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Comparison of the Morphological Language Skills in Normal and Language Delayed Children

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COMPARISON OF THE MORPHOLOGICAL LANGUAGE SKILLS IN NORMAL AND LANGUAGE DELAYED CHILDREN

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BY

ANNETTE R. FORREST

THESIS

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CHAPTER I

INTRODUCTION

The Problem

Chomsky has formulated a descriptive technique to assess the nature of language acquisition. This model is termed transformational or generative grammar. It is based on a tri-partite structure: phrase structure, transformations, and morphology. More specifically, a phrase structure is a kernel, or a simple-active-declarative (SAD) sentence. Transformations are sentences of a more complex variety. Rules of addition, deletion, permutation, and substitution are involved at this level. Morphology is the application of inflectional or derivational rules on the previous sequences, such as the formulation of the past tense of the verb with the addition of the phonemes /t/, /d/, or /əd/.

The present investigation carried out by this author, was concerned with the third structure of Chomsky's model; that of morphology. Cooper (1967:77) defined morphology as a "system of rules by which the smallest meaningful language units, or morphemes, are combined into words." There are two types of morphemes: derivational and inflectional. An example of these types can be described in the word farmers. Farm comprises

the root, er equals the derivational suffix, and s is the inflectional suffix.

The justification for choosing morphology as the topic of this investigation is twofold. Linguistic research has recently been flooded with tests and measurements to assess receptive and expressive language abilities of the very young child. Normative data to describe baseline behavior is beginning to evolve but only in a few select areas such as comprehension of language (the Assessment of Children's Language Comprehension, Foster, Giddan and Stark, 1969) and production of expressive language (the Length-Complexity Index, Miner, 1969). Numerous morphological investigations have been undertaken in the past fifteen years but no reliable and valid norms have been compiled which provide the language therapist with baseline behaviors to measure her students' morphological abilities. The second reason for undertaking this study was to review previous attempts of morphological test construction and to combine their beneficial features into a deep test of morphology. The rationale behind the deep testing approach is to determine the comprehensive morphological skills possessed by young children. Frequently, teachers or therapists will observe that a child does not use plurals correctly or the proper tense of the verb. Rarely, do they evaluate the child's performance and competence in the many features of pluralization alone. With the many sophisticated linguistic tools available at present, it is

time, researchers attended to the important structures of morphology and applied it to their measurement battery of linguistic tests.

Researchers have discovered that waiting until a child is five years old for their first formal language assessment, is very often detrimental. Children who possess language deficiencies need to be stimulated and taught the necessary language skills of their capacity before the desire or ability is stifled with maturity. Numerous types of pre-school programs have evolved due to this intensive awareness of language acquisition in the pre-academic years. Early development and pre-school centers are becoming much more accessible to the general public. In the state of Illinois, with the passage of House Bill 323, special educational services must be made available to children, three to five years of age, who display mild to severe degrees of handicaps, both physical and educational.

With the realization of these mandatory pre-school programs, which will involve the language handicapped child, it appears necessary and relevant to be aware of the grammatical rules that these children should possess, and in actuality do possess, at the time of their appraisal.

Screening programs, such as DIAL (Developmental Indicators for the Assessment of Language, Springfield, Illinois, 1972) are being held throughout the state to reach these children. The next step will be the actual placement of these children in training programs, such as PEECH (Precise Early Education of Children with Handicaps, Urbana, Illinois,

1973) to help prepare them for their future educational involvements. Speech pathologists will play a major role in these programs and, therefore, must be equipped with the knowledge of language acquisition and the specific techniques for evaluating it. This ability of the speech and language therapist to determine if a child is delayed or normal in his receptive and expressive language skills is a necessary requisite of a teacher working with young children in a therapy situation. This evaluative ability can be compared with Lee's (1967) warning that clinicians must be able to differentiate between "aberrant language production" and "delayed language development." Once again, this is another justification for developing a thorough morphological test upon which norms may be compiled.

Miner (1970) summarizes the rationale for developing tools to assess the oral language of children in eight concise statements. They are as follows:

1. The comparison of an individual's results with the performance of peers in the same situation.
2. The determination of an individual's capability and consistency of rule generation ability.
3. The analysis of error types.
4. The assessment of developmental progress.
5. The ability to predict future oral language skills.

6. The planning of language development activities.

7. The evaluation of the effectiveness of language instruction.

8. The generation of hypotheses regarding a theory of language acquisition.

As mentioned in previous paragraphs, numerous morphological studies have been carried out, but none have utilized the deep testing approach nor used the "language delayed" child as their subject. Various morphological investigations have been conducted with the normal child (Berko, 1958; Bellugi, 1964; and Menyuk, 1963, 1964, and 1971); with the mentally retarded child (Newfield and Schlanger, 1968; and Dever and Gardner, 1970); the hearing impaired child (Cooper, 1967); and with the culturally disadvantaged child (Shriner and Miner, 1968). From these facts, it appears rather obvious that a need existed for a test to be developed and administered to "language delayed" children to determine their morphological skills and how they compare to children with normal language acquisition.

In summary, this study was undertaken to research, as thoroughly as possible, previous morphological investigations, and apply their findings to the development of a deep test of morphology. This test was administered to "normal" and "language delayed" children in the age range of three and a half years to five and a half years, to assess their present morphological language rules and skills.

Statement of Purpose

The purpose of this investigation is to compare the morphological rules of the language delayed child and the child who possesses normal language acquisition. The following questions were posed at the outset of this study:

1. Is there a statistically significant difference between the obtained total nonsense scores of the subjects in the normal group as compared to the subjects in the language delayed group?
2. Is there a statistically significant difference between the obtained total lexical scores of the subjects in the normal group as compared to the subjects in the language delayed group?
3. Do statistically significant differences exist between the two groups in their performance on the lexical and nonsense noun plurals subtest?
4. Do statistically significant differences exist between the two groups in their subtest scores for the verb forms, possessives, and adjective subtests?
5. Is there a statistically significant difference between the responses of normal and language delayed children in their performance on lexical stimuli versus nonsense stimuli?

6. Is there a statistically significant difference between the responses of the normal and language delayed child to the backward and forward formation items? (c.f. pg. 30)

7. Is there a statistically significant difference between the normal child's responses on the receptive items as compared to the expressive items?

8. Is there a statistically significant difference between the language delayed child's responses on the receptive items as compared to the expressive items?

9. Is there a statistically significant relationship between morphological skills and mental age for either the normal or language delayed child?

10. Is there a statistically significant relationship between morphological skills and chronological age for either the language delayed or normal child?

CHAPTER II

REVIEW OF THE LITERATURE

In the past ten years, various researchers in the areas of linguistics and child development have taken an interest in the morphological level of children's acquisition of language. A well known morphological study was undertaken by Berko (1958). She observed pre-school and first grade children who ranged in chronological age from four to seven years.

The purpose of her study was to determine if children possess an internalized system of morphological rules. She used nonsense words in her study to test for this internal set of rules and to keep the process of rote memory for real words, which may have already been in their vocabulary, out of the testing situation. She did, however, use two lexical words out of her total 27 items. These were the words glasses and melted which were utilized to check for correct usage of /Iz/ and /ɘd/ with a common English word. Natalicio (1969) criticized Berko for her choice of glasses as the lexical item to account for the internal rule of the /Iz/ allomorph. She pointed out that the two words glass and glasses may have strikingly different connotations for a child, thus, they would not generalize this rule to a nonsense example.

Berko tested her subjects' ability to supply English plurals, possessives, verb tenses, derivations and compound words with nonsense words. She used adults to determine what the correct and standard answer should be to her test items. An example of a test item used for plural inflection testing would be a presentation of a picture of one cartoonlike figure, then two of the same figure. The examiner said to the child, "Here is a wug. Now there's another one. There are two of them. There are two _____." (Berko, 1958: 158). The child was to supply the final word.

Results from Berko's investigation indicated that the children had "systems of consistent, regular, simple rules for morphological inflections, although these rules did not conform to adult patterns," (Bellamy and Bellamy, 1970). There appeared to be little improvement of morphological skills between the ages of four and six. The majority of children in both age groups adequately utilized the progressive tense of the verb, the past tense allomorphs /t/ and /d/ and the possessive and plural forms of /s/ and /z/. It was observed that the children, for the most part, regularized irregular verbs, such as "bing--binged," in contrast to the tested adults who used the "bing--bang" rule. In summary, Berko stated:

> ...When they provided inflectional endings, their best performance was with those forms that are the most regular and have the fewest variants. With the morphemes that have several allomorphs, they could deal with allomorphs that appear in a limited distribution range. (1958: 177)

Although Berko's study was a definite contribution to the field of language acquisition, many criticized her for her lack of control of variables. Natalicio and Natalicio (1969) reviewed her study and felt she should have controlled for the variables of I.Q., aptitude, and socio-economic status. She did not check for the influence of previous items on following items. It should be noted that Berko's population was not very typical of a normal population. She drew her subjects from the Harvard Pre-school in Cambridge and the Michael Driscoll School in Brookline, Massachusetts. Menyuk (1964) used the same population in a morphological study and found the mean I.Q. for the children to be 130.3 and the occupation of the parents of all the children fell within the upper 24% range for a middle class population. This type of population is obviously a biased one and would effect the generalizability of her results to other studies. It lacks a true representation of the normal population and should be evaluated with this factor in mind. Another problem of data reliability was that of controlling the stimulus to which the subject was responding. As mentioned previously, poor selection of lexical words was another questionable factor.

Anisfeld and Tucker (1967) also criticized Berko's project. They felt it did not provide a full index to the development of morphological skills. They agreed with Natalicio and Natalicio's points and added the following: the receptive aspect of morphological development was not examined

(comprehension), an un-equal distribution of the allomorphs was utilized, and the test did not investigate the child's ability to provide the singular form if given the plural (backward formation). The importance of assessing forward formation and back formation items is found when observing the types of skills which are displayed. The production skill is seen when the child performs these given tasks. The forward formation (FF) items consisted of normal pluralizing situations. The child is provided an uninflected stem and is asked to supply the proper inflected form. ("This is a /wog/. Here is another /wog/. Now, there are two _____.") The back formation items consisted of the deletion of an inflection or the substitution of one inflection for another. An example of this type of item would be: "Here are some /tasses/ (show the child two nonsense forms). But, now, here is a _____" (after covering one of the items). The objective of this type of task is to determine if a child can derive a singular item name when given a plural form and to see if he can derive a present tense form from a past tense verb. These tasks actually tap the child's knowledge and ability in handling pluralization and verb tense forms.

Anisfeld and Tucker (1967) then proceeded to examine the aspect of pluralization in three studies. Specifically, they studied the "pluralization by addition" rule, the "role of numbers" in pluralization, and the 'child's mastery of standard English" pluralization rules. This last study involved the assessment of children's ability to handle three recognition and three production tasks.

Their results suggested that children, ranging in age from four to six years, had much difficulty with the /Iz/ allomorphs than with the /s/ and the /z/ in the production items and that it was easier for them to provide the singular form, once given the plural, than vice versa. On the recognition tasks, more errors appeared with the /s/ and /Iz/ allomorphs than with the /z/. This author wonders if this could be due to the factor of frequency of occurrence of the /z/ allomorph in word plurals and, therefore, the children are exposed to and are more familiar with that form.

Bellamy and Bellamy in 1970, investigated the ability of children, four to ten years of age, to handle both comprehensive and productive tasks of morphological inflections. Their study used a technique which required the child to apply the correct morphological rule to a novel situation for the following areas: past, present, and progressive tenses of regular verbs and the plural and possessives of regular nouns. They tested 156 children (kindergarten through fourth grade) with an equal distribution of twenty females and twenty males at each grade level. There was an exception at the kindergarten level which tested only fifteen males and fifteen females. Each child was tested individually and the child's responses were transcribed phonetically or tape recorded for later analysis. If a child did not respond or responded incorrectly, the examiner supplied the correct rule for each presentation. To control for familiarity effects, the order of presentation of the items was reversed after each child.

In this study, the performance of back formation (BF) and forward formation (FF) was assessed during the production items. The FF items were similar to the pluralization items Berko used. "Here is a lun. Now there are two of them. There are two _____." The child was presented with an uninflected root and was asked to add the inflected form. The BF tasks required a deletion of an inflection or the substitution of one for another. For nouns, they were to supply the singular form when given the plural. "Here are two /lunz/. Now, there is only one. It is a _____." For verbs, the only inflected form provided was the past tense. "Yesterday, this little boy /tas/. He is doing it right now. What is he doing? He is _____. What does he do when he does it? He _____. What does he know how to do? He knows how to _____." (1970: 202).

Results in this study indicated that not until the second grade level were more than half the comprehension tasks successfully handled. By fourth grade level (age ten) all items were mastered except the item which requested the child to pick the picture which depicted a supplied past tense. Bellamy and Bellamy suggested that many children do not comprehend the basic concepts of language, for example, the past tense. They noted that their poor performance on these items was probably due to a lack of sensitivity to morphological inflections and not to an inability to comprehend spoken language. Back formations were also found to be acquired at a late age (eight years) and no consistent pattern could be

seen for significant differences in allomorph acquisition. On the forward formation tasks, there was an agreement for mastery consistent with the comprehension and back formation items. The complete mastery of the /s/ and /z/ allomorphs was found to occur at the third grade level. The /Iz/ inflection never appears to be mastered according to their data. The authors speculated that this is not an unusual finding due to the problems many adults have with this allomorph.

In comparing the results for comprehension and production, several unusual facts can be seen. First, the concept of comprehension of morphological inflection does not appear to overcome production as most would expect. Children seem to be suddenly aware of morphological inflections around the age of eight and then seem to begin progressing at a rapid rate in both comprehension as well as production. This concurrent acquisition does not follow the pattern usually seen in language development.

Their results differed with those of Anisfeld and Tucker's (1967), in that some BF items seemed to be more difficult than the FF items. Children could form a plural when provided a singular by age six, but were not able to derive a singular from a plural form until age eight. The difficulty found in learning the /Iz/ allomorph was the same for both BF and FF tasks.

Another researcher involved in morphological study was Brown (1957), who gave Berko much of her foundation for her investigation. He conducted an experiment which dealt with pre-schoolers. He wanted to tap their

receptive ability to choose nonsense figures for their appropriate nonsense words, which depicted parts of speech. The particular areas of assessment were particular nouns, mass nouns and verbs. He found that 83% of children's vocabulary consisted of nouns which were actually naming things and 67% of the children's verbs were concrete actions as compared to adults whose vocabulary consisted of 39% of concrete things for nouns and 33% of their verbs actually depicted actions. Thus, it appears that nouns and verbs used by children seem to have much more semantic implications than those utilized by adults. This study laid the basis for using nonsense figures and words in morphological studies. It showed that children will choose a picture of movement when a novel verb is introduced as compared to the selection of an object for the presentation of a novel noun.

Menyuk (1963) conducted a series of studies which describe the syntactic structures in children's language. She used Chomsky's generative grammar model to determine if a child's grammar could be described as a self-contained system. She described the rules utilized at all three of Chomsky's stages of his tri-partite structure. This author is mainly concerned with the rules of the morphology level assessed by Menyuk in her studies, since this study will be concentrating on this area of acquisition. These rules consisted of: third person singular and plural in the present tense of verbs, past tense of verbs, singular and plural of nouns,

possessive nouns, and adjectives. These rules were chosen because they were forms which were restricted to a child's grammar. She concluded that it was possible to describe children's grammars using Chomsky's model. This grammar included all the rules used by the child to generate structures which were not only consistent with adult structures, but also those which were restricted to the child's grammar. The structures which were not consistent with adult usage were found to occur infrequently in the child's usage.

Menyuk in 1964, compared the grammar of normal children with that of children possessing "infantile speech." Her results revealed that perhaps the term infantile was a misnomer since "at no age level did the grammatical production of a child with deviant speech match or closely match the grammatical production of a child with normal speech from two years on"(1964: 120). The child who possessed normal speech acquired increasingly complex structures very rapidly for his age range of two-three years and exceeded even the oldest child with infantile speech at age three. The grammatical usage of the two groups also differed: the normal group used more transformations and the deviant group used more restricted forms and utilized them much more frequently than the normal group. Repetition ability was markedly different. The deviant speech children repeated just the last words in the sentence or repeated with omissions. Their non-repetitions seemed to be associated with sentence

length whereas the "normal speech" children did not have the same problem of sentence length dictating repetition ability. Their ability to repeat seemed to depend on the structure of the sentence. It was also observed that children with deviant speech skills constructed their sentences with the most general rules as compared to the normal speaking children's usage of increasingly complex and differentiated morphological rules to generate structures, the older and more mature the population was assessed.

Menyuk's investigation of children with deviant speech lacks many factors which are necessary in making this a valid and representative study. As reported before in the Berko review, the population Menyuk utilized for her "normal population" was drawn from schools in the Cambridge Massachusetts, area with a mean I.Q. of 130.3. The parents' occupations were found to be in the upper middle class socioeconomic status.

The children used for her "deviant speech" group were unintelligible in their speech and it is questioned how an examiner could distinguish if a child was using a correct morphological inflection, when their speech is not understandable.

This study could not be reported as valid or reliable because of the variables involved. Again, this justifies the need for a morphological study comparing language delayed children with their normal peer group.

Cooper (1967) examined the morphological skills of the deaf child as compared to the hearing child. His study was limited to written language and therefore attempted to assess children's knowledge of the morphological rules underlying written English. It was a receptive test and required the subject to fill in the correct written form by circling the correct answer. Comparisons between the hearing and deaf females (due to the very small male group of N, significant comparisons could not be made) revealed that the easiest items were those that tested knowledge of inflectional rules and those testing derivational rules were the hardest for the subjects. For both groups, rules which were tested receptively showed better results than when testing the same rules productively. He compared individual versus group administration of the test and found that the most optimal testing situation was that of testing the children individually and orally. He felt the usage of a morphology test of assessing children's knowledge of certain language skills definitely was a step in the right direction and pointed out the limitations of using a written test. There is not a one to one relationship between written and spoken English and a test such as Cooper's could not be given to very young children who do not know how to read or write. This would definitely rule out pre-schoolers and mentally retarded children.

Another study which was similarly modeled after Berko's, was that of Newfield and Schlanger's (1968) investigation of the acquisition of

morphology by normal children and educable mentally retarded children. They utilized a list of lexical words which paralleled Berko's nonsense words. Each subject was initially given an articulation test to assess their production of the phonemes /s/, /z/, /t/, /d/, and /ŋ/. Normal articulation or a consistent substitution were necessary to be included in the study. They used the Peabody Picture Vocabulary Test to find the correlation between the acquired mental age and subject's morphological development. They used both real and nonsense words--administering the real words first. The authors stated their rationale for this presentation was that it aided the children in understanding the desired response and, therefore, no practice items were necessary. This study did not test for adjectives or the plural or possessive allomorph /s/.

Results of the Newfield and Schlanger study indicated that the /Iz/ allomorph was learned initially with verbs, then possessives, and then with nouns. The /z/ is mastered first with noun plurals, and then with possessive singular nonsense words. The overall results revealed that retarded children seem to learn morphological skills in a manner similar to normal children. The pace is much slower in learning the skills but differences are quantitative rather than qualitative. The system of acquisition of the allomorphs used in constructing morphological items was virtually identical for mentally retarded and normal subjects for the nonsense word items and similar with the lexical tasks. The children seemed

to master the most common and regular morphological forms first whether they were normal or retarded. This parallel progression in the order of the learned rules with nonsense items seemed to confirm Berko's results. The authors concluded from their findings that in both normal and retarded subjects, "there is an undefined time lapse between the production of correct English morphological inflection forms within the context of familiar words and the generalization of these same forms to unfamiliar words" (1968: 705). They also pointed out that mental age is a much more significant factor than chronological age in the acquisition of morphological rules.

Another comparative study was done in the area of morphological acquisition. This was the comparison of the morphological structures in the language of advantaged and disadvantaged children by Shriner and Miner (1968). The investigation looked at two groups of pre-school children, (25 in each) and their ability to apply morphological rules to unfamiliar situations, specifically, nonsense words. Their test consisted of expressive and receptive items, which assessed noun pluralizations, possessives, and the verb forms for third person singular, past tense, and progressive. On the receptive portion, the area of noun pluralization was checked. The receptive items were administered after the expressive tasks, to guard against the subjects receiving correct stimuli which might influence their responses on the expressive portion of the test. The authors

utilized nonsense items to assess the subject's morphological competence, as opposed to performance, which would be found, if only lexical items were presented. The results of their study revealed no statistically significant difference between the morphology test scores of the culturally advantaged and disadvantaged child. Both groups appeared to be able to apply increased complexity of the morphological rules to novel situations as a function of increased mental age.

Chappell (1968) developed a Picture Test of English Inflections which was to measure the "elementary school child's morphemic expression of English inflection" (1968: 1). He used the most frequently occurring morphemes of adult speech and constructed his test items with lexical words. He administered the test to 196 children from pre-school to second graders. He controlled for chronological age, freedom from handicaps such as language disorders, hearing loss, visual defect, I.Q., parental education, and the language in the home environment had to be predominately English. The author cautioned that this test was primarily designed to act as a detector of deviant behavior. He has shortened his original battery of 110 test items to a screening test of 47 items. Findings of his original test revealed that as a group, all 196 children used regular morphemic forms on a similar basis for expressing pluralization, possession, tense, and derivation. Another result of the study dealt with irregular morphemes of tense and plurality. It appeared that as the children increased in age,

more consistent and correct usage was found in the use of irregular morphemes. The reliability and validity of the test is not high and, therefore, its use for a standardized test is questionable. Chappell noted this lack of reliability in his dissertation and stated that as a screening device, this test, "was designed to be a sampling component capable of detecting deviant behavior in morpheme omissions, redundancies, or substitutions" (1968: 51). He listed various classes of children that this test would be beneficial in identifying language disorders of a linguistic nature.

Berry and Talbott have published a language test (1966) with the purpose of assessing linguistic comprehension. They state that the rationale of the test is, "to explore the child's ability to make up and use rules of grammar and syntax" (pg. 2). The test consists of 27 plates and tests plurals of nouns, singular and plural possessives, third person singular, progressive, and past tense of the verb; and comparative and superlative of the adjective. It utilizes nonsense words and cartoon-like figures, much like Berko's study.

This test lacks many of the basic fundamentals which are necessary for a test of morphology. There are no norms to compare a child's obtained score. The authors have predicted what the average five--eight year old should correctly complete on the test. The directions are very scanty. They do not report any basis for their predictions and, therefore, the test lacks validity and reliability. There is no correct response key available

with the test materials. It appears to this author that much improvement is needed on this test before one can reliably use it for assessing morphological development.

The previously cited studies were undertaken to assess the development of morphological skills in children. The results of these investigations warrant the following conclusions:

1. Children will respond to nonsense figures and words. They will choose a picture of movement for a presented novel verb and a picture of an object for a novel noun.
2. Children's grammar can be described as a three part structure, consisting of base structures, transformations, and morphology. It is a self-contained system which has some rules which are restricted to children's grammar.
3. Usage of plurals and tenses appear at a very young age in children. The rules, which govern inflectional patterns of the English language are extended, refined and become more like that of the adult as the child matures in mental age and language skills.
4. Children with deviant speech skills will construct their sentences with the most general rules whereas the normal child will use more complex rules in sentence construction as he matures.

5. More restricted forms of grammar were seen with the deviant speech subjects as compared to the usage of transformations by normal children.
6. Testing a child individually and orally appears to be the most optimal conditions for assessing morphological competence and performance.
7. The /z/ allomorph is mastered first in children's developmental patterns of morphology. The next learned suffix is /s/ and then /Iz/. This could be due to the frequency of occurrence, in the English language, of these morphemes. The more often the morpheme appears in the child's vocabulary, the earlier it will be learned. An example of this occurrence is the vast number of regular nouns which are pluralized with the addition of the /z/ phoneme. This substantiates the rationale for the belief in a definite developmental pattern in children's grammar.

A test was needed which could test both receptively and expressively morphological inflections which are found in the English language. It should include both nonsense and lexical items to test for competence as well as performance. Areas of concentration should be the same areas which have been suggested in the above studies, such as pluralization of nouns and verbs, past and progressive tenses, back and forward formation,

receptive and expressive tasks, but more extensively and conclusively. This test should be easy to administer and easy to understand by the subject. It should be flexible enough to be administered to pre-school children and children with handicaps such as language disorders, educable mentally handicapped and hard of hearing children. Many of the above investigations have much merit, but are lacking in certain items to make it a thorough test. (For a graphic illustration comparing the various tests and studies, see Appendix A, Chart 1.)

The purpose of this investigation was to assess the previous endeavors and to develop a test of morphology which would adequately cover the necessary requirements for a sound and comprehensive test of inflections.

CHAPTER III

PROCEDURES

Selection of Subjects

Twenty children, who ranged in chronological age from three years-eleven months to five years-five months were selected for this investigation. They were chosen from a sample of forty-six tested children drawn from nine different pre-school programs in the east central portion of Illinois. The specific cities the subjects were chosen from were: Charleston, Cowden, Effingham, Mattoon, and Mason. The children were enrolled in either a Head Start Program or a nursery school program at a day care center. Table 1 displays the early childhood programs involved in this investigation and the number of subjects each program contributed. Two groups of ten children each were selected and matched on the basis of mental age. Each group of ten children comprised the language delayed and normal populations as described in the following paragraphs.

TABLE 1.--Listing of Programs and Their Locations From Which the Initial 46 Children Were Tested and the 20 Subjects Selected for This Study

Source	Location	Number
Busy Bee School	Mattoon, Illinois	2
Charleston Community Day Care Center	Charleston, Illinois	3
Charleston Head Start Program	Charleston, Illinois	5
Cowden Head Start Program	Cowden, Illinois	3
Effingham Child Development Center	Effingham, Illinois	13
La Petite Academy	Mattoon, Illinois	3
Mary's Child Care Center and Nursery School	Effingham, Illinois	11
Mason Head Start Program	Mason, Illinois	6
	Total	46
Actual Subjects Used in Study		
Charleston Community Day Care Center	Charleston	1
Charleston Head Start Program	Charleston	3
Cowden Head Start Program	Cowden	2
Effingham Child Development Center	Effingham	5
La Petite Academy	Mattoon	1
Mary's Child Care Center and Nursery School	Effingham	6
Mason Head Start Program	Mason	2
	Total	20

TABLE 2.--Number of Males and Females Utilized in This Investigation

	Experimental	Control
Males	3	7
Females	7	3
Total	10	10

Language Delayed Subjects--Experimental Group
Normal Subjects--Control Group

Language Delayed.--The children chosen for this group had to meet the following criterion before they could be included in the morphological assessment phase of this study. They must possess normal hearing which was determined by the examiner after administering an audiometric screening evaluation to each individual subject. The speech frequencies of 500, 1000, and 2000 Hz were tested at 25dB in a reasonably quiet room at each of the subject's respective centers. Determination of the subject's language abilities was necessary to classify them as a language delayed child. According to Bangs (1968), the language delayed child, often called language disordered, appears to be following an orderly pattern of learning the language code, but is extremely behind the level of comprehension and expression in speech and language than other children of his chronological age. For the purposes of this study, any child whose score on the ACLC (Assessment of Children's Language Comprehension) was two

standard deviations or more below the mean score of the local norms established at Eastern Illinois University's Speech and Hearing Clinic, they were considered language delayed. Local norms were used because they were established from the same area of the state that the subjects of this investigation were chosen and it was felt that these norms would represent a more accurate representation of the population from which they were drawn.

The children in this group were also given the Ammons and Ammons Quick Test (QT) of Intelligence to compute their mental age and received a brief picture articulation screening to assess their production of the phonemes /s/, /z/, /t/, and /d/, which were utilized in the morphological rule production phase of this investigation. Pictures for the articulation evaluation were taken from the initial and final specific phoneme plates as mentioned above from the revised edition of the Templin Darley Articulation Test (1968). They had to correctly produce the test phonemes or have a consistent substitution for them or they were excluded from the study.

Normal Language Acquisition.--The ten children selected for this group were chosen from a normal population of pre-school children within the age range of four years, zero months to four years, seven months. They were matched with the language delayed children according to their mental age score obtained from the Ammons and Ammons Quick Test (QT). They were also administered the same battery of tests that the language delayed children received.

Mental Age

The decision to match the two groups according to mental age scores was determined by the conclusion made by Zeaman and House (1966) that because mental age is a true determinant of developmental level, it is more closely associated with the act of learning. Chronological age appears to be an irrelevant variable for learning according to Zeaman and House. Shriner and Miner (1968) pointed out that a child's mental age would be a clearer indicator of a child's present level of linguistic competence and performance than chronological age.

The range comprising the mental ages was from four years, zero months to seven years, zero months with a mean mental age of five years, two months. The mean mental age for the children with normal language acquisition was five years, two point five months (5.25) and the mean mental age for the language delayed child was five years, two point three months (5.23).

Methodology

The morphology test utilized in this investigation was composed of expressive and receptive items of both nonsense and lexical form. Several of the nonsense word tasks were taken from a thirty item morphology test developed by Shriner and Miner, 1968. The remaining test items were chosen by the investigator to meet the following criteria: items which would test receptive and expressive nouns and verbs. See Appendix B,

Tables 3 and 4 . Specific areas of assessment were: plurality, possession, tense and derivation. Five morphemic forms of plurality were evaluated: /s/, /z/, /Iz/, /vz/, the irregular change such as "leaf-leaves." Three forms of singular possessive morphemes were assessed: /s/, /z/, and /Iz/. It was felt by this examiner that it was unnecessary to test for plural possessives. The basis for this judgment was made because the child's oral performance (production of the required morpheme) would not inform the examiner of his morphological rule for plural possessive. It would be acoustically the same as the child's production of his plural nouns. The only feasible method to assess this rule would be to have the child write his desired inflection and this task is not practical for the age group used in this study nor is it fundamentally necessary to achieve the purpose of this investigation.

Measurement of tense was checked by using five morphemic forms: the progressive ing, /t/, /d/, /ə d/, and irregular verb tense, such as "bing-bang." The use of derivational and adjectival inflections were tested with the following forms: /ɚ/, /ə st/, and the derivational /ɚ/.

Stimuli selection were made on the following criteria: frequency of occurrence of the lexical words in a child's vocabulary as determined by the Thorndike-Lorge List of the 10,000 Most Frequently Occurring Words. All words used in this study appear in the first 2500 words of the list, which comprise the words most frequently occurring in grades one through

three. Phonemes which are considered to be early developing sounds were used in creating the nonsense words to minimize articulation difficulty.

The developed morphology test was given to five adults to determine the common accepted English inflection used for each item. The scoring criterion for the morphological test which was used with the children in this study, was based on conformity with the rules demonstrated by the tested adults.

The children in this study were asked to repeat the stimulus word for each item. This determined for the examiner, what the subject was perceiving as the stimuli and the examiner could repeat the item, if necessary. This was done to guard against outside variables distracting the subject and verified that the subject's response was one of morphological judgment, and not of misunderstood stimuli.

Devised Language Measure

Administration of Morphology Test

The devised deep test of morphology, developed by this investigator, was presented in two portions. Initially, the nonsense stimuli section, consisting of thirty-five items, was administered to each subject. The test was organized into six grammatical categories, which consisted of sixteen noun plural items, three singular possession, seven past tense

verb tasks, three third person singular, three present progressive verbs and three derivational items. Expressive forward formation tasks were presented first, to eliminate the possibility of a learning effect taking place on the following items. Receptive and backward formation items always succeeded their expressive or forward formation counterpart to assure spontaneous subject responses. The lexical stimuli portion was identically modelled after the nonsense portion of the test. An attempt was made to test each grammatical category in all possible phonetic contexts. Voiced and voiceless final phoneme stems were presented for each morphological inflection examined in this investigation.

Verbal Directives

Each subject was given the same initial instructions:

> "You are going to see some funny cartoon pictures. Some of them you will have not seen or heard their names before. Others will be things you see every day. I will tell you their names and you will say their names back to me. Sometimes, you will be asked to say what two of the pictures are called. Other times, you will be asked to point to a certain picture. Do you understand? Are you ready? Listen---"

Specific verbal directives were utilized for each grammatical category and each particular type of skill evaluated.

1. Noun plurals: Fifteen regular and one irregular plural forms were included in the pluralization category. These forms were used in both nonsense and lexical portions. The inflectional rules tested were the regular forms /-s/, /-z/, and /-əz/.

The irregular form presented was /-vz/, the plural inflectional pattern found in words ending in /f/. Following are some examples of verbal directives as they were used both receptively and expressively.

a. Expressive Forward Formation: "This is a _____ (e.g. /gip/ of "cup"). What is it called? A _____. Here is another _____. Now, there are two _____."

The child was to respond with the correct pluralization form: /gips/ or "cups," depending on the stimulus.

b. Expressive Backward Formation: "Here are some _____ (/wimz/ or "drums"). But, now, here is a _____."

The correct response for the singular item displayed was /wim/ or "drum."

c. Receptive Forward Formation: "This is a _____ (e.g. /fId/ or "bed"). What is it called? A _____. Now, look at all these pictures. Point to /fIdz/ or "beds."

The stimulus picture was covered by the examiner's hand to eliminate the possibility of the subject choosing that item picture in his response.

d. Receptive Backward Formation: "Here are some _____ (/vits/ or "boats"). What are they called? _____. Look at all the pictures. Point to /vit/ or "boat."

2. Singular possession of nouns: These three items were tested in only an expressive forward formation manner due to the difficulty in representing pictorially receptive and backward formation possessive nouns. The three inflectional forms of possession

examined were: /s/, /z/, and /əz/. The verbal directives for these tasks were as follows:

> Expressive Forward Formation: "This is a _____ (/dæk/ or "cook") who has a _____ (/gup/ or "hat"). What is he called? A _____. Whose /gup/ is it? It is the _____ (/dæk's/ or "cook's")."

3. Past tense verbs: Six regular and one irregular form of past tense were displayed in this test. The regular forms were: /-t/, /-d/, and /-əd/. The irregular form was the sbustitution of the past tense form /fæŋ/ for the present tense /fIŋ/ in the nonsense portion, and the sbustitution of the word "sang" for the present tense "sing" in the lexical portion.

   All illustrations for the verb tense items demonstrated a figure performing some type of action to represent the particular verb tested. Expressive and receptive test plates were arranged in a similar manner to the noun plural items.

   a. Expressive Forward Formation: "This is a _____ (/dup/ or "boy") who knows how to _____ (/zæp/ or "step"). He did it yesterday. Yesterday, he _____ (correct response: /zæpt/ or "stepped")."

   b. Receptive Forward Formation: "This is a _____ (/mIf/ or "girl") who knows how to _____ /sId/ or "rub"). She did it yesterday. Look at all these pictures. Point to the _____ who _____ (/mIf/ who /sidəd/ or "girl" who "rubbed")."

   c. Receptive Backward Formation: "This is a _____ (/bap/ or "girl") who _____ (/mikt/ or "climbed") yesterday. She does it everyday. Look at all the pictures. Point to _____ _____ (/bap miks/ or "girl climbs")."

4. Third person singular: Three items were selected for this grammatical category; two expressive and one receptive. All three items were forward formation tasks. Due to the length of the test, it was felt by this investigator that testing the three inflectional patterns in a forward formation setting would be most beneficial in determining morphological ability.

   a. Expressive Forward Formation: "This is a _____ (/ɫʌt/ or "clown") who knows how to _____ (/mip/ or "drop"). He does it everyday. Everyday, he _____ (/mips/ or "drops")."

   b. Receptive Forward Formation: "This is a _____ (/dæp/ or "man") who knows how to _____ (/keb/ or "rob"). He does it everyday. Look at all the pictures. Point to _____ _____ (/dæp kebz/ or "man robs")."

5. Present participle: Three present participle verb items were tested in this study; two forward formation and one backward formation task. All three items were expressive tasks.

   a. Expressive Forward Formation: "This is a _____ (/bIf/ or "dog") who knows how to _____ (/vuk/ or "bark"). He is doing it right now. Right now, he is _____ (correct response: /vukIŋ/ or "barking")."

   b. Expressive Backward Formation: "This is a _____ (/nIf/ or "man") who is _____ (/kutIŋ/ or "painting") right now. He does it everyday. He knows how to _____ (/kut/ or "paint")."

6. Derivational noun and adjectives: This section of the test consisted of one derivational noun and two derivational adjectives; the comparative and superlative forms. All were presented in an expressive, forward formation situation.

a. Derivational noun: "This is a man who knows how to _____ (/kik/ or "pick"). He _____ (/kiks/ or "picks") everyday. This man is called a _____ (/kikɚ/ or "picker")."

b. Derivational adjectives: "This is a _____ (/bæm/ or "shirt"). This _____ (/bæm/ or "shirt") has some _____ (/zuts/ or "spots") on it. It is _____ (/zuti/ or "spotty"). This _____ (/bæm/ or "shirt") has even more _____ (/zuts/ or "spots") on it. It is _____. And this _____ (/bæm/ or "shirt") has the most _____ (/zuts/ or "spots") on it. It is the _____." (The correct response for the comparative is: /zutiɚ/ or "spottier," and the correct response for the superlative form is: /zutiəst/ or "spottiest.")

For a more thorough explanation, examples of the illustrations utilized in this morphology test may be found in Appendix D.

Back and forward formation items were included in this test to determine if a child could derive a singular noun when given a plural, and could derive a present tense verb when provided with a past tense form.

Administration of Test Battery

Each subtest of the total test battery, the ACLC, QT, articulation screening, and the morphology test, were administered to each child, chosen for the study, individually. All testing was conducted by this investigator to maintain rapport and consistency in administering the morphology test to all subjects.

The total time of administration did not exceed sixty minutes. Due to the young age of the children in this study and their short attention span, the testing program was divided into two sessions. The first session included administration of the ACLC, the QT, the articulation

screening, and the hearing screening. The second session involved the assessment of the child's morphological skills and rules with the devised morphology test found in Appendix B, Tables 3 and 4.

Examiner Reliability

The reliability of the experimenter in scoring the subjects' expressive and receptive responses was established by videotaping a testing situation with a normal five year old male child. Observations and scoring of the child's elicited responses were reviewed by the examiner and six graduate students in the Department of Speech Pathology and Audiology at Eastern Illinois University, Charleston, Illinois. Comparison of the experimenter's and observer's responses was analyzed using a Percent of Agreement coefficient. The obtained interexaminer reliability was .95 percent consistency between the scorers. This percent of agreement was considered to be highly acceptable and comparable to reported agreement values in similar studies (Carson, 1973).

Scoring of the Test

The stimulus word and correct morphological inflection for each task was included on the test form. The variables being tested were also stated on the form. Responses of the subject were judged as correct (+), incorrect (-), or no response (NR). A blank was placed next to each item for marking of the item and for phonetic transcription, when necessary.

The test form included space for the subject's name, date of testing, subject's birthdate, and chronological age. Space was provided at the bottom of the sheet for a total score for each portion and the examiner's name.

Equipment

The following items were utilized in this study: A Beltone 10D portable audiometer for the audiometric screening portion of the investigation; the test booklet and record forms for the ACLC, the test plates and scoring blanks for the QT, and the morphology test plates arranged in notebook form, with their accompanying score forms. A clipboard was used in securing all record forms during the testing situation. The morphology test, which consisted of 70 platelets, was placed in an $8\frac{1}{2}$ by 11 three ring notebook for handling ease. All illustrations were black and white line drawings which were placed in plastic binders. The accompanying verbal directives were placed on the succeeding items, which could be read and seen by only the examiner. An example of these illustrations may be seen in Appendix D.

CHAPTER IV

RESULTS AND DISCUSSION

A deep test of morphology was developed and administered to ten normal and ten language delayed children who ranged in age from three years-eleven months to five years-five months in chronological age. Oral and gestural responses were required for the expressive and receptive portions of the devised morphological language measure.

The test scores were compiled and analyzed statistically for the purpose of answering the questions posed at the outset of this study. The Mann-Whitney U (Downie and Heath, 1965), a non-parametric statistic, was applied to these test scores to determine if statistically significant differences existed between the morphological performance of language delayed children as compared to normal children of the same mental age. Specific areas of examination were: nonsense versus lexical; backward versus forward formation; and expressive versus receptive. An alpha level of .05 was set to determine if significant differences did occur.

Another non-parametric statistic, the Kendall-Tau correlation coefficient was applied to the obtained data to detect if a statistically significant

relationship existed between mental age and morphological ability and chronological age and morphological ability. In this chapter, the specific statistical analyses are reported and discussed.

The table on pages 42 and 43 represents the eighteen comparisons made during the examination of all obtained test scores for the experimental group (language delayed) as well as the control group (normal children). The first column in Table V represents the perfect score for each category under analysis. For example, there were 35 possible points on the lexical items and 35 points on the nonsense items. Refer to the key at the top of the table for references explaining the various abbreviations used in setting up this table. Following are the results of each comparison and their interpretations.

Total Scores Analysis

A. Between comparisons were made for lexical and nonsense obtained total scores for both the normal and language delayed groups. No statistically significant difference was found between the two groups on the lexical variable. There was a statistically significant difference found with the nonsense variable between the experimental and control group beyond the .001 level of confidence. This difference was in favor of the control group's performance on the nonsense items.

TABLE 5.--Mann-Whitney U Analyses for Between- and Within-Group Comparisons

Key: E - experimental group consisting of language delayed children
C - control group consisting of normal children
Lex - lexical stimuli
Non - nonsense stimuli
Sing - singular
Poss - possession
FF - forward formation
BF - backward formation
Sig - significant
Nonsig - nonsignificant

Maximum Score	Category	Variable	Comparison	Mann-Whitney U Value
		A. Between Comparison		
35	Total Score	Lexical	E vs C	Nonsig
35	Total Score	Nonsense	E vs C	Sig at .001
		B. Within Comparison		
35	Total Score	Control	Lex vs Non	Nonsig
35	Total Score	Experimental	Lex vs Non	Sig at .001
		C. Between Comparison		
24	Expressive	Nonsense	E vs C	Sig at .001
24	Expressive	Lexical	E vs C	Sig at .05
		D. Within Comparison		
24	Expressive	Control	Lex vs Non	Sig at .05
24	Expressive	Experimental	Lex vs Non	Sig at .01
		E. Between Comparison		
11	Receptive	Nonsense	E vs C	Sig at .05
11	Receptive	Lexical	E vs C	Sig at .05
		F. Within Comparison		
11	Receptive	Control	Lex vs Non	Nonsig
11	Receptive	Experimental	Lex vs Non	Nonsig
		G. Between Comparison		
27	FF	Nonsense	E vs C	Sig at .001
27	FF	Lexical	E vs C	Sig at .05

TABLE 5.--Continued

Maximum Score	Category	Variable	Comparison	Mann-Whitney U Value
		H. Within Comparison		
27	FF	Control	Lex vs Non	Nonsig
27	FF	Experimental	Lex vs Non	Sig at .05
		I. Between Comparison		
8	BF	Nonsense	E vs C	Sig at .05
8	BF	Lexical	E vs C	Sig at .05
		J. Within Comparison		
8	BF	Control	Lex vs Non	Sig at .001
8	BF	Experimental	Lex vs Non	Sig at .001
		K. Between Comparison		
16	Noun Plurals	Nonsense	E vs C	Sig at .01
16	Noun Plurals	Lexical	E vs C	Sig at .05
		L. Within Comparison		
16	Noun Plurals	Control	Lex vs Non	Nonsig
16	Noun Plurals	Experimental	Lex vs Non	Sig at .05
		M. Between Comparison		
7	Past Tense Verbs	Nonsense	E vs C	Sig at .01
7	Past Tense Verbs	Lexical	E vs C	Sig at .05
		N. Within Comparison		
7	Past Tense Verbs	Control	Lex vs Non	Nonsig
7	Past Tense Verbs	Experimental	Lex vs Non	Sig at .05
		O. Between Comparison		
3	3rd Person Sing	Nonsense	E vs C	Nonsig
3	3rd Person Sing	Lexical	E vs C	Nonsig
		P. Within Comparison		
3	Sing Noun Poss	Nonsense	E vs C	Sig at .001
3	Sing Noun Poss	Lexical	E vs C	Nonsig
		Q. Between Comparison		
3	Present Participle	Nonsense	E vs C	Nonsig
3	Present Participle	Lexical	E vs C	Nonsig
		R. Within Comparison		
3	Derivational	Nonsense	E vs C	Nonsig
3	Derivational	Lexical	E vs C	Nonsig

B. Within comparisons revealed no significant difference between obtained nonsense and lexical total scores for the control group. A statistically significant difference was obtained beyond the .001 level for the experimental group in this within comparison. The language delayed children performed significantly higher on the lexical items as opposed to the nonsense items.

The following conclusions can be drawn from these results:

1. There does not appear to be a difference between lexical and nonsense stimuli for children with normal language acquisition. These results indicate evidence of morphological rules in so-called normal children and their ability to apply these rules to unfamiliar situations.
2. Lexical stimuli do not appear to have a significant effect on either group. Each performs equally well on these types of tasks.
3. With language delayed children, it appears that type of stimulus does make a difference. Lexical stimuli yield significantly higher scores than nonsense stimuli for this group within the confines of this investigation. Therefore, lexical stimuli may be more facilitating for language delayed children and it is recommended that these types of stimuli be utilized when training morphological skills in children with delayed language.

Expressive Scores Analysis

C. Between-group comparisons were made for nonsense as well as lexical score on the expressive items. Statistically significant differences were obtained at both levels. When comparing expressive scores on nonsense items, the difference between performance for experimental and control groups was significant beyond the .001 level. Lexical scores for expressive tasks were significantly different beyond the .05 level. The control group received higher scores than the experimental group for both comparisons.

D. Within comparisons disclosed a significant difference beyond the .05 alpha level for lexical and nonsense expressive stimuli for the control subjects. The second within comparison for expressive tasks also resulted in a statistically significant difference beyond the .01 alpha level for the experimental group when contrasting lexical and nonsense items. Both within comparisons revealed that the subjects performed better on the expressive lexical items than the nonsense tasks.

The stimuli rank order themselves in relation to subjects' optimal performance on the expressive portion of the morphology test. The normal children with lexical stimuli performed the best, with their performance on nonsense items ranking second. The third position was found to be the

experimental subjects' scores on the lexical items with nonsense item performance ranking fourth. This data strongly agrees with the previous suggestion by this author to present expressive lexical stimuli in therapy tasks of morphological skill building with the language delayed child.

Receptive Scores Analysis

E. Between comparisons of the obtained receptive scores yielded a significant difference in the normal group's performance on both nonsense and lexical items when compared to the experimental group. The normal children scored higher in both situations and the significant difference obtained for both comparisons was beyond the .05 level of confidence.

F. Within comparisons of the control versus the experimental subjects resulted in no significant differences in performance for either nonsense or lexical items.

The above data can be interpreted to mean that once more, the normal children did better than the language delayed children for both types of receptive stimuli. Also seen was the failure of one type of stimulus to be more effective than the other in a receptive testing situation. Perhaps, this can be attributed to the "guessing" factor which may be involved in receptive testing of morphological rules. The child is presented with four foils and is asked to choose one which fits the criteria of the verbal directive. He has a 25% chance of randomly picking the correct choice

which could alter the "true" morphological receptive knowledge score of this child.

A consistency was seen with the expressive score data in that the lexical stimuli, once again produced significantly higher results for both the control and experimental groups.

Forward Formation Task Analysis (FF)

G. Between-group comparisons were made for the above category with the results revealing a statistically significant difference (beyond the .001 level) in the experimental versus control group performance with nonsense stimuli. Using lexical stimuli with both groups, again revealed a significant difference in between-group performance at the .05 level. The control group subjects exceeded the experimental group subjects in both task situations.

H. Within comparisons analyzed for each group revealed no significant difference in performance for normals with either nonsense or lexical stimuli, and a significant difference in morphological rule performance beyond the .05 alpha level for the language delayed subjects. Lexical stimuli scores were significantly higher than nonsense scores for the experimental group.

It can be seen from between-group comparison data that in forward formation tasks, type of stimuli does make a difference in performance for both control and experimental subjects. The hypothesis that normal children

will perform better than language delayed children in morphological testing held true once more for both nonsense and lexical items. These results are consistent with the total score comparisons reported at the beginning of Chapter IV. The normal children obtained similar scores (within group comparison data) for both types of stimuli when placed in forward formation settings. Language delayed children received significantly higher scores with lexical stimuli than with nonsense stimuli in the above FF tasks.

Backward Formation Analysis (BF)

I. Between-group comparisons yielded significant differences in performance for the control and experimental group when presented with nonsense stimuli and lexical stimuli. Both comparisons were statistically significant beyond the .05 level.

J. Within-group comparisons yielded significant differences for both groups. The control children received higher scores in lexical stimuli settings than they did in a nonsense stimuli situation. Their differences were significant at the .001 level of confidence. The experimental subjects identically modelled the control group in their performance on each stimuli presentation with a matching significance level of .001.

The analysis of backward formation items followed the trend of previous comparisons in that the subject's performance was consistent with the type of stimulus presentations. The lexical scores were significantly

better than nonsense for each subgroup. The control group repeatedly achieved superior scores than the experimental group with both nonsense and lexical stimuli.

Noun Plurals Analysis

K. Between-group comparisons: Mann-Whitney U analysis was computed in this category and the results indicated that nonsense stimuli performance was significantly different from lexical stimuli for the two groups of this study. An alpha level of .01 revealed that normal children performed significantly higher than language delayed children in pluralizing nonsense nouns. The control group, also, scored higher on the lexical portion of the morphology test with a significant difference of .05 in the noun plurals section.

L. Within-group comparisons: No significant difference was found in pluralizing nonsense or lexical nouns for the control group subjects. When considering experimental group's same performance, there was a significant difference found beyond the .05 level of confidence between pluralizing nonsense and lexical nouns. They achieved higher scores when working with lexical items.

These results for noun pluralization data indicate that children of this age range (3-11 to 5-5) can handle noun pluralization tasks whether they

are language delayed or normal children. Two items which were consistently missed by the majority of children in both groups were the pluralization of a word or stem ending in /z/ such as "rose" or /tIz/ and the nonsense and lexical irregular noun plural such as /maf/ to /mavz/ and "leaf" to "leaves." This investigator hypothesizes that perhaps these errors are due to the infrequency of the usage of the /Iz/ allomorph in the English language and the second error caused by the inconsistent use of the correct morphological form by many adults, thereby providing a poor example to children.

Past Tense Verb Analysis

M. Between-group comparisons were analyzed on past tense verbs in nonsense and lexical environments. Nonsense stimuli scores were found to be significantly different for control subjects when compared to experimental subjects. A significant difference beyond the .01 level was computed for the above comparison, with the control group achieving better scores than the experimental group. This was again seen in the second between-group comparison of normal versus language delayed children when lexical stimuli were utilized but at a significance level of .05.

N. Within comparisons: The control group experienced no significant difference when comparing nonsense past tense verb usage with lexical past tense usage. The experimental group, on the

other hand, produced significantly different scores (beyond the .05 level) when comparing nonsense to lexical past tense verb stimuli.

On the basis of these results, it can be hypothesized that significantly higher performance on the lexical items for the language delayed children can be attributed to exposure to the certain grammatical forms with rote memory playing a significant factor in subject responses. . . An ability to apply the past tense verb inflectional rules to novel situations was found in both groups but with much higher and consistent performance in the control group.

Third Person Singular Analysis

O. Between-group comparisons: The resulting U values computed on control versus experimental groups in the third person singular category were nonsignificant. This held true for both nonsense and lexical items.

Because of the small N (3), within comparisons were not computed. This could account for the inability to statistically determine if there was any real difference between the two study populations. When examining each subject's performance on these items, it was found that the normal children had a mean score of 1.4 correct on the nonsense items and 1.6 correct responses on the lexical items as compared to the mean score of .9 on nonsense items and .8 on lexical items for language

delayed children. The patterns can be seen that the stimuli are still rank ordering themselves with lexical proving to be more effective, and that the normal child does better than the language delayed child in morphological ability.

Singular Noun Possession Analysis

P. Between-group comparisons in this grammatical category revealed a significant difference beyond the .001 level in subject performance on nonsense noun possession items. The second between comparison did not yield any significant differences between control and experimental performance on lexical stimuli in a singular noun possession setting.

Again, due to a small N (3), no within comparisons were run for this grammatical category. The significantly higher performance of the control group in utilizing their morphological competence in unfamiliar situations is evidence that normal young children can generate morphological inflections as a function of capability and not of rote memory due to continued exposure. This can be substantiated by their ability to generate the correct morphological inflections for the tested noun and verb forms, with stimuli which they had not been exposed to previously. One could hypothesize that type of testing taps the child's morphological competence ability as opposed to lexical stimulus presentations which tests performance ability.

It should be noted that two of the normal subjects exhibited advanced morphological patterns for the items of singular noun possession. They consistently used the pronoun possessive forms of "his" and "her" in their nonsense and lexical stimuli responses. These responses although morphologically correct could not be accepted as correct responses to the verbal directives given in this test. Perhaps, this could account for the non-significant difference computation between the performance of the two groups.

Present Participle Analysis

Q. Between comparisons were made of experimental versus control group performance on lexical and nonsense stimuli for present participle usage. Neither comparison was found to be significant.

It is interesting to note that although a small N (3) prevented a within comparison in this category, this experimenter wonders if a difference of statistical value would have been found if performed by comparing lexical to nonsense items for each subject group. A mean score value for correct responses revealed that substantially higher scores were seen with comparing lexical performance to nonsense performance. The mean score for the normal population for the nonsense present participle words was 1.2 as compared to a mean score of 2.8 for the lexical items of the same categories. The mean score for the language delayed subjects was .7 for nonsense present participle performance as compared to a mean score of 2.3 for lexical items of the same nature.

Derivational Word Analysis

R. Between-group comparisons computed on derivational performance of normal and language delayed children in both lexical and nonsense situations revealed no significant difference between the two populations.

Some possible reasons for the inconsistent and rather poor performance of both groups of children on these last three tasks of the test could be inattention caused by fatigue or the infrequency of the derivational noun usage in the English language. The usage of the comparative and superlative adjectives was almost nil in the subjects of both groups for both types of stimuli. Sequence of emergence data (Menyuk, 1971 and Jacobson, 1956) consistently reports that these grammatical features do not develop in children of this age range.

MA and CA Comparisons with Morphological Skills

To determine if there was a statistically significant relationship between morphological performance and mental age, and/or morphological performance and chronological age, eight Kendall Tau correlation coefficients were computed and analyzed. The results are displayed in Table 6.

TABLE 6.--Kendall Tau Correlations for Determining Relationships Between Mental Age (MA), and/or Chronological Age (CA) to Morphological Performance

Variable	Mental Age	Chronological Age
Nonsense Score		
Normal Population	.22	.02
Language Delayed Population	.02	.04
Lexical Score		
Normal Population	.16	.11
Language Delayed Population	.24	.24

These figures may be interpreted as non-significant values. Therefore, there does not appear to be any statistically significant relationship between:

1. Mental age and lexical performance on the devised morphology test for normal children.
2. Mental age and nonsense performance on the devised morphology test for normal children.
3. Chronological age and lexical performance on the devised morphology test with normal children.
4. Chronological age and nonsense performance on the devised morphology test with normal children.
5. Mental age and lexical performance on the devised morphology test with language delayed children.
6. Mental age and nonsense performance on the devised morphology test with language delayed children.

7. Chronological age and lexical performance on the devised morphology test with language delayed children.

8. Chronological age and nonsense performance on the devised morphology test with language delayed children.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this investigation was to compare the morphological rules of the child with language delay and the child with normal language acquisition. These comparisons were accomplished by devising a deep test of morphology and administering this linguistic measure to a sample of ten language delayed children. The devised morphological test was also given to a control group of ten normal children who closely matched the language delayed population in mental and chronological age.

A child was considered to be language delayed if he scored two standard deviations or more below the mean score for children of the same chronological age, according to the ACLC norms established within the East Central Illinois region. Criteria for selection of subjects included normal intelligence, absence of known organic, mental, or physical impairment which would hinder his language development.

The children in the experimental and control groups were selected from the East Central Illinois region. They were administered a battery of tests to determine their mental age, language comprehension ability, hearing acuity, and specific articulation skills (final /t/, /d/, /s/ and /z/).

Tests utilized in this study were: the Ammons and Ammons Quick Test of Screening Intelligence (QT), The Assessment of Children's Language Comprehension (ACLC), and a brief articulation test adapted from the revised edition of the Templin Darley Test of Articulation. The devised deep test of morphology was then administered to these children and the results statistically analyzed.

This morphology test consisted of 35 lexical and 35 nonsense items. Specific areas of assessment included: plurality, possession, tense, and derivation. Additional features were backward and forward formation, and the psycholinguistic processes of expressive and receptive performance on nouns and verbs.

Stimuli selection was based on the following criteria: frequency of occurrence of lexical items in a child's vocabulary (according to the Thorndike-Lorge 10,000 Most Frequently Occurring Words); and devised nonsense stimuli based upon early developing phonemes to minimize articulation difficulty on the test items.

The developed morphology test was given to five adults to determine the common accepted English inflection used for each item. The scoring criterion for the morphological test which was used with the children in this study, was based on conformity with the rules demonstrated by the tested adults.

From the obtained data, statistical analyses were made concerning the morphological ability of language delayed children versus normal children. Specifically, the following relevant questions were asked at the outset of this investigation:

1. Is there a statistically significant difference between the obtained total lexical scores of the subjects in the normal group as compared to the subjects in the language delayed group?
2. Is there a statistically significant difference between the total obtained nonsense scores of the subjects in the normal language group as compared to the subjects in the language delayed group?
3. Do statistically significant differences exist between the two groups in their performance on the lexical and nonsense noun plurals subtest?
4. Do statistically significant differences exist between the two groups in their subtest scores for the verb forms, possessives, and adjectives subtests?
5. Is there a statistically significant difference between the responses of normal and language delayed children in their performance on lexical stimuli versus nonsense stimuli?

6. Is there a statistically significant difference between the responses of the normal and language delayed children to the backward and forward formation items?
7. Is there a statistically significant difference between the normal children's responses on the receptive items as compared to the expressive items?
8. Is there a statistically significant difference between the language delayed children's responses on the receptive items as compared to the expressive items?
9. Is there a statistically significant relationship between the morphological skills and mental age for either the normal or language delayed child?
10. Is there a statistically significant relationship between morphological skills and chronological age for both the language delayed and normal child?

Eighteen comparisons were made to assess statistical differences between and within the experimental and control groups. The differences were determined through utilization of the Mann-Whitney U statistic. Eight statistical relationships were assessed by means of the Kendall Tau correlation coefficient. Specifically, the variables examined were: mental and chronological age and their relationship to morphological rule performance for lexical and nonsense stimuli.

Conclusions

The above statistical analyses concerning morphological performance between the experimental and control groups were interpreted as follows:

1. Regarding the differences between total score performances:
   a. No significant differences were found between lexical and nonsense stimuli for normal children.
   b. Evidence of morphological rules was indicated for the control group and their ability to apply these rules to novel situations.
   c. Both groups performed equally well in their total score performance with lexical stimuli.
   d. Lexical stimuli yielded significantly higher results than nonsense stimuli for language delayed children.
2. Concerning the differences between expressive score performances:
   a. Lexical stimuli on expressive tasks resulted in significantly higher scores than nonsense stimuli for both subject groups.
   b. Stimuli rank order themselves in relation to subject group and performance on the expressive tasks:
      1. Normal Lexical-ranking highest
      2. Language Delayed Lexical
      3. Normal Nonsense
      4. Language Delayed Nonsense-ranking lowest

3. Concerning the differences found between receptive task performance:
   a. Control group subjects scored significantly higher than experimental group subjects on both receptive nonsense and lexical items.
   b. This concurs with expressive data results.
4. Comparison of forward formation tasks revealed the following:
   a. Type of stimuli does make a difference in performance on forward formation tasks for both test groups. Lexical stimuli resulted in higher scores than nonsense stimuli.
   b. The hypothesis that normal children will perform better than language delayed children held true for both nonsense and lexical items in forward formation performance.
   c. These results are consistent with total score data.
5. Backward formation task analysis resulted in the following conclusions:
   a. Results supported previous comparisons data in lexical stimuli achieving the best scores for both groups.
   b. The control group continued to perform significantly higher than the experimental group for both types of stimuli.
6. Noun plural task analysis revealed the following:
   a. Both subject groups could handle noun pluralization tasks equally well.

b. Children in both groups experienced difficulty in using the /Iz/ allomorph for noun plurals. This data is consistent with other morphological studies that hypothesize this incorrect usage is due to the infrequency of occurrence of this inflectional marker in the English language.

c. Difficulty was also seen in the formation of irregular plurals. Both subject groups used the /s/ allomorph to pluralize "leaf" as opposed to the adult pattern of substituting a /v/ for the /r/ and adding the inflectional marker /z/. It should be noted that during nonsense noun pluralization performance on a similar task, adults tended to regularize the stimulus item /ʃmaf/ with a /s/ instead of /vz/. Thus, their inconsistent use of the correct morphological form revealed that they do not have this morphological rule of competence in their linguistic system.

7. Comparisons of past tense verb usage revealed the following:

a. Control group subjects performed significantly better than experimental subjects on nonsense and lexical stimuli on past tense verb forms.

b. Children in the normal test group regularized the lexical verb form of "sing"-"singed" in contrast to adults who followed the irregular morphological pattern of "sing"-"sang."

c. No significant difference was found between type of stimuli performance for the subjects in the control group.

d. It was hypothesized that the significantly higher test scores on the lexical items for the experimental group can be attributed to constant exposure to the specific grammatical forms with subject responses being geared by rote memory and not competence.

8. Third person singular data revealed the following:

a. Stimuli was still rank ordered with lexical items ranking first.

b. Between-group comparisons yielded non-significant results for both groups and both types of stimuli.

c. Results were consistent with above data regarding normal children consistently performing better in all grammatical forms than the language delayed group.

9. Concerning the results of singular noun possession comparisons, the following statements can be made:

a. A significant difference (at the .001 alpha level) was found in subject performance on the nonsense items with the normal children outranking the experimental group subjects on possessive nouns.

b. Lexical stimuli did not yield any significant differences

between the two groups. Both experimental and control subjects responded correctly to the lexical stimuli presentations.

c. The results from the between-group comparisons substantiated the hypothesis that normal children possess the competence at this age range to produce the correct inflectional marker for singular noun possessives in novel or unfamiliar situations.

10. The comparisons for present participle usage revealed that:

a. There was no significant difference between subject performance for either type of stimuli in their usage of present participles.

b. An item analysis revealed that both normal and language delayed children performed equally well on generating lexical present participles with a mean score of 2.8 out of a possible 3.0 for the control group and a mean score of 2.3 out of a possible 3.0 for the experimental group.

c. From the above analysis, it is hypothesized that children of this age range can expressively generate the present participle form in a lexical situation.

11. Derivational word performance was statistically analyzed and from the results, these conclusions can be made:

a. Between-group comparisons did not yield a significant difference in subject performance for either group in this study. Stimulus situation did not have an effect on the subjects.

b. These results are consistent with previous morphological studies which relate that children of this age range do not possess the ability to generate a derivational noun or the derivational comparative and superlative adjectives.

12. Concerning the relationships between MA and CA and their effect on morphological performance, it can be concluded that:

a. There is no statistical relationship between mental age of normal subjects and their total performance on nonsense and lexical items.

b. The preceding statement is held true for language delayed children in their performance scores for both types of stimuli.

c. There is no statistical relationship between the subject's chronological age and his performance on the devised linguistic measure utilized in this study. This statement refers to both normal and language delayed children and both lexical and nonsense stimuli.

The children in this study who possessed normal language acquisition clearly performed better than children who were language delayed. The results of this study implied that children in the age range of four to five years old had the competence to generate the correct inflectional markers in frequently occurring parts of speech.

Implications for Future Research

1. A more thorough study of morphology modelled after the devised linguistic measure utilized in this investigation using a larger population. Expansion of the receptive and backward formation items would be beneficial. These items in particular differentiated the experimental and control groups in this study.
2. In order to make this test more applicable for speech and language clinicians, normative data should be compiled for various age ranges and types of disorders.
3. A study should be conducted to examine the reliability and validity of this test in order to establish the utility and effectiveness of this language measure.
4. Replication of this investigation, using a larger sample of language delayed children is warranted in order to standardize the results of this test and effect greater generality.
5. A screening version of this test should be developed utilizing the most frequently occurring morphological inflections found in children of various age groups.

APPENDIX A

Chart 1: Variables Used in Constructing a Test of Morphology

Variable	Berko	Berry & Talbott	Bellamy & Bellamy	Chappell Test of English Inflection	Miner & Shriner	ITPA Grammatic Closure	Newfield & Schlanger
Nonsense Items	X	X	X		X		X
Lexical Items	X		X	X		X	X
Expressive	X	X	X	X	X	X	X
Receptive			X		X		
Back Formation			X				
Forward Formation	X	X	X	X	X	X	X
Noun Plurals	X	X	X	X	X	X	X
Possessives	X	X	X	X	X	X	
Past Tense	X	X	X	X	X	X	X
Third Person Singular	X	X	X	X	X		X
Present Progressive	X	X	X	X	X	X	X
Derivations	X	X		X		X	X
Irregular Verbs				X		X	

APPENDIX B

TABLE 3

DEEP TEST OF MORPHOLOGY

NAME_____ DATE_____ B.D._____ C.A._____

NONSENSE WORDS

1.	gip	_____(s)	Exp	FF	Noun plurals
2.	dæk	_____(s)	Exp	FF	Noun plurals
3.	vits	_____(-)	Rec	BF	Noun plurals
4.	*nIf	_____(s,vz)	Rec	FF	Noun plurals
5.	wimz	_____(-)	Exp	BF	Noun plurals
6.	leb	_____(z)	Exp	FF	Noun plurals
7.	tɛv	_____(z)	Exp	FF	Noun plurals
8.	dʌn	_____(z)	Exp	FF	Noun plurals
9.	bilz	_____(-)	Rec	BF	Noun plurals
10.	fid	_____(z)	Rec	FF	Noun plurals
11.	gog	_____(z)	Rec	FF	Noun plurals
12.	tæsə z	_____(-)	Exp	BF	Noun plurals
13.	tIz	_____(əz)	Exp	FF	Noun plurals
14.	gʌtʃ	_____(əz)	Rec	FF	Noun plurals
15.	kɛ/əz	_____(-)	Rec	BF	Noun plurals
16.	*maf	_____(s,vz)	Exp	FF	Noun plurals
17.	dæk	_____('s)	Exp	FF	Singular possession
18.	gog	_____('z)	Exp	FF	Singular possession
19.	tIss	_____('əz)	Exp	FF	Singular possession
20.	zæp	_____(ət)	Exp	FF	Past tense verbs
21.	mikt	_____(-k-)	Rec	BF	Past tense verbs
22.	tɛb	_____(d)	Exp	FF	Past tense verbs
23.	liməd	_____(-m-)	Rec	BF	Past tense verbs
24.	vut	_____(əd)	Exp	FF	Past tense verbs
25.	sId	_____(əd)	Rec	FF	Past tense verbs
26.	fIŋ	_____(fæŋ) or (fIŋed)	Exp	FF	Irregular past tense
27.	mIp	_____(s)	Exp	FF	3rd person singular
28.	keb	_____(z)	Rec	FF	3rd person singular
29.	ræs	_____(əz)	Exp	FF	3rd person singular
30.	zæp	_____(Iŋ)	Exp	FF	Present participle
31.	vuk	_____(Iŋ)	Exp	FF	Present participle
32.	kutIŋ	_____(-)	Exp	BF	Present participle

TABLE 3.--Continued

33.	kik	_____(ɚ)	Exp	FF	Derivational noun
34.	zut	_____(iɚ)	Exp	FF	Derivational comparative adj.
35.	zut	_____(iə st)	Exp	FF	Derivational superlative adj.

Key: + indicates correct response
- indicates incorrect response (no transformation-repetition of stimulus)
NR indicates no response

Exp - Expressive
Rec - Receptive
BF - Backward Formation
FF - Forward Formation
* - 2 acceptable answers

Number Correct:

____	____	____	____	____	____	=	____
16	3	7	3	3	3		35

Examiner _____

TABLE 4

DEEP TEST OF MORPHOLOGY

NAME_____ DATE_____ B.D._____ C.A._____

LEXICAL WORDS

1.	cup	_____(s)	Exp	FF	Noun plurals
2.	lake	_____(s)	Exp	FF	Noun plurals
3.	boats	_____(-)	Rec	BF	Noun plurals
4.	leaf	_____(vz)	Rec	FF	Noun plurals
5.	drums	_____(-)	Exp	BF	Noun plurals
6.	club	_____(z)	Exp	FF	Noun plurals
7.	wave	_____(z)	Exp	FF	Noun plurals
8.	can	_____(z)	Exp	FF	Noun plurals
9.	girlz	_____(-)	Rec	BF	Noun plurals
10.	bed	_____(z)	Rec	FF	Noun plurals
11.	dog	_____(z)	Rec	FF	Noun plurals
12.	dressez	_____(-)	Exp	BF	Noun plurals
13.	rose	_____(ez)	Exp	FF	Noun plurals
14.	watch	_____(ez)	Rec	FF	Noun plurals
15.	dishez	_____(-)	Rec	BF	Noun plurals
16.	half	_____(vez)	Exp	FF	Noun plurals
17.	cook	_____('s)	Exp	FF	Possession (sing)
18.	dog	_____('z)	Exp	FF	Possession
19.	nurse	_____('ez)	Exp	FF	Possession
20.	step	_____(t)	Exp	FF	Past tense verbs
21.	walkt	_____(-)	Rec	BF	Past tense verbs
22.	rub	_____(d)	Exp	FF	Past tense verbs
23.	climbd	_____(-)	Rec	BF	Past tense verbs
24.	skate	_____(ed)	Exp	FF	Past tense verbs
25.	trade	_____(ed)	Rec	FF	Past tense verbs
26.	sing	_____(sang)or (singed)	Exp	FF	Irregular past tense
27.	drop	_____(s)	Exp	FF	3rd person singular
28.	rob	_____(z)	Rec	FF	3rd person singular
29.	kiss	_____(ez)	Exp	FF	3rd person singular
30.	shop	_____(ing)	Exp	FF	Present participle
31.	bark	_____(ing)	Exp	FF	Present participle
32.	painting	_____(-)	Exp	BF	Present participle

TABLE 4.--Continued

33.	pick	_____(er)	Exp	FF	Derivational noun
34.	spot	_____(ier)	Exp	FF	Derivational comparative
35.	spot	_____(iest)	Exp	FF	Derivational superlative

Key: + indicates correct response
- indicates incorrect response
NR indicates no response

Exp - Expressive
Rec - Receptive
BF - Backward Formation
FF - Forward Formation

Number Correct:

____	____	____	____	____	____	= ____
16	3	7	3	3	3	35

Examiner _____

APPENDIX C

APPENDIX C

MORPHOLOGY TEST - LEXICAL ITEMS

Platelet Number	Exp Rec	Stimulus Picture	Tested Morpheme	Parts of Speech	BF or FF	Rule Tested	Frequency of Word In Vocabulary
1	Exp	cup	-s	noun	FF	plural	1st 1000
2	Exp	lake	-s	noun	FF	plural	1st 1000
3	Rec	boat	-s	noun	BF	plural	1st 1000
4	Rec	leaf	-s	noun	FF	plural	1st 2000
5	Exp	drum	-z	noun	BF	plural	1st 2000
6	Exp	club	-z	noun	FF	plural	1st 1000
7	Exp	wave	-z	noun	FF	plural	1st 1000
8	Exp	can	-z	noun	FF	plural	1st 1000
9	Rec	girl	-z	noun	BF	plural	1st 1000
10	Rec	bed	-z	noun	FF	plural	1st 1000
11	Rec	dog	-z	noun	FF	plural	1st 1000
12	Exp	dress	-Iz	noun	BF	plural	1st 1000
13	Exp	rose	-Iz	noun	FF	plural	1st 1000
14	Rec	watch	-Iz	noun	FF	plural	1st 1000
15	Rec	dish	-Iz	noun	BF	plural	1st 2000
16	Exp	half	-vz	noun	FF	plural	1st 1000
17	Exp	cook	's	noun	FF	possession	1st 1000
18	Exp	dog	'z	noun	FF	possession	1st 1000
19	Exp	nurse	'Iz	noun	FF	possession	1st 2000

Platelet Number	Exp Rec	Stimulus Picture	Tested Morpheme	Parts of Speech	BF or FF	Rule Tested	Frequency of Word In Vocabulary
20	Exp	step	-t	verb	FF	past tense	1st 1000
21	Rec	walk	-t	verb	BF	past tense	1st 1000
22	Exp	rub	-d	verb	FF	past tense	1st 2000
23	Rec	climb	-d	verb	BF	past tense	1st 2000
24	Exp	skate	- ɘd	verb	FF	past tense	1st 1500
25	Rec	trade	- ɘd	verb	FF	past tense	1st 1000
26	Exp	sing	sang	verb	FF	irregular past tense	1st 1000
27	Exp	drop	-s	verb	FF	3rd person singular	1st 1000
28	Rec	rob	-z	verb	FF	3rd person singular	1st 2000
29	Exp	kiss	-Iz	verb	FF	3rd person singular	1st 1000
30	Exp	shop	ing	verb	FF	present participle	1st 1000
31	Exp	bark	ing	verb	FF	present participle	1st 1500
32	Exp	paint	ing	verb	BF	present participle	1st 1000
33	Exp	pick	ɘr	noun	FF	derivational	1st 1000
34	Exp	spot	Iɘr	adjective	FF	comparative	1st 1000
35	Exp	spot	Iɘst	adjective	FF	superlative	1st 1000

Key: Rec - Receptive Exp - Expressive BF - Backward Formation FF - Forward Formation

APPENDIX D

SAMPLE TEST PLATES

The verbal directives listed below accompany the following sample test plates for the devised deep test of morphology used in this investigation. The directives and illustrations are numbered correspondingly (platelet number is centered at the bottom of each illustration).

1. Expressive forward formation noun plurals:

   "This is a /gip/.
   Here is another /gip/.
   Now there are two ____(/gips/)."

2. Receptive forward formation noun plurals:

   "This is a /nIf/.
   What is it called? A ____.
   Look at all these pictures
   Point to /nIfs/."

3. Receptive backward formation noun plurals:

   "Here are some /kɛʃəz/.
   Now look at all these pictures.
   Point to /kɛʃ/."

4. Expressive forward formation singular possession:

   "This is a /tIss/ who has a /gik/.
   Whose /gik/ is it?
   It is the _____(/tIssəz/."

5. Expressive forward formation past tense verb:

   "This is a /dup/ who knows how to /zæp/.
   He did it yesterday. Yesterday, he _____ (/zæpət/)."

6. Receptive forward formation past tense verb:

   "This is a /mIf/ who knows how to /sId/.
   He does it everyday. Look at all these pictures.
   Point to the /mIf/ who /sIdəd/."

7. Expressive forward formation 3rd person singular:

"This is a /ˈgoʊɡ/ who knows how to /ræs/.
He does it everyday. Everyday, he _____(/ræsəz/)."

8. Expressive backward formation present participle:

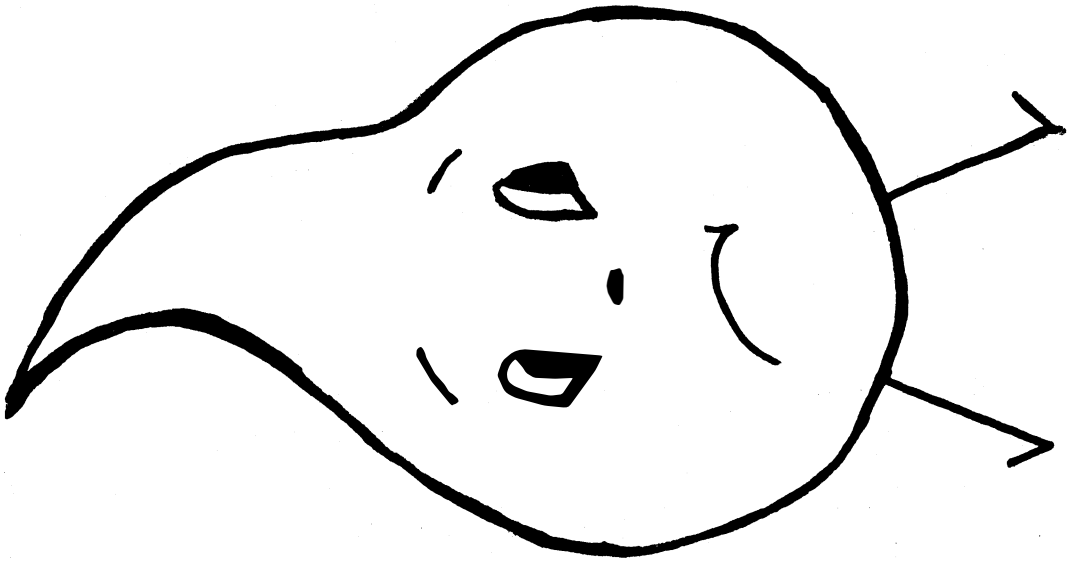
"This is a /nɪf/ who is /ˈkʌtɪŋ/ right now.
He does it everyday. He knows how to _____ (/kʌt/)."

9. Derivational noun:

"This is a man who knows how to /kɪk/.
He /kɪks/ everyday.
This man is called a _____ (/kɪkər/)."

10. Derivational adjective:

"This is a /bim/. This /bim/ has some /zʌts/ on it.
It is /zʌtɪ/. This /bim/ has even more /zʌts/ on it.
It is _____ (/zʌtiər/). And this /bim/ has the most /zʌts/
on it. It is the _____(/zʌtiəst/)."



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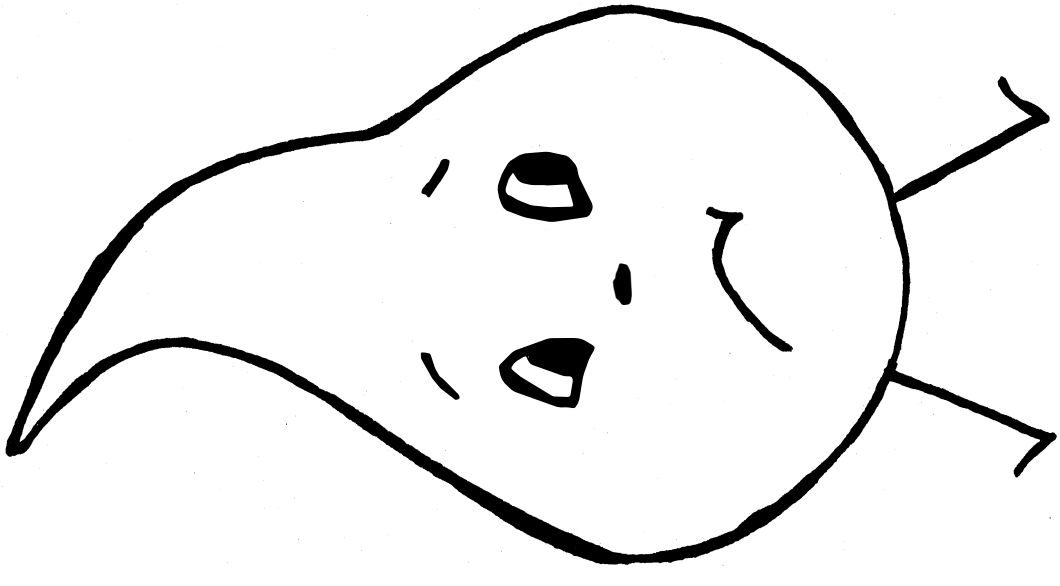

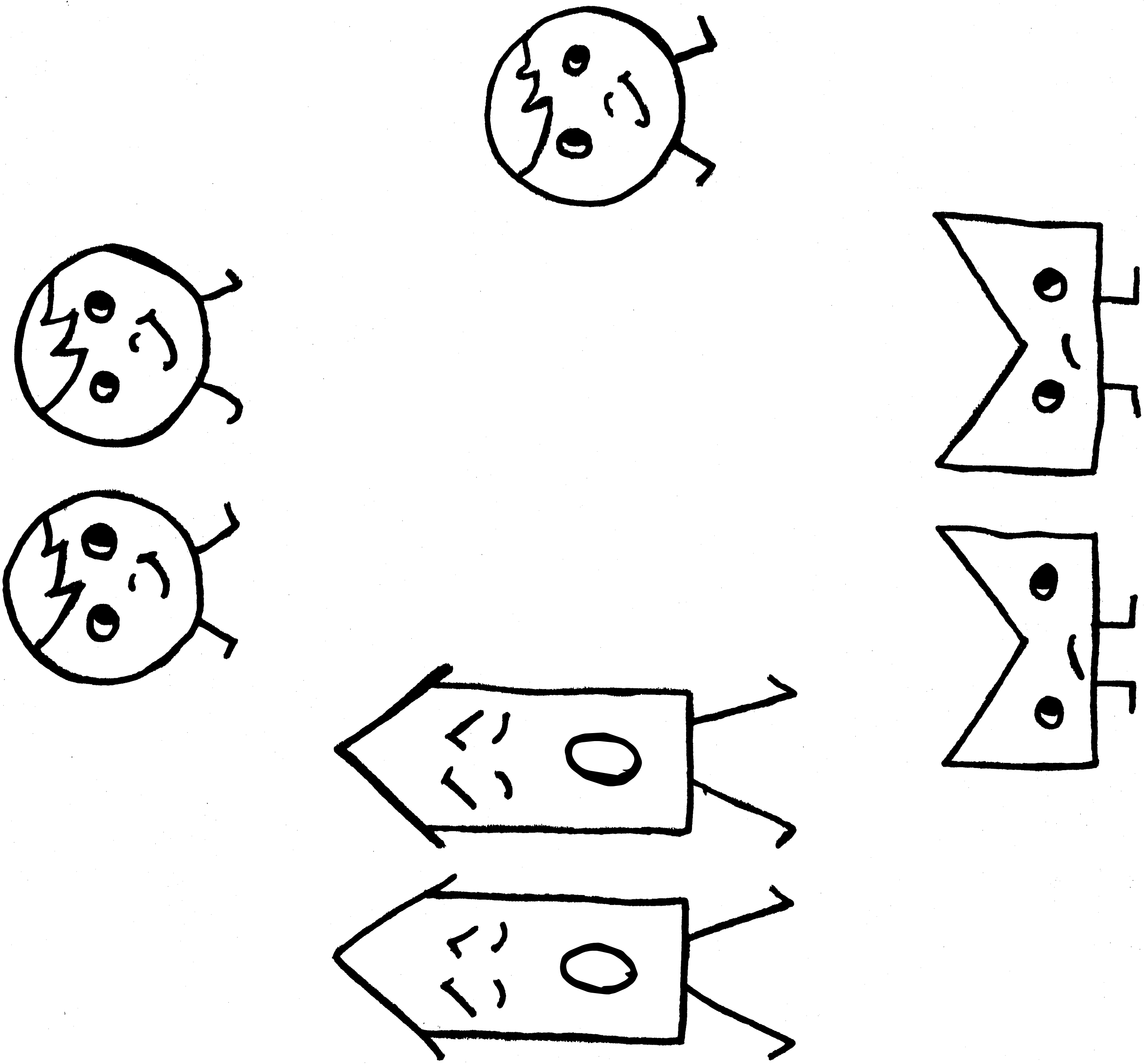

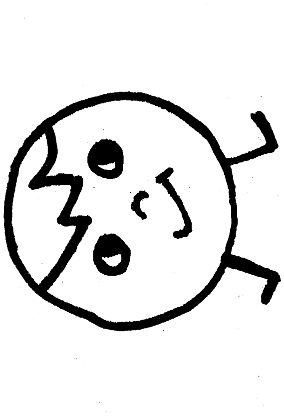

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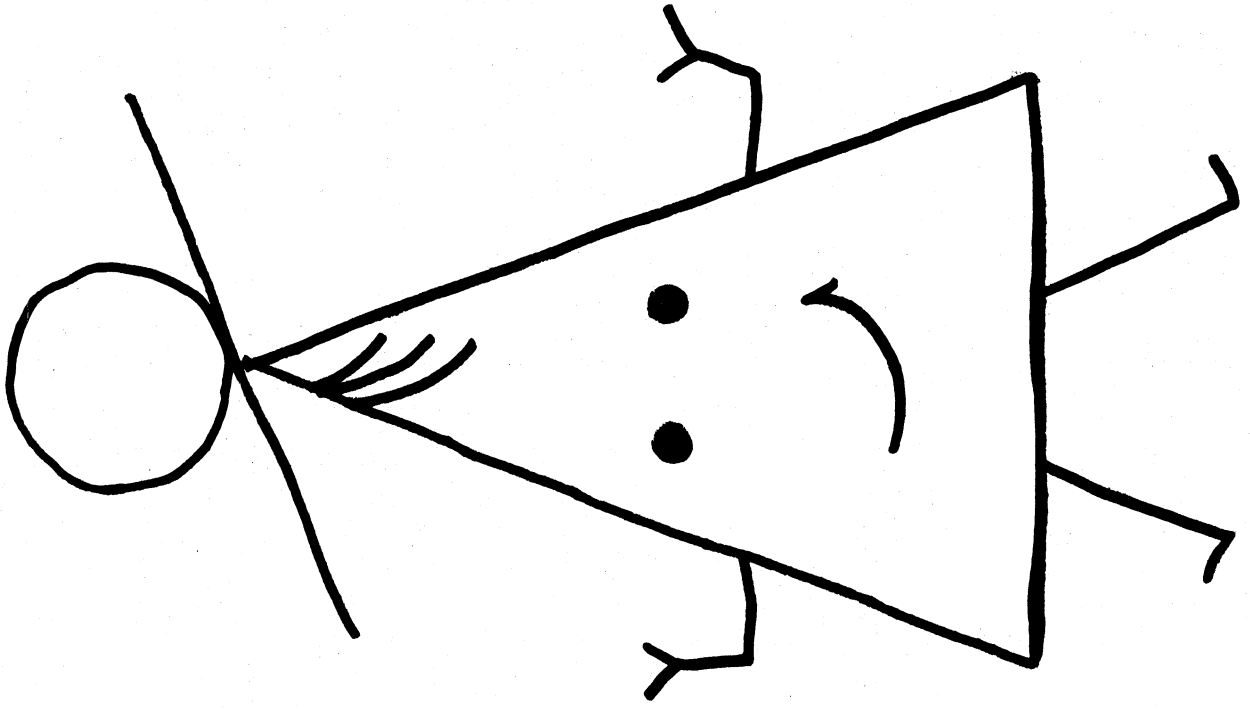

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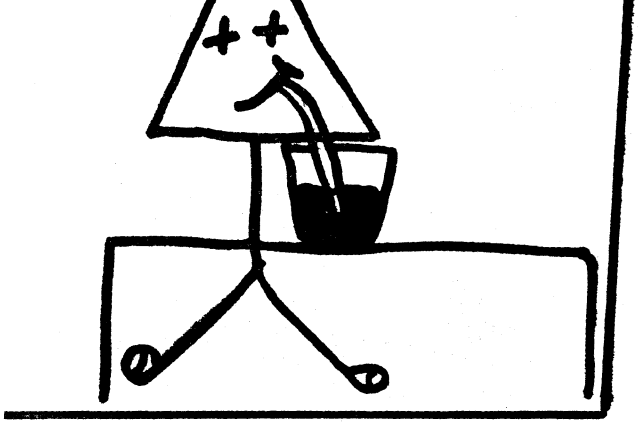

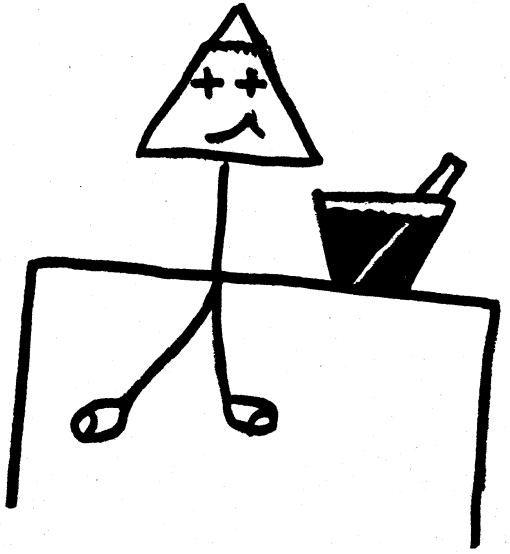

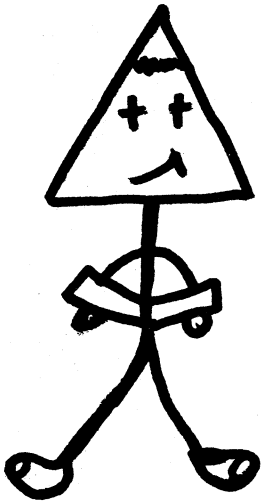

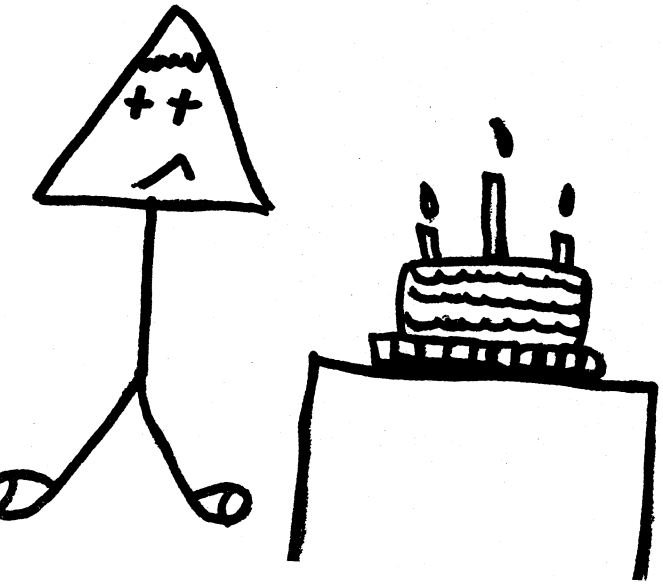

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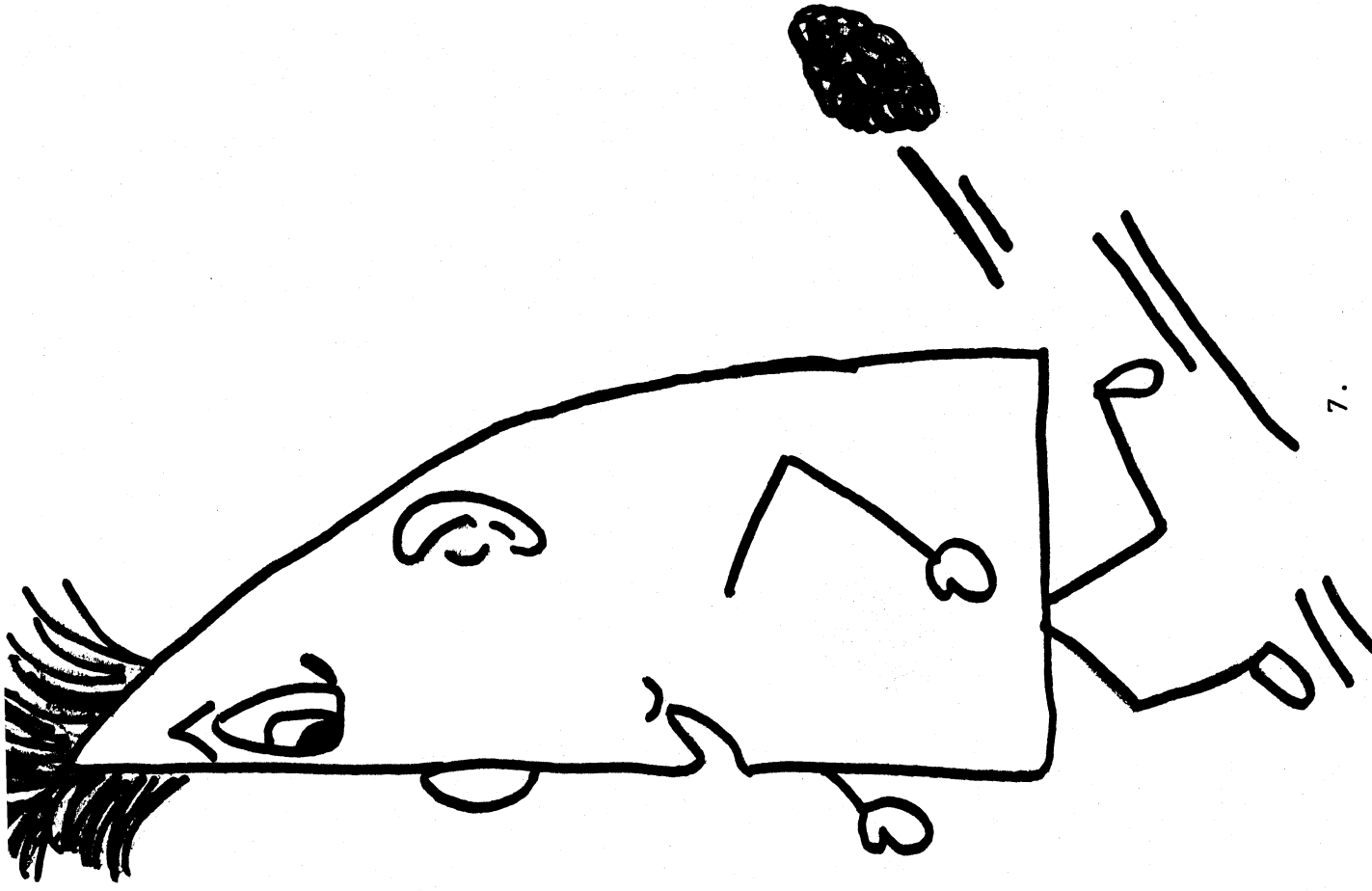

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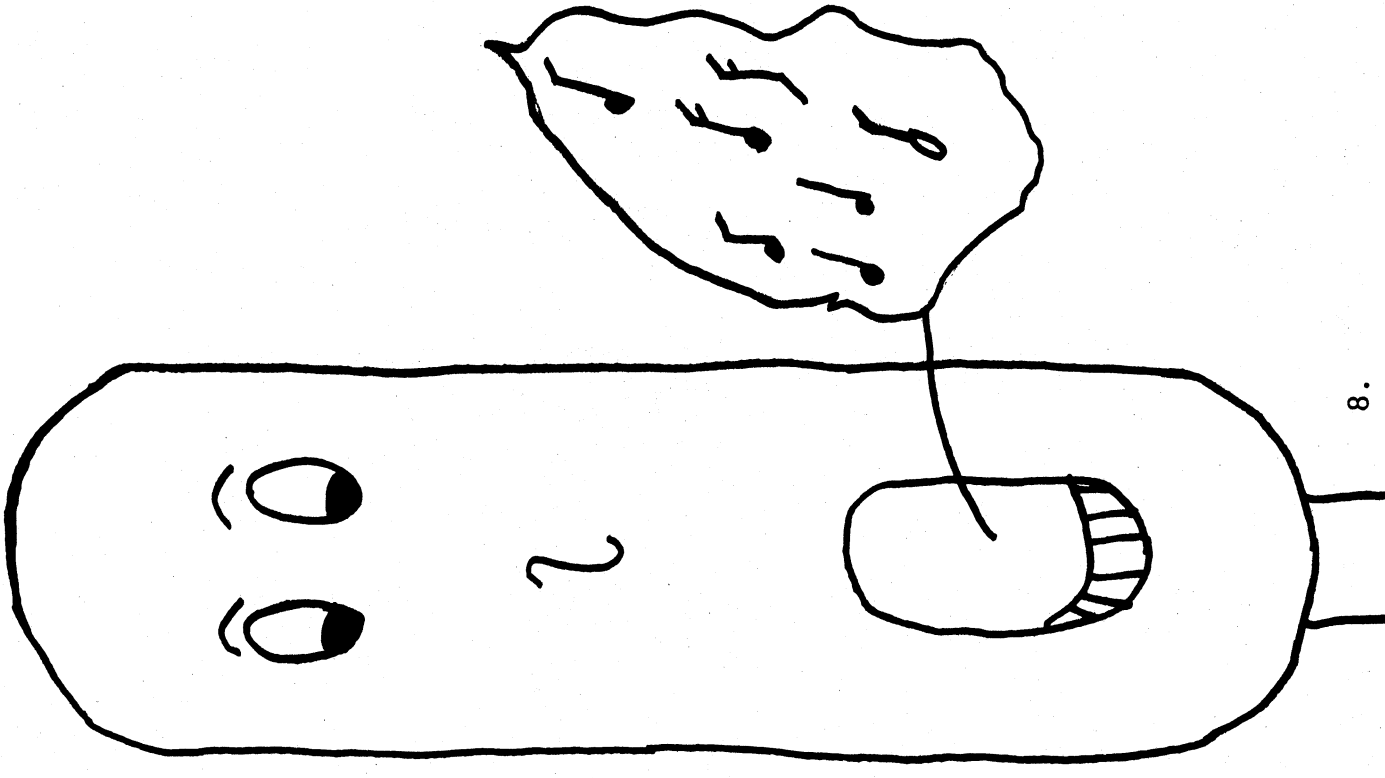

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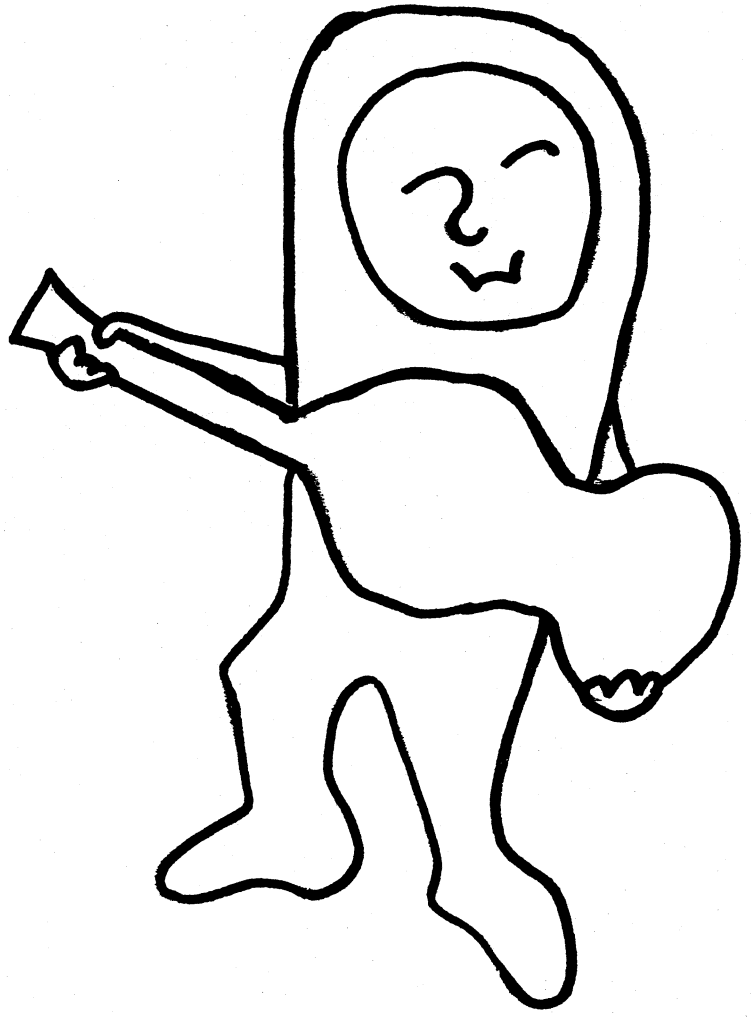

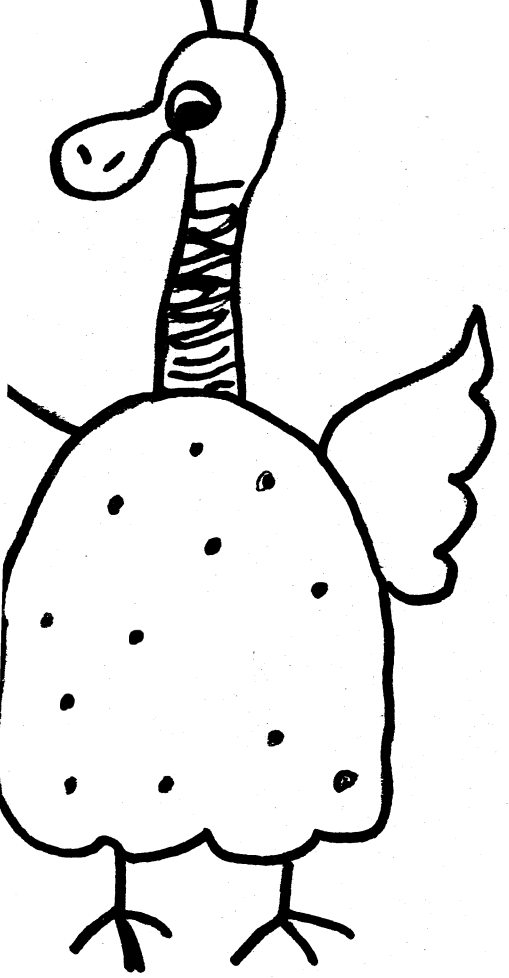

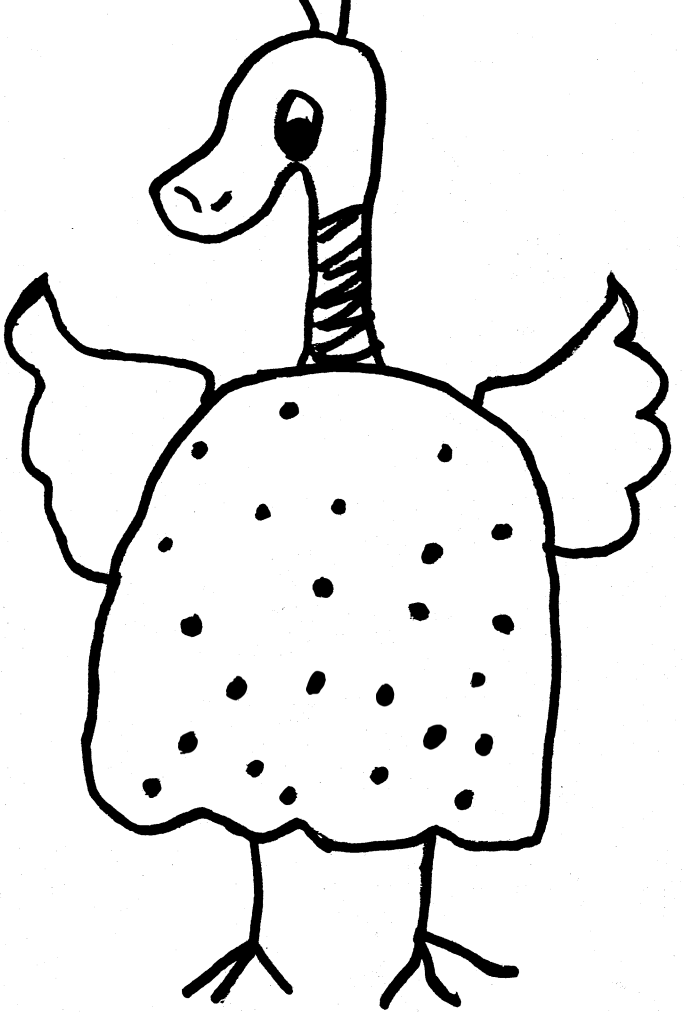

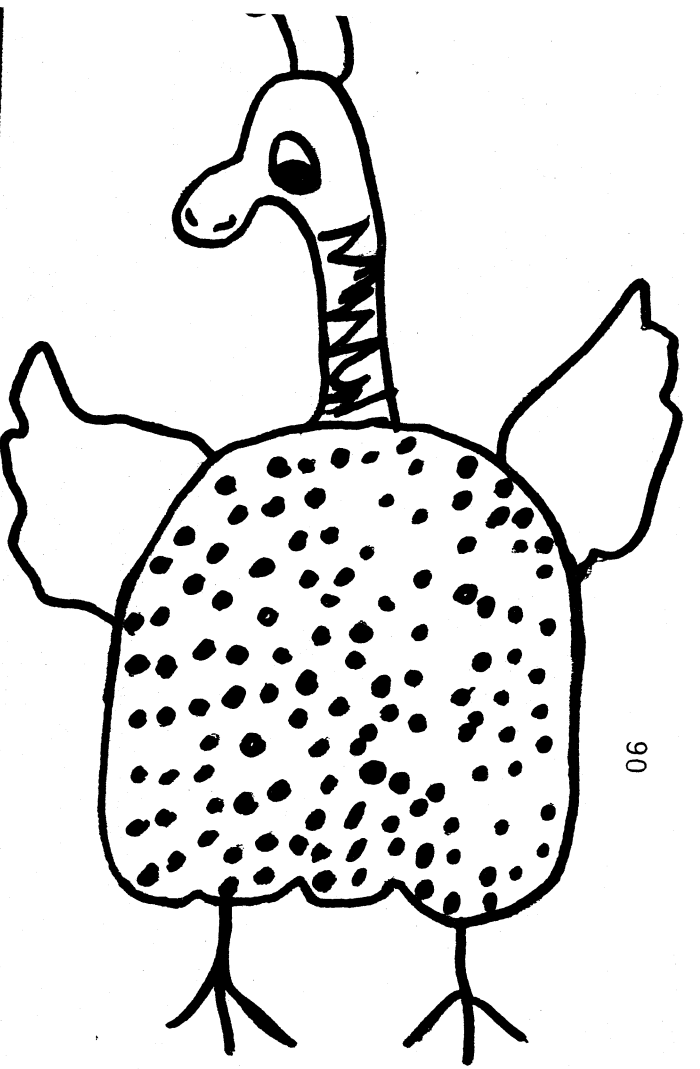

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