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AN ABSTRACT OF THE THESIS OF Bernadette Maresh-Ericksen for the Master of Science in Speech Communication, with an emphasis in Speech Pathology/Audiology, presented on April 23, 1982.

Title: The Acquisition of Obligatory-do.

APPROVED BY MEMBERS OF THE THESIS COMMITTEE:

Mary E. Gordon, Chairperson

Robert L. Casteel

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The auxiliary verb obligatory-do is used in forming questions, negative and emphatic sentences. Currently there is no test or norms established for the acquisition of

obligatory-do. The purpose of this study was to establish age trends, via elicited imitation for the acquisition of obligatory-do according to the sentence type in which it expressively occurs i.e., negative sentences, emphatic sentences, interrogative reversals and wh-questions. This study addressed the following question: At what ages do children expressively demonstrate, via elicited imitation, the auxiliary verb obligatory-do in negative sentences, emphatic sentences, interrogative reversals and wh-questions? A secondary question was: In what manner does age and MLU, mean length of utterance, of 25 utterances correlate with the acquisition of obligatory-do?

Forty children consisting of four groups of ten each were tested within one month of their designated age groups. They comprised each of the following age groups; 30, 36, 42, and 48 months. Twenty-four month olds were initially included in the design of this study but were later discontinued due to their lack of imitation ability. Only children who demonstrated language development within Lillywhite's (1970) guidelines for their age level were accepted as subjects for this study.

A language sample of 25 utterances was recorded for each child and analyzed to arrive at a MLU. The Imitative Test of Obligatory-Do consisting of 24 sentences, six for each sentence type, was administered to each child. The highest possible score was 96. The mean for 2 1/2 year olds was 68.6, for 3 year olds 80.2, for 3 1/2 year olds 89, and

for 4 year olds 95.9. A score of 85 or above indicates the child is using obligatory-do accurately in most contexts.

Fifty percent of 2 1/2 year olds, 60-70 percent of 3 year olds, 80-90 percent of 3 1/2 year olds and all 4 year olds used obligatory-do correctly depending on the sentence type. Negative sentences appeared to be easiest for all ages. The emphatic sentences were next easiest for all ages. Interrogative reversals were most difficult for 2 1/2 year olds while wh-questions were the most difficult for the other age groups. There was a moderately strong correlation between MLU of 25 utterances and the number of obligatory-do errors (-.70) and between age and obligatory-do errors (-.63).

THE ACQUISITION OF OBLIGATORY-DO

by

Bernadette Maresh-Ericksen

A thesis submitted in partial fulfillment of the
requirements for the degree of

MASTER OF SCIENCE IN SPEECH COMMUNICATION:
with an emphasis in

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Portland State University
1982

TO THE OFFICE OF GRADUATE STUDIES AND RESEARCH:

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TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vi
LIST OF FIGURES	vii
CHAPTER	
I INTRODUCTION AND PURPOSE	1
Introduction	1
Statement of Purpose	3
Definition of Terms	3
II REVIEW OF THE LITERATURE	5
Language Acquisition	5
Transformational Grammar	7
Obligatory-Do Transformation	8
Negation	9
Questions	12
Elicited Imitation	14
Current Tests of Obligatory-Do	18
III METHOD	20
Subjects	20
Instrumentation	21
Procedures	22
Scoring Data and Analysis	23
IV RESULTS AND DISCUSSION	24
Results	24
Discussion	34
V SUMMARY AND IMPLICATIONS	40
Summary	40
Implications	42

Clinical	42
Research	43
BIBLIOGRAPHY	45
APPENDICES	47
A CCD-CDRC Hearing Screening Schedule	48
B Permission Form	49
C The Imitative Test of Obligatory-Do	52
D Raw Data and Obligatory-Do Scores	54

LIST OF TABLES

TABLE		Page
I	Developmental Sentence Scores for Obligatory-Do	18
II	Children Scoring 85 or Higher on the Imitative Test of Obligatory-Do	26

LIST OF FIGURES

FIGURE		Page
1.	Percent of Children who had one or/less error per each sentence type	25
2.	Mean scores for 2 1/2 to 4 year old subjects on the Imitative Test of Obligatory-Do	27
3.	Mean Obligatory-Do errors of 2 1/2 year olds	28
4.	Mean Obligatory-Do errors of 3 year olds	29
5.	Mean Obligatory-Do errors of 3 1/2 year olds	30
6.	Mean Obligatory-Do errors for all ages according to conjugation and age	31
7.	Mean Obligatory-Do errors for all subjects according to sentence type and conjugations .	33

CHAPTER I

INTRODUCTION AND PURPOSE

Introduction

In the course of language development, children progress from understanding language to the production of language. Sounds are first produced without any meaning. Later meaning is attached to these first sounds, and they are called words. Generally, words are initially produced one at a time, later in two-word combinations, and eventually into longer and longer combinations known as sentences. Basic sentence structure, i.e., subject-verb-object, is one of the early landmarks in children's language development. By two years of age, children are beginning to form two-word phrases which often resemble adult language with a large number of omissions. By the time children are five, 80 percent of their utterances are considered grammatically correct when compared to the adult form (Lee, 1974).

Exactly how children acquire language and its various rules of grammar is not wholly known. One cannot look into children's minds to observe how language is being learned. It is possible, however, to study the language produced, examine the changes made over time and draw parallels to adult language. Many studies have been done concerning the

development of syntax and morphology in children's language. From the research gathered, there are available norms and standards by which one can evaluate a child's language. Most of the norms are concerned with average length of response, number of words in the vocabulary, the appearance of different sentence structures and basic language concepts. A speech-language pathologist can determine whether a child is functioning at age level in regards to language development by comparing the child's language to various norms. Currently there are no norms established for the acquisition of certain auxiliary verbs, particularly obligatory-do. The auxiliary verb, obligatory-do, is used in forming questions, negative and emphatic sentences. Until obligatory-do is mastered, a child cannot correctly produce some sentence structures such as "I don't like him," "where did he go?" and "I did see him." This verb form is basic to many sentence structures and generally appears in children's language between the ages of two and three and a half (Lee, 1974; Menyuk, 1963; and Miller and Ervin, 1964). The data available on age of acquisition of obligatory-do come from studies involving very few children.

There is a need for age norms concerning the acquisition of obligatory-do, to aid speech-language pathologists in the remediation of language disorders. When evaluating the language of a child, it is necessary to have available age norms with which to compare the language of the child.

Statement of Purpose

The purpose of this study was to establish age trends, via elicited imitation, for the acquisition of obligatory-do according to the sentence type in which it expressively occurs, i.e., negatives, emphatic sentences, interrogative reversals and wh-questions.

This study addressed the following questions:

At what ages do children expressively demonstrate, via elicited imitation, the auxiliary verb, obligatory-do, in negative sentences, emphatic sentences, interrogative reversals and wh-questions?

In what manner does age and MLU correlate with the acquisition of the auxiliary verb, obligatory-do?

Definition of Terms

Auxiliary verb: Verbs used in combination with other verbs to help form tenses, aspects, or voices of other verbs. Includes the verbs have, be, do, can, must, will, and shall (Lee, 1974).

Copula: The verb "to be" used as the main verb to link a subject with a predicate complement (Guralnik, 1968).

Deep Structure: The abstract level of representation of a sentence containing all the information relevant to its meaning (Fowler, 1974). The underlying structure and semantic base which governs how a sentence is formed (McElroy, 1972).

Embed: To subordinate one clause of a sentence to another, as in the sentence, "The man who likes ice cream, is here." The clause "who likes ice cream" is embedded in the sentence.

Inflection: A single bound morpheme, i.e., that which cannot appear by itself, which modulates the meaning of nouns

and verbs to signify number, tense, and aspect (e.g., ing, s, ed, for tense, and es, s, for plural) (Brown, 1973).

Mean Length of Utterance (MLU): The average length of a child's utterance in morphemes. A MLU is usually determined from a 100 utterance sample. For the purposes of this study, however, only 25 utterance samples were used.

Morpheme: The smallest linguistic unit of meaning (Dale, 1976). It can be a word and capable of standing by itself or a segment of a word such as ing, un, ment, et cetera.

Surface Structure: A series of lexical elements composed according to syntactical and phonological rules, produced or written as a sentence (Dale, 1976).

Transformational Rules: Those rules which manipulate words and endings by addition, substitution, deletion and reordering. They change the deep structure of a sentence into the surface structure. The rules which specify how deep and surface structure are related (Dale, 1976; Lee, 1974).

CHAPTER II

REVIEW OF THE LITERATURE

Language Acquisition

There are various theories on language acquisition which strive to explain how children learn language. Theories of language acquisition analyze children's language in an attempt to describe their grammar. Grammar represents linguistic knowledge, that set of learned principles possessed by fluent speakers of a language (McNeill, 1966). Syntax, semantics, phonology and morphology are included in the grammar of a language. Chomsky (1957) proposed a theory of language acquisition, known as transformational or generative grammar, which is based on the "nativist" position that children have an innate capacity for language. Transformational grammar is a technique for describing the rules or categories from which children generate the sentences of their language. It is possible to identify the grammatical categories of children's language and determine at what age the various categories are acquired (Menyuk, 1963).

Various linguists and researchers have studied language acquisition using transformational grammar as a basis for explaining the course children's language development follows. Bellugi and Brown (1964), Menyuk (1964), McNeill (1966), and

Lee (1974) have found that at eighteen months children begin to form simple two- and three-word sentences, and by four years produce sentences of almost every syntactic type. Therefore in approximately thirty months, children have acquired the basic syntactic structures of their language. Syntax is the knowledge possessed by a person which dictates how words are joined together to form sentences (Wood, 1976). When a child learns syntax, he is able to join words into sentences and understand multiple word sentences said by others. Syntactic ability refers to the production and comprehension of relationships expressed in sentences (Wood, 1976).

Brown (1973) described five stages of language acquisition. He asserted that age is not a good indicator of early language development since children vary greatly in their rates of development (Dale, 1976). Regularities of development are often expressed in terms of mean length of utterance (MLU) instead of age. MLU is the average length of the child's utterance in morphemes, usually based on a language sample of 100 utterances. According to Dale (1976), a morpheme is the smallest unit of meaning, which may be a word, plural indicator, a suffix or a prefix. Brown's stages of language development are based on MLU. Stage I (MLU=0-1.99) constitutes relations or roles within simple sentences (e.g., "Who that?"). Brown suggests these word combinations in Stage I represent various semantic relations. In Stage II (MLU=2.00-2.49) grammatical morphemes appear to modify the

meaning of children's sentences (e.g., "What book name?"). Children begin to master inflections in Stage II. Stage III (MLU=2.50-3.12) entails the elaboration of the basic sentence involving many transformations (e.g., "What I did yesterday?"). In Stage IV (MLU=3.13-3.74), children learn to embed sentences within one another (e.g., "I see the man with the hat."). Stage V (MLU=3.75+) consists of the coordination of simple sentences and propositional relations (e.g., "They're flying again.").

Transformational Grammar

After Stage II the course of syntactic development is a matter of learning the major transformations of English (Dale, 1976). Transformations are the rules which change the basic syntactic structure of subject-verb-object into complex sentences. The generative model of language describes grammar as having a tripartite structure, i.e., deep structure, transformations and surface structure.

The deep structure or underlying structure is the basic syntactic structure of the sentence. According to Lee (1974), this basic structure is the grammatical relationship of subject-verb-object, often called the kernel sentence or phrase structure. The elaboration of the deep structure with word endings and function words involves many steps called transformations by Chomskyan psycholinguists. Transformational rules determine how word forms such as noun modifiers and auxiliary verbs will appear in the surface structure. These

rules change the order of the symbols in the deep structure or allow symbols to be deleted or added (Menyuk, 1963). The surface structure which is connected with stress, intonation, phrase structure and phonology is that finished product normally thought of as a sentence. The three elements of a basic sentence, subject-verb-object, are sometimes called lexical items (Lee, 1974).

Transformational rules are of two types, optional and obligatory. The optional rules are those chosen by a speaker in regards to the type of sentence desired. Once a particular sentence form is chosen, there is a set of obligatory rules which must be followed to produce a grammatical sentence (Menyuk, 1963). By following these transformational rules it is possible to compose a variety of sentence types such as declaratives, negative, yes/no questions, wh-questions and imperatives. A child as young as eighteen months may produce these sentence types although in a form different from that of the adult (Dale, 1976). As MLU rises above 2.5, the transformations necessary for the adult forms are learned step-by-step (Dale, 1976).

Obligatory-do Transformation

One major transformation learned between the ages of two and four years is the do-insertion transformation (T-do), also known as "obligatory-do" (Ob-do). This transformation which provides an auxiliary verb for signalling number and tense is used in forming four different sentence types:

negatives (e.g., I don't want it), emphatic-affirmatives (e.g., I do like you), wh-questions which are those starting with "why", "when", "what", "where", "how", and "who" (e.g., Why did you go?), and interrogative reversals (e.g., Do you want some ice cream?).

The expansion of a lexical verb involves the addition of tense markers and auxiliary verbs. Verb elaboration is one of the most complicated features of English, as it has a variety of auxiliary verbs. According to Lee (1974), each auxiliary verb carries a particular meaning which is superimposed upon the meaning of the lexical verb. This study will focus on the verb form obligatory-do and the role it plays in language development.

Negation

The development of negation will be examined since the do-insertion usually appears first in negative sentences. Negation appears early in language development. According to Bloom (1970), negation generally is first used in a statement of nonexistence, later as a form of rejection and even later as a form of denial. Children progress through a period of attaching the morphemes "no" and "not" to verbs and nouns as in "no doggie", "not hungry", and "me not want". As they begin to speak in sentences, "can't" and "don't" appear as in "I don't want it" and "he can't see" (Lee, 1974). The negation of a sentence in English most commonly occurs with the use of "not" in conjunction with an auxiliary verb. When a modal auxiliary (will, can, may, shall, et cetera) or the

verb "to be" (either as a copula or auxiliary) or the verb "have" exist in the deep structure, they carry both tense and negation transformations as in the following examples:

He can eat
He cannot eat
He could not eat

He eats
He is eating
He is not eating
He was not eating

I ate
I have eaten
I have not eaten
I had not eaten
(Lee, 1974)

When there is no auxiliary verb to carry the negative morpheme (e.g., I want it), the auxiliary verb "do" is inserted to accomplish the negative rule. The morpheme "not" cannot be attached to main verbs nor can it stand by itself. Thus sentences such as "I not want it" or "I wantn't it" are not grammatically correct in English. When this is the case, the do-insertion or obligatory-do rule must be applied in order to accomplish negation. The steps of the negation process with obligatory-do can be described as follows:

No auxiliary in the verb form	He ate
Supply obligatory-do	He do ate
Move tense marker to obligatory-do	He did eat
Negate obligatory-do	He did not eat
Contract obligatory-do with negative (optional)	He didn't eat

(Lee, 1974)

Negative imperatives (e.g., don't fight) also follow the above transformational rules with the addition of the "you-deletion" rule, yet they appear earlier in children's

speech than negative declarative sentences. For example, a child may use sentences such as "don't hit me" and "he no go" before well-formed declaratives such as "he didn't go". Many linguists theorize that children are not aware of the obligatory-do rules when they first use "don't" (Lee, 1974). They have probably generalized from hearing adults say "don't touch, don't fall", et cetera and use "don't" as a "giant word" or a stereotyped form (Lee, 1974). Klima and Bellugi (1966) supported this contention with data gathered from three children ages eighteen to twenty-seven months. Using Brown's Stages of language development, Klima and Bellugi (1966) categorized these children's utterances on the basis of stages and not ages. They found that "don't" first appeared in Stage II in negative imperative sentences, while the rest of the children's negative sentences were of the forms "we not little", "he no bite" and "I no want that". Although Klima and Bellugi did not believe the obligatory-do transformation was being used by the children, they did assert that children understand this transformation as used by others in negation in Stage II. By Stage III, all three children were using negative transformations and obligatory-do in declarative sentences.

Pederson and Trantham (1976), in a longitudinal study of language development of eight children, found the negative "don't" first appeared in declarative sentences between eighteen and thirty months. Miller and Ervin (1964) provide data from a longitudinal study of one child and found "don't"

appeared at twenty-six months. In a study of spontaneous speech among children in nursery school and first grade, Menyuk (1963) found that all of the children used the various forms of obligatory-do. She found the negative "don't" being used by children from twenty-five to thirty-six months of age. In all the above mentioned studies, obligatory-do appears first in the contracted form which is more commonly used than the uncontracted form.

Questions

As mentioned earlier, in Stage III children use obligatory-do in questions, declaratives and negative sentences. There are two types of questions: 1) yes/no questions or interrogative reversals and 2) wh-questions. The interrogative reversal asks for affirmation or negation of a sentence while the wh-question seeks information (Lee, 1974). To ask a yes/no question it is necessary to know the auxiliary verb system, since the first auxiliary verb is reversed with the subject. The first auxiliary verb also carries tense, negation, and interrogation. As in the case of negation, the obligatory-do rule is needed when there is no auxiliary verb. The following steps take place when forming a yes/no question with obligatory-do:

No auxiliary verb	He eats.
Supply obligatory-do	He do eats.
Move tense marker to obligatory-do	He does eat.
Invert subject and obligatory-do	Does he eat?

(Lee, 1974)

Children begin asking questions simply by raising their

intonation at the end of an utterance. Once auxiliary verbs are learned, children can produce interrogative reversals. Lee (1974) suggested that questions using obligatory-do occur later in a child's speech than simple yes/no questions.

Wh-questions, which ask for information not in the sentence, appear to be more complicated than interrogative reversals. The speaker must choose the appropriate wh-word to replace that part of the sentence which he wishes to know. This demands that the speaker has knowledge of the parts of speech which relate to particular wh-words. Once the appropriate wh-word is chosen, it is placed first in the sentence and the subject is inverted with the first auxiliary verb. Again as in negation and interrogative reversals, the obligatory-do rule must be applied when there is no auxiliary verb, as in the following example:

Missing object	Mary ate_____.
Replace with "what"	Mary ate what.
Move "what" to front of sentence	What Mary ate.
Supply obligatory-do	What Mary do eat.
Move tense marker to obligatory-do	What Mary did eat.
Invert subject and obligatory-do	What did Mary eat?
(Lee, 1974)	

According to Klima and Bellugi (1966), children begin producing questions in Stage I without applying any transformational rules. "Who that?" and "where Sue coat?" are typical wh-questions in this stage. Klima and Bellugi (1966) found that children in Stage I do not yet understand wh-questions. By Stage II children are using more pronouns, articles, modifiers and inflections, but they still lack most auxiliary verbs and are not producing grammatical

wh-questions. Although children can generally understand wh-questions in Stage II, those questions produced are of the following type: "what book name?", "why you waking me up?", et cetera. By Stage III, children are correctly producing yes/no questions and a few wh-questions with the obligatory-do. For the most part though, children in Stage III still do not invert the subject and auxiliary verb correctly as demonstrated in the following questions: "what I did yesterday?", "how that happened?", and "why he don't know how to pretend?" (Klima and Bellugi, 1966). Bellugi and Brown (1974) suggested that children do not begin using auxiliary verbs (including obligatory-do) abundantly until their MLU is above 3.5 (Stage IV) which occurs approximately after three years of age.

Pederson and Trantham (1976) reported obligatory-do appears in interrogative reversals between twenty-seven and thirty-six months. Miller and Ervin (1964) collected similar data from their longitudinal study of one child, with obligatory-do used in yes/no questions at thirty-two months. Menyuk (1969) reported obligatory-do is produced correctly in interrogative reversals as early as three years of age. Little data are available relative to the ages when obligatory-do appears in wh-questions.

Elicited Imitation

The studies cited above involved very few children and depended on spontaneous language samples as a method for

collecting data. Gathering language samples is one method of studying children's language, but it can be quite time-consuming. There is no guarantee the child will use his full range of linguistic competence while the researcher is conversing with him. Under pressure to communicate in a social situation, the child likely may use simple syntactic forms of which he is sure.

Another method for studying children's language which has been used quite successfully is elicited imitation. When using elicited imitation, the examiner asks the child to repeat sentences. This method has contributed much information relative to the development of language comprehension and expression in children (Carrow, 1974a and 1974b; Menyuk, 1964; McNeill, 1970; and Lenneberg, 1967). There are a number of linguists who assert that a child can imitate those structures he is in the process of acquiring (Clay, 1971). Present research strengthens the use of sentence repetition as a technique for discovering what structures and items an individual child controls in an elicited imitation task. Justification for this opinion may be found in the literature.

Ervin-Tripp (1964) found two year olds unable to imitate sentence forms which did not occur in their spontaneous speech production. Slobin and Welsh (1973) found two year olds could imitate their own utterances repeated back to them as long as the intent to communicate was still operative. They hypothesized that sentence imitation and recognition are filtered through the child's linguistic system and hence that

which is discovered through imitation should be considered to be a conservative estimate of the child's linguistic competence.

Fraser, Bellugi, and Brown (1963) conducted a study with three year olds which examined imitation, comprehension, and production of language structures. Comprehension was tested by having the subject point to the picture named. Pairs of pictures were used in which only one grammatical construct differed. Imitation was tested by having the subject repeat sentences after the examiner. Scoring was based on the subjects retention of the particular grammatical constructs being tested. Production was tested by the examiner showing two pictures and naming both with complete sentences without indicating which sentence went with which picture; the subject was then asked to name each picture. Again scoring was based on the use of the particular grammatical construct being examined. The children's imitation score exceeded the comprehension score, which exceeded the production score. Lovell and Dixon (1967) replicated this study in England and obtained the same results. This evidence suggests that imitation can be more advanced than production and possibly is representative of comprehension or competence.

In a study of nursery school and first grade children, Menyuk (1963) analyzed sentences drawn from language samples and elicited imitation. She reported that correctly imitated sentences tend to be more advanced than the children's spontaneously-produced sentences. Menyuk is of the opinion that

the children are probably in the process of acquiring the sentences they imitate correctly, since they do appear in the spontaneous speech of children who are a little older. According to McNeill (1970), in order to produce an imitated sentence correctly, a child must comprehend the sentence he imitates.

Bellugi and Brown (1964) supported the above hypothesis with data from young children eighteen to thirty-six months, who always preserved word order even if some words were missing. They contended that the model sentence is processed by the child as a total construction, not a list of words and found that the limitation on length of imitated utterance is the same as that of the length of spontaneous utterances. Menyuk (1969) also reported that length was not a determining factor in the correct imitation of sentences by preschool children. Children as young as three years old could repeat sentences up to nine words in length. Menyuk reported the structure of a particular sentence determined whether or not it was repeated, not its length. The correlation between sentence length and nonrepetition of sentences in their correct grammatical order was .03 (Menyuk, 1969). This research suggested that by using elicited imitation as a research tool, it is possible to gather data which reflect children's linguistic competence. This author proposes to utilize sentence imitation as a method of studying children's comprehension and use of obligatory-do in the context of questions, emphatic affirmatives and negative sentences.

Current Tests of Obligatory-Do

As can be seen from previous studies, the obligatory-do transformation plays an important role in the formation of negative, emphatic-affirmative, and interrogative sentences. Unfortunately, little data are available delineating the ages and steps by which obligatory-do is acquired. Lee (1974) does outline the stages in which obligatory-do is acquired, but does not provide age levels for the various steps. Her information comes from language samples gathered from two hundred children ages two to seven years. Table I from Lee's Developmental Sentence Scoring format gives the various forms of obligatory-do in their corresponding order of difficulty (Lee, 1974).

TABLE I
DEVELOPMENTAL SENTENCE SCORES FOR OBLIGATORY-DO

Score	Main Verbs	Negatives	Interrogative Reversals	Wh-questions
1				
2				Where, how many, how much, what...do, what...for, what, who
3				
4	Obligatory-do + verb; Emphatic- do + verb	Don't		
5				When, how
6	Obligatory-does, did + verb; Em- phatic-does, did + verb		Obligatory-do, does, did	

When a child's language does not seem equal to that of normally developing children, a speech-language pathologist administers some tests and gathers a language sample to determine at what language level the child is functioning. The language of the child is compared to established norms in order to determine at what syntactic level intervention should occur. Currently there are not norms for the ages at which children acquire the various forms of obligatory-do. There is a need for such norms so that a speech-language pathologist may determine when a child is behind in his acquisition of syntax and when intervention should occur.

There are a few tests which do use sentence imitation to determine whether a child is using obligatory-do, but none of these tests give any guidelines in terms of ages. The Elicited Language Inventory (Carrow, 1974b), the Preschool Language Scale (Zimmerman, Steiner and Evatt, 1979), and the Test of Language Development (Newcommer and Hammill, 1977) do have sections in which the child repeats sentences after the examiner. Negative sentences, interrogative reversals, and wh-questions containing obligatory-do are tested in these tests, but the norms given correspond to the total score, not to any particular syntactic form. The Elicited Language Inventory does distribute the scoring components among negation, contraction, and verbs, which does provide more information than the other imitative tests. None of the tests suggest approximate ages for the acquisition of obligatory-do.

CHAPTER III

METHOD

Subjects

Fifty children consisting of 5 groups of 10 were tested within one month of their designated age group. They comprised each of the following age groups: 24, 30, 36, 42, and 48 months. The 50 subjects with no preference as to the sex of the child, were randomly selected from various preschools in the Portland Metropolitan Area. Children with reported hearing losses, physical handicaps or speech deficiencies which would interfere with the intelligibility or verbal production of test sentences were excluded from this study. The criteria for normal language was established primarily by clinical judgement through observation of the subject and secondarily by comparing the subject's language abilities to Lillywhite's (1970) guidelines for expressive language. The guidelines indicate a 24 month old should have 100-200 words as reported by the parent; a 30 month old should have 300-500 words as reported by the parent with some two-word responses; a 36 month old should have 600 words with some three-word responses as reported by the parent; and a 42 month old should have between 600 and 1,000 words and/or three- to four-word responses, as reported by the parents. Normal language was

determined by having the parents report an estimate of the child's expressive vocabulary and examples of one-, two-, three-, and four-word responses of their child. The examiner also recorded a 25-word language sample for each child upon which a clinical judgement of normal language skills was based. Only those children who demonstrated language development within Lillywhite's guidelines (1970) for their age level were accepted as subjects for this study. Normal hearing was established using the CCD/CDRC Hearing Screening Schedule (Appendix A). All children had permission forms signed by their parents (Appendix B).

Instrumentation

The Imitative Test of Obligatory-Do, devised by this investigator, consisted of 24 sentences, each with a maximum length of five words. Only those words suited to the vocabulary of a 30 month old child were included on the test. The content words of this test are among the 500 most frequently and earliest used words as defined by Ling and Ling (1977), Thorndike (1921) and Van Hattum (1970). The test consists of six sentences for each of the following categories: 1) negatives, 2) emphatic-affirmatives, 3) interrogative-reversals, and 4) wh-questions. Each category consists of two sentences using the forms "do", "did", and "does". (See Appendix C for Test). A Sony tape recorder, model #45953 was used to record the subjects' responses to test items.

Procedures

Each subject was seen individually by the examiner in a quiet room at each subject's preschool or home. The subject's hearing was screened and a language sample of 25 utterances was gathered from each child after a few minutes of conversation with the examiner. The examiner had a few books and some action toys (truck, jumping jack, and a doll) with which to elicit language. Each subject was asked to tell the examiner a story using one of the books. If the subject was reluctant to tell a story, the examiner initiated play with the subject and gathered the language sample in that manner. The language sample was analyzed in order to arrive at an MLU for each child and to help determine whether the child's language development was normal according to Lillywhite's (1970) guidelines.

After the language sample, each subject was instructed in the imitative task and given a practice session. The following instructions were given: "I'm going to say some things. You say what I say. I'll show you how." The practice session continued until the subject openly and freely repeated. If after five minutes of practice the subject did not repeat, he was excluded as a subject. The Imitative Test of Obligatory-Do was administered to those children who openly and freely repeated. If the subject asked to have a sentence repeated, or did not answer, the examiner proceeded to the next sentence and returned to the missed items at the

end of the test. Each subject was given social reinforcement after each item, regardless of the degree of correctness of the response. Initial scoring was done during the test and affirmed later by listening to the tape recording of each subject's responses.

Scoring and Data Analysis

Exact replication of the test sentence by the subject was scored as four. Correct reproduction of the form of obligatory-do although an error occurred elsewhere in the sentence, was scored as three. The use of some form of obligatory-do was scored two. The lack of any form of obligatory-do was scored one. No reproduction of the test sentence was scored zero. A total of 96 points was possible. A score of 85 or better indicated the subject was using obligatory-do correctly in the contexts in which it was tested.

A descriptive analysis was utilized to analyze the results according to age, sentence types, and verb conjugations. The scores for the various forms of obligatory-do were compared to each child's MLU and age in order to correlate the acquisition of obligatory-do, with Brown's (1973, see page 6) stages of language development. A Pearson Product moment correlation analysis was utilized to correlate age and MLU with obligatory-do errors.

CHAPTER IV

RESULTS AND DISCUSSION

Results

This study sought to investigate the age levels at which children expressively demonstrate, via elicited imitation, the auxiliary verb obligatory-do in negative sentences, emphatic sentences, interrogative reversals and wh-questions. Although the study was initially structured to include five age groups, two years through four years, the two year age group was not included in the analysis due to lack of results. Of the ten two year olds examined, only two did the imitation task. In conversation some two year olds demonstrated obligatory-do in negative sentences, but were not trainable for sentence imitation.

Criterion for correct usage of obligatory-do was set at one or less obligatory-do error per each of the four sentence types. Thus a score less than three for more than one sentence among the six negative sentences, meant the subject was not using obligatory-do correctly in the negative context. Figure 1 illustrates the results for each age level according to sentence types. Using this criterion it was found that 50 percent of the 2 1/2 year olds tested used obligatory-do correctly in all four sentence types. Sixty percent of the 3

Figure 1. Percent of children who had one or less ob-do error per each sentence type.

Negative = ●---●
 Emphatic Affirmative = ▲---▲
 Interrogative Reversal = ●—●
 Wh-Question = ▲—▲

year olds tested used obligatory-do correctly in wh-questions, while 70 percent used obligatory-do correctly in the three other sentence types. Eighty percent of the 3 1/2 year olds used obligatory-do correctly in negative sentences and interrogative reversals, while 90 percent used obligatory-do correctly in emphatic sentences and with wh-questions. All of the 4 year olds used obligatory-do correctly via elicited imitation for all four sentence types.

Scores ranged from 39 to 96, with 96 being the highest possible score. A score of 85 or better indicates the child is using obligatory-do accurately in most contexts. One of the 2 1/2 year olds, seven of the 3 year olds, seven of the 3 1/2 year olds and all ten of the 4 year olds achieved a score of 85 or better. Table II displays the number of children who achieved a score of 85 or better for each age group.

TABLE II

CHILDREN SCORING 85 OR HIGHER ON THE
IMITATIVE TEST OF OBLIGATORY-DO

Age	2 1/2	3	3 1/2	4
Number scoring higher over the number of total subjects	1/10	7/10	7/10	10/10

The mean for 2 1/2 year olds was 68.6; for 3 year olds, 80.2; for 3 1/2 year olds, 89.0; and for 4 year olds, 95.9.

Figure 2 displays these means along with the range of scores for each age group. The raw data appear in Appendix D. Figures 3, 4, and 5 show the mean number of errors by age groups according to sentence types and obligatory-do conjugations.

Results of this study indicate that most of the children have acquired the use of different forms of obligatory-do (do, did, does) in succeeding stages. The 2 1/2 year olds used "do" more correctly than "did" or "does"; however, there was no notable difference in the performance of 3 and 3 1/2 year olds on "do" and "did". For all age groups the conjugation "does" was the most difficult, as can be seen in Figure 6 which indicates the mean number of obligatory-do errors according to conjugation and age.

The type of sentence did influence the degree of correctness for the various forms of obligatory-do as shown in Figure 7. The greatest number of correct responses for all age groups occurred on negative sentences. Emphatic sentences were the second easiest for all ages except the 2 1/2 year olds, who had the same number of errors for emphatic sentences as they had for wh-questions. Interrogative reversals appeared to be the most difficult for 2 1/2 year olds, while wh-questions were the most difficult for 3 and 3 1/2 year olds.

The secondary question considered in this study sought to determine whether age and MLU of 25 utterances correlated with the acquisition of obligatory-do. The correlation between age and MLU in relation to obligatory-do errors was

Figure 2. Mean scores and range for 2 1/2 to 4 year old subjects on the Imitative Test of Obligatory-Do according to age groups.

Figure 3. Mean obligatory-do errors of 10 two and a half year olds according to sentence type.

Figure 4. Mean number of obligatory-do errors for 10 3 year olds according to sentence type and conjugation.

Figure 5. Mean number of obligatory-do errors of 10 3 1/2 year olds according to sentence type and conjugation.

Figure 6. Mean number of obligatory-do errors for all age groups according to conjugations and age.

Figure 7. Mean obligatory-do errors for all 40 subjects according to sentence type and conjugations.

analyzed using a Pearson Product moment correlation analysis. The coefficient of correlation of MLU of 25 utterances to obligatory-do errors was $-.70$. The coefficient of correlation of age to obligatory-do errors was $-.63$. Both of these correlations can be considered to be moderately strong.

Discussion

The results of this study concur with those of Peder-son and Trantham (1976), Miller and Ervin (1964), and Menyuk (1963) in that obligatory-do appears in children's language between the ages of two to three and a half years. It was found in this study and others that children as young as thirty months use obligatory-do correctly in negative sentences.

The study does support the notion that a child will only imitate that which is already in his repertoire and gives further credence to the use of imitative tests as measures of syntactic abilities. It was found that some of the subjects made the same type of errors in the spontaneous language sample as they made when imitating obligatory-do sentences. For example, the use of "her" for "she" and "him" for "he" was a common error among the 2 1/2 year olds in both imitative sentences and spontaneous sentences. Some of the subjects did not invert the subject and verb for either imitative or spontaneous sentences. Other subjects omitted the obligatory-do verb in both imitative and spontaneous sentences, as in "Where that goes?" instead of "Where does that go?". Many of

the subjects utilized obligatory-do correctly in both imitative and spontaneous sentences.

Generally, those subjects with few errors on the Imitative Test of Obligatory-Do demonstrated more advanced speech syntactically in their spontaneous language samples than other subjects the same age with lower obligatory-do scores. A number of subjects used the obligatory-do correctly in negatives and interrogative-reversals in both imitative and spontaneous speech, but used either substitution or omission of obligatory-do in wh-questions in both types of tasks.

The most common type of error was the omission of obligatory-do (122 out of 144 errors). The next most common error was the substitution of "do" for "does" (19 out of 144 errors). These data contribute to the transformational theory of grammar in that many of the errors made appeared to be steps in the transformation process. The most notable error of substituting "do" for "does" correlates with the step of moving the tense marker from the main verb to the auxiliary verb as illustrated:

No auxiliary verb	He eats
Supply obligatory-do	He do eats
Move tense marker to obligatory-do	He does eat

It is assumed that those children who substituted "do" for "does" were in the process of acquiring obligatory-do. These children did use the forms "do" and "did" correctly in most sentence types. These data contribute support for the hypothesis that "does" is the most difficult and latest form of obligatory-do to appear.

When comparing MLU to scores, it should be remembered that the MLU used in this study was based on only 25 utterances whereas the base is usually 100. Thus the MLU's utilized in this study are not as valid as an MLU of 100 utterances would be. Only five (ages 2 1/2 to 3 years) of the children tested demonstrated MLU's falling within the range of Brown's (1973) Stage III (MLU=2.50-3.12). Of these five, only one used "do", "did", and "does" correctly in negative sentences and wh-questions (see Appendix D). The remaining four subjects were not successful using obligatory-do in emphatic sentences, interrogative reversals and wh-questions. Two of the remaining four did use "do" and "did" correctly in negative sentences. These data suggest that in Brown's Stage III most children do not use obligatory-do appropriately. This would seem to be consistent with Brown's theory that transformations are emerging at this stage. Three of the children (ages 2 1/2 to 3 years) had MLU's falling within the range of Stage IV (MLU=3.13-3.74). One of these three had no obligatory-do errors. The other two demonstrated errors on "did" and "does" in negatives, interrogative reversals and wh-questions. Of the 24 items they had five and six errors each, which indicates they were in the process of acquiring obligatory-do. These data suggest that the 2 1/2 year olds in this study are in the process of acquiring obligatory-do. They can and do use this auxiliary verb correctly in negative and emphatic sentences, but have not yet mastered it in interrogative reversals and wh-questions.

The data noted in this study support Brown's (1973) contention that one cannot categorize children's language abilities on the basis of age alone. He found that among three children of the same age (2.3 years), two were at Stage I in terms of MLU, while the other was at Stage V. Brown proposed that MLU as used in his Stages I-V, along with age, is a fairly good index of language development. It was found in this study that age and MLU combined were more indicative of a child's skill in the usage of obligatory-do than MLU or age alone. There were many 2 1/2 year olds in this study who had MLU's the same as or in close proximity to those of 3 and 3 1/2 year olds; however, these 2 1/2 year olds were not as skilled in using obligatory-do as the 3 and 3 1/2 year olds who had the same MLU's. (See Appendix D).

The children with the lowest obligatory-do scores (39) were 2 1/2 years old, but there were 3 year olds with lesser MLU's and higher obligatory-do scores (54, 65, 51). There were four 3 year olds with scores 90 or above and MLU's ranging from 3.52 to 4.56. These subjects obviously had mastered the usage of obligatory-do as measured through an imitation task, and yet were barely beyond Stages IV and V. There were two 3 1/2 year olds with MLU's of 5.2 and 5.72 who did evidence some difficulty with obligatory-do in wh-questions and interrogative reversals. The majority of their errors occurred on the form "does". Although apparently beyond Brown's Stage V, these two children were not entirely proficient in the usage of obligatory-do as evidenced in

their scores of 77 and 66. There was one other 3 1/2 year old with an MLU of 4.04 and an obligatory-do score of 84 who had not yet become proficient in the use of the form "does". The data from these three youngsters must caution one from relying too heavily on MLU and age as indicators of language skills for individuals.

This sample was too small to establish any definitive norms. The correlation between MLU and obligatory-do errors may have been greater if a larger language sample on which the MLU was based had been gathered. Results do show 50 percent of 2 1/2 year olds, 60-70 percent of 3 year olds, 80-90 percent of 3 1/2 year olds and all of the 4 year olds used obligatory-do correctly depending on the sentence type. The following paragraphs contain generalizations about the results.

The negative sentences appeared to be easiest for all age groups. The emphatic-affirmative sentences were next easiest for all ages. Interrogative reversals were the most difficult for 2 1/2 year olds, while wh-questions were the most difficult for all other ages. (See Figure 7).

The verb form "do" appeared to be least difficult for the subjects, while the form "does" was the most difficult. In emphatic sentences and wh-questions, the 3 year olds experienced more difficulty with "did" than "do". By four years of age all children in this study utilized the three obligatory-do forms correctly in negative sentences, emphatic-affirmative sentences, interrogative reversals and

wh-questions. These results generally support the data of Lee (1974), Menyuk (1963), Miller and Ervin (1964), and Pederson and Trantham (1976) who assert that obligatory-do appears in children's language between the ages of 2 and 3 1/2 years.

CHAPTER V

SUMMARY AND IMPLICATIONS

Summary

The auxiliary verb obligatory-do is used in forming questions, negative and emphatic sentences. This verb form is basic to many sentences and generally appears in the language of children between the ages of two and three and a half (Lee, 1974; Menyuk, 1963; and Miller and Ervin, 1964). The data available on the age of acquisition of obligatory-do come from studies involving very few children.

In order to determine where a child is functioning in terms of language abilities a speech-language pathologist can administer tests and gather a language sample for comparison to established norms. Currently there is no test or norms established for the acquisition of obligatory-do. The purpose of this study was to establish age trends, via elicited imitation for the acquisition of obligatory-do according to the sentence type in which it expressively occurs i.e., negative sentences, emphatic sentences, interrogative reversals and wh-questions. This study addressed the following question: At what ages do children expressively demonstrate, via elicited imitation, the auxiliary verb obligatory-do in negative sentences, emphatic sentences,

interrogative reversals and wh-questions? A secondary question was: In what manner does age and MLU of 25 utterances correlate with the acquisition of obligatory-do?

Forty children consisting of four groups of ten each were tested within one month of their designated age groups. They comprised each of the following age groups; 30, 36, 42, and 48 months. Twenty-four month olds were initially included in the design of this study but were later discontinued due to their lack of imitation ability. Only children who demonstrated language development within Lillywhite's (1970) guidelines for their age level were accepted as subjects for this study.

A language sample of 25 utterances was recorded for each child and analyzed to arrive at a MLU. The Imitative Test of Obligatory-Do consisting of 24 sentences, six for each sentence type, was administered to each child. The highest possible score was 96. The mean for 2 1/2 year olds was 68.6, for 3 year olds 80.2, for 3 1/2 year olds 89 and for 4 year olds 95.9. A score of 85 or above indicates the child is using obligatory-do accurately in most contexts.

Fifty percent of 2 1/2 year olds, 60-70% of 3 year olds, 80-90% of 3 1/2 year olds and all 4 year olds used obligatory-do correctly depending on the sentence type. Negative sentences appeared to be easiest for all ages. The emphatic sentences were next easiest for all ages. Interrogative reversals were most difficult for 2 1/2 year olds while wh-questions were the most difficult for the other age groups.

There was a moderately strong correlation between MLU of 25 utterances and the number of obligatory-do errors (-.70) and between age and obligatory-do errors (-.63). Results of this study show that 2 1/2 and 3 year olds are in the process of acquiring obligatory-do and do use it more correctly in some sentence forms than others. By 3 1/2 years 80 percent and by 4 years 100 percent of the children did use obligatory-do correctly in all contexts.

Implications

Clinical

The clinical implications of this research are somewhat limited due to the small sample of children studied. It is advised that the Imitative Test of Obligatory-Do be utilized in conjunction with a language sample when determining a child's use of obligatory-do. The age trends noted above should be used only as trends and not as norms. In the age range from two to four years there is much variability as can be seen in the results of this study. It can be assumed that a child over the age of four who does not correctly imitate the sentences of this test has a language problem in the usage of obligatory-do.

Implications for language remediation did arise from this study. Since the forms "do" and "did" were utilized more correctly by the subjects, it can be assumed that these forms should be taught before "does". In terms of sentence structure, negative sentences occurred earliest and so should

be taught first, then emphatic-affirmative sentences, interrogative reversals and wh-questions.

Research

This study can be used as a guideline to a larger, more intensive study. A larger sample of subjects would require more time but would also lead to more reliable results. It would be desirable to determine test-retest reliability of the Imitative Test of Obligatory-Do before it is used further. The testing of children in smaller age increments, e.g., every two or three months may yield more information as to the stages in which obligatory-do is acquired. It would also be beneficial to gather larger language samples from each child in order to have a more valid MLU to compare with obligatory-do scores.

A variation of this study which could lead to more information on the process of acquisition of obligatory-do would be to test the same group of children every two to three weeks over a six month period. One could then follow the progress individual children make in acquiring obligatory-do.

This examiner suspects that many children begin to acquire obligatory-do as young as two years, primarily in the negative form. Language sampling appears to be the only accurate method of analyzing two year olds language. If one had the time to gather language samples structured in such a way as to encourage the use of obligatory-do from two year

olds, much information on the early stages of the acquisition of obligatory-do could be gathered.

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APPENDIX A

GCD-GDRC HEARING SCREENING SCHEDULE

<u>Age</u>	<u>Materials</u>	<u>Procedures</u>	<u>Responses</u>	<u>Criteria</u>	<u>Interpretation</u>
8-15 months (babbling-- vowels & consonants)	Quiet, meaningful sounds. Voice (whistle, name or sh), cellophane, spoon-in-cup or noisemakers above	Present sounds at 3-4' from ear, alternate sides	Turn head or eyes toward sound, eye widening, quiet- ing. Child may also vocalize as a response	2/3	Rules out all but mild loss
16-24 mos. (understands a few words)	Voice & 3 toys to identify (baby, bird, shoe or car)	In soft voice, call child's name, ask him to show you objects or to point to eyes, nose, hair	Child points or gives objects	2/3	Within normal limits
2 years up	As above. Use any 4-5 objects he "knows"	As above, or sim- ple commands, stand up, sit down, shut the door	Child points or follows commands	3/4	As above
3 years up	Audiometer	Screening audio- metry, 1, 2, 4 & .5KHz at 20-25 dB right and left	Raise hand, touch phone, or say "yes" when tone (whistle, beep) is heard	8/8	As above

APPENDIX B

PERMISSION FORM

I agree/do not agree to let my child participate as a subject in a study entitled "The Acquisition of Obligatory-Do". This study is being carried out by Mrs. Bernadette Maresh-Ericksen under the supervision of Professor Mary Gordon, thesis director, Speech and Hearing Sciences Program, Portland State University.

The purpose of this study is to determine at what ages children acquire the auxiliary verb, obligatory-do. I understand my child will participate in this study by conversing with the examiner for approximately ten minutes and then repeat 24 sentences from the Imitative Test of Obligatory-Do. My child's hearing will be informally tested.

There are no risks or dangers inherent in the procedures of this study. My child will simply talk to the examiner. Subjects are free to withdraw from the study at any time without jeopardizing their position in the preschool. I agree to answer the following questions concerning the language development of my child:

1. Birthdate of child _____
Child's name _____
2. Approximate vocabulary of child (please circle the

most appropriate numbers).

50

Less than 50 words 50-100 words 100-300 words

300-500 words 700-1,000 words 1,000-1,500 words

1,500-2,000 words 2,000 words or more

3. The majority of my child's speech consists of;

1-word phrases 2-word phrases 3-word phrases

4-word phrases

4. The following are examples of my child's speech;

1-word phrases; _____, _____, _____

2-word phrases; _____, _____, _____

_____ , _____

3-word phrases; _____, _____

_____, _____, _____

4-word phrases; _____, _____

_____, _____, _____

I understand my child's name will not be used at all in conjunction with this study. If necessary for my child to be seen again for the purpose of test-retest reliability, I will not object to this procedure.

Signature of Parent/Guardian

Date

Please return this form with your child tomorrow. If you have any questions, leave a message with the Director at the preschool and I will return your call, or you may call me in the evenings at 239-0438.

Thank you for your co-operation.

Sincerely,

A solid black rectangular box redacting the signature of the sender.

Mrs. Bernadette Maresh-Ericksen

APPENDIX C

THE IMITATIVE TEST OF OBLIGATORY-DO

1. Don't fight.
2. I don't like that.
3. Bill didn't see it.
4. He didn't go.
5. Mary doesn't hear me.
6. She doesn't want any.
7. We do want that.
8. I do like you.
9. He did go home.
10. They did see it.
11. She does play ball.
12. John does live here.
13. Do they have it?
14. Do they see him?
15. Did she cry?
16. Did Mary like that?
17. Does Sue live here?
18. Does he want some?
19. Where do they live?
20. What do they want?
21. Why did he go?

22. Who did that?
23. When does she play?
24. How does it work?

APPENDIX D

RAW DATA AND OBLIGATORY-DO SCORES

2 1/2 year olds			3 year olds			3 1/2 year olds			4 year olds		
MLU	Total Score	Ob-do Errors	MLU	Total Score	Ob-do Errors	MLU	Total Score	Ob-do Errors	MLU	Total Score	Ob-do Errors
2.8	39	18	2.92	51	13	5.72	66	10	6.4	95	0
3.0	39	18	2.16	54	12	5.2	77	6	5.2	96	0
4.08	63	11	2.76	65	10	4.04	84	4	5.56	96	0
3.88	68	7	5.24	85	2	5.24	93	1	5.72	96	0
3.78	74	6	5.32	87	3	6.12	93	1	5.72	96	0
3.68	76	5	5.68	87	3	5.36	94	0	6.2	96	0
4.24	76	7	4.56	90	1	5.8	95	0	6.3	96	0
3.8	82	5	4.56	92	2	5.08	96	0	6.44	96	0
3.28	83	6	3.52	95	0	6.12	96	0	6.8	96	0
3.85	86	4	4.56	96	0	8.6	96	0	7.12	96	0
Means for each age											
3.64	68.6	8.7	4.13	80.2	4.6	5.73	89	2.2	6.15	95.9	0