)	NR. (couldn't find vb.)
	K 104	56 crying?	girl crying?
	216	57 Was boy.	Drinking.
	412	58 Was goul boy.	Falling.
	304	59 tho god.	Clapping?
	108	60 Is boy?	Running?
	116	61 skpllng	Running.
	408	62 Was Dogs	Dogs.
	308	63 boy was?	Walking?
	112	64 gor?	Jumping?

#24			#30
T A S K 3	103	33 The is girl clapping.	The girl is clapping.
	411	34 The is boy jumping.	The boy is jumping.
	307	35 is the boy running?	Is the boy running?
	407	36 is the girl jumping?	Is the girl jumping?
	315	37 The was boy sleeping.	The boy was sleeping.
	115	38 The was bog running.	The dog was running.
	415	39 Was the girl swimming?	Was the girl swimming?
	403	40 Was the boy falling?	was the boy falling?
	207	41 The is girl swimming.	The girls is swimming.
	311	42 The is boy falling.	The boys is falling.
	203	43 is the dog running?	Is the dogs running?
	303	44 is the girl crying?	Is the girls crying?
	215	45 The was dog sleeping.	The dogs was sleeping.
	111	46 The was boy crying.	The boys was crying.
	107	47 Was the boy sleeping?	was the boys sleeping?
	211	48 Was the girl laughing?	was the girls laughing?
T A S K 4	204	49 is The girl.	The girl is Eating.
	208	50 is The girl	The girl is Falling.
	316	51 is the boy Drinking?	Is boy Drinking?
	416	52 the boy is Walking?	Is boy Walking?
	312	53 was the boy clapping.	The boy was clapping.
	212	54 was The girl.	The girl was skipping.
	404	55 the girl was sitting?	was girl sitting?
	104	56 the was girl?	was girl crying?
	216	57 is the boy.	the boys is Drinking.
	412	58 the girl is Falling.	The girls is Falling.
	304	59 the is girl Clapping?	Is girls Clapping?
	108	60 the is boy?	Is boys running?
	116	61 was the girl.	The girls was running.
	408	62 the dog was	The dogs was sitting.
	308	63 was the boy walking?	was boys walking?
	112	64 was the girl?	was girls Jumping?

#33		#40	
T A S K 3	103 33	The girl is clapping.	The gril is clapping.
	411 34	The boy is jumping.	The boy is jumping.
	307 35	Is the boy running?	Is the boy running?
	407 36	Is the girl jumping?	Is the gril jumping?
	315 37	The boy was sleeping.	The boy was sleeping.
	115 38	The dog was running.	The dog was running.
	415 39	Was the girl swimming?	Was the gril swimming?
	403 40	Was the boy falling?	Was the boy falling?
	207 41	The girls is swimming.	The gril is swimming.
	311 42	The boys is falling.	The boys is falling.
	203 43	Is the dog running?	Is the dog running?
	303 44	Is the girls crying?	Is the grils crying?
	215 45	The dogs was sleeping.	The dogs were sleeping.
	111 46	The boys was crying.	The boy was crying.
T A S K 4	107 47	Was the boys sleeping?	Are the boys sleeping?
	211 48	Was the girls laughing?	was the grils laughing?
	204 49	The girl is eating.	The gril is eating.
	208 50	The girl is falling.	The gril is falling.
	316 51	The doy is Drinking?	Is the boy Drinking?
	416 52	The boy is walking?	Is the boy walking?
	312 53	The boy was clapping.	The boy was clapping.
	212 54	The girl was skiping.	Was the gril skipping.
	404 55	The girl was sitting?	Was the girl sitting?
	104 56	The girl was crying?	The gril was crying?
	216 57	The boys is Drinking.	The boy was drinking.
	412 58	The girls is falling.	The grils is falling.
	304 59	The girls is clapping?	Is the grils clapping?
	108 60	The boys is Running?	Are boy running?
116 61	The girls was Running.	Was the grils running.	
408 62	The dogs was sitting.	The dog was sitting.	
308 63	The doys was walking?	The boy was walking?	
112 64	The girl was Jumping?	Was the grils jumping?	

APPENDIX I

SUMMARY ANOVA INCLUDING EXAMINER AS A FACTOR

Summary of Analysis of Variance

Source	df	Mean Square	Error Term	F
MEAN ^a	1	181.6891	R(AX)	234.9711
A ^b	3	7.4838	R(AX)	9.6786 **
B ^c	3	15.1046	BR(AX)	98.1129 **
C ^d	1	36.5765	CR(AX)	60.8242 **
D ^e	1	.3062	DR(AX)	2.0992
E ^f	1	.1562E-02	ER(AX)	0.0081
X(A) ^g	4	3.7945	R(AX)	4.9073 **
AB	9	.5841	BR(AX)	3.7947 **
AC	3	4.0213	CR(AX)	6.6872 **
BC	3	.4463	BCR(AX)	2.5315
AD	3	.3072	DR(AX)	2.1063
BD	3	.1593	BDR(AX)	1.2436
CD	1	.9179E-05	CDR(AX)	0.0001
AE	3	.2588	ER(AX)	1.3347
BE	3	.2963	BER(AX)	1.7988
CE	1	.7956E-01	CER(AX)	0.3051 **
DE	1	1.406	DER(AX)	16.1822 **
R(AX) ^h	32	.7732		
BX(A)	12	.1736	BR(AX)	1.1282
CX(A)	4	2.4976	CR(AX)	4.1534 **
DX(A)	4	.4007	DR(AX)	2.7471 *
EX(A)	4	.1289	ER(AX)	0.6647
ABC	9	.1453	BCR(AX)	0.8242
ABD	9	.2201	BDR(AX)	1.7178
ACD	3	.2218	CDR(AX)	1.5290
BCD	3	.5728E-01	BCDR(AX)	0.5518
ABE	9	.8559E-01	BER(AX)	0.5196
ACE	3	.4219E-01	CER(AX)	0.1681
BCE	3	.1713	BCER(AX)	1.2621
ADE	3	.2072	DER(AX)	2.3854 **
BDE	3	.5635	BDER(AX)	4.0714 **
CDE	1	.5624E-01	CDER(AX)	0.5028
BR(AX)	96	.1539		
CR(AX)	32	.6013		
DR(AX)	32	.1458		
ER(AX)	32	.1939		
BCX(A)	12	.2538	BCR(AX)	1.4399
BDX(A)	12	.2070	BDR(AX)	1.6154
CDX(A)	4	.3203E-01	CDR(AX)	0.2207
EEX(A)	12	.1476	BER(AX)	0.8963
CEX(A)	4	.8203E-01	CER(AX)	0.3269
DEX(A)	4	.1882	DER(AX)	2.1667

Summary of Analysis of Variance (cont.)

Source	df	Mean Square	Error Term	F
ABCD	9	.1694	BCDR(AX)	1.6317
ABCE	9	.1161	BCER(AX)	0.8552
ABDE	9	.1548	BDER(AX)	1.1187
ACDE	3	.6978E-01	CDER(AX)	0.6239
BCDE	3	.1302	BCDER(AX)	1.0873
S(BCDE) ⁱ	32	.1640	SR(AXBCDE)	1.6044
BCR(AX)	96	.1763		
BDR(AX)	96	.1281		
CDR(AX)	32	.1451		
BER(AX)	96	.1647		
CER(AX)	32	.2509		
DER(AX)	32	.8690E-01		
BCDX(A)	12	.9455E-01	BCDR(AX)	0.9108
BCEX(A)	12	.2153	BCER(AX)	1.5865
BDEX(A)	12	.8826E-01	BDER(AX)	0.6377
CDEX(A)	4	.3824E-01	CDER(AX)	0.3419 *
ABCDE	9	.2979	BCDER(AX)	2.4881 *
AS(BCDE)	96	.1005	SR(AXBCDE)	0.9829
BCDR(AX)	96	.1038		
BCER(AX)	96	.1357		
BDER(AX)	96	.1384		
CDER(AX)	32	.1118		
BCDEX(A)	12	.1569	BCDER(AX)	1.3102
SX(ABCDE)	128	.8824E-01	SR(AXBCDE)	0.8630
BCDER(AX)	96	.1197		
SR(AXBCDE)	1024	.1022		

* = probability < .05

** = probability < .01

a = grand mean

b = age

c = task

d = singular/plural

e = tense

f = transform

g = examiner nested under age

h = subjects nested under examiner and age

i = sentences nested under BCDE