The University of Hull

An Infant's Language Progress:

Crying, Babbling and First Words.

A Case Study

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by

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by

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On

An Infant's Language Progress:

Crying, Babbling and First Words.

A Case Study

A study has been made on the infant, Sarah, from age 1 month up to 18 months. The main interest of the study was concerned with her phonetic and phonological development in the stages of: Crying, Babbling and First Words.

As to the first stage, Crying, I intended to give as much coverage as possible to my subject's crying in the first six months of her life, attempting to analyze and explain it, making clear any differences in structure and content. According to the contextual situations in which they were produced, cries were categorized as:

1) Call Cries,

2) Protest Cries, and

3) Non-call Cries.

Vocalizations included in the above categories were tested according to their manner of phonation, temporal patterning and melodic patterning.

As to the Babbling stage, Sarah's babblings were tested against the following issues:

- Variety of sounds produced,

- Relation between babbling and speech,

- Are babblings meaningless and playful?, and

- Function.

Finally, the child's first words were tested against the following issues:

- Appearance of the first word,

- Holophrases, and

- Overextension.

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ACKNOWLEDGEMENTS

CHAPTER ONE

PROBLEM STATEMENT AND PROCEDURE

INTRODUCTION

The science of language acquisition has been a subject of study for a long time. The desire to know how the child learns to talk and communicate, the stages which he undertakes to achieve superiority in language increases day after day. Studies on child language began a long time ago, about the last quarter of the nineteenth century, when Darwin (1877), Tracy (1893), and others, observed the language development of children.

Studies have been carried out since that time up till now. Up to the sixties, studies in that field were rather fragmentary and meagre, depending mostly on written diaries. Jakobson (1968)* said, "In particular, the pre-language stages of the child as well as the initial stages of his linguistic development, which are of the utmost importance for the phonological structure of language, have been neglected for a considerable time" [p.19]. Recent researches, dating from about the seventies, have come out with tremendous discoveries in the field of child language. The use of the new techniques, like videos, audio tapes etc., in studying and analyzing children's utterances have been of great assistance in giving as clear a description as possible.

Recent research does not at all lessen the value of the efforts of scholars such as M.M.Lewis (1936,1957,1963) who gave us a very detailed study of children's language development, or R.E.Stark (1978) who gave a very interesting approach to

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*An English translation, by A.R.Keiler, of Jakobson's original German book, "Kindersprache, Aphasie und allgemeine lautgesetze", 1941.

children's cry. Also many others, such as C.A.Ferguson (1973), D.A.McCarthy (1929,1930), D.Crystal (1976), D.B.Fry (1966), and P.Menyuk (1966,1971), who provided us with a very useful collection in that field, which, at least, gives us a very solid foundation.

Beyond dispute is the fact that the scholar Roman Jakobson, in his book "Child language, Aphasia and Phonological Universals"(1968), has contributed a great deal to the science of child language. In that book, he reports on all the stages and steps through which, as he claims, almost every child in the world passes until he gets complete control over his language.

According to his universals, almost all children of the world go through the same stages while learning their language, although, chronologically, they might differ. He also believes that the order of acquisition of vowel and consonant phonemes proceeds according to linguistic universals. Another point claimed by him is the intervening period of silence between the cessation of babbling and the beginning of speech, and that the child in his babbling, "can accumulate articulations which are never found within a single language or even a group of languages" [p.21].

He then adds to the same point that the child after being able to produce a number of consonants, vowels, and diphthongs, suddenly becomes unable to articulate them as phonemes in words in the later stages when the phonemes are learned as distinguishable and identifiable units.

We cannot deny that Jakobson's theory of phonological development is one of the most strong and influential theories. But, whether it is valid or not, is a point that has inspired

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many researchers. Velten (1943) studied the language development of his daughter, Joan, and found some support for Jakobson's ordering. On the other hand, Braine (1971) pointed out several counter examples from the phonological development of his son. Leopold's daughter (1947) mastered the glides /w/ and /h/ very early to cast doubt on Jakobson's claim that they are acquired late in speech development.

So much have been said concerning the theory of Jakobson, either supporting or criticising. Suffice it to say that his claims have opened more doors for those who are interested. Nevertheless, apart from universalizing, Jakobson also advised that, "the more data linguistics makes available, from different people, on the speech of children and aphasics, the more significantly and thoroughly can it handle the structural laws of particular languages and of language in general" [p.94].

Research in the field of children's acquisition of language is very important for several reasons:

- As a science in its own right, it is very interesting.
- It throws light on medical and educational disabilities.
- It is part and parcel of the history of language.
- And it confirms or disconfirms universals of language.

Working in this field is not an easy task. Not only is it difficult indeed to grasp and record the sounds that are produced, but to interpret them also entails large demands. Notwithstanding, we still believe in the importance and value

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of this field.

It is almost agreed upon that all children seem to pass through a series of more or less fixed stages as they acquire language. The age at which different children reach each stage or milestone considerably varies, but the relative chronology remains the same. Roughly speaking, during the first two years of life, most children pass through the following stages:

- The cry stage,
- The cooing stage,
- The babbling stage,
- The one-word stage, and
- The two-word stage.

Each stage plays a very important part in the development of the child's language. Of great importance is the babbling period, since it is the one that leads to true language. The linguist Otto Jespersen (1928) makes a distinction between babbling, in other words, the free play with sounds, and the child's first words, as controlled, planned speech. In babbling, as he noticed, it does not matter which sound the child produces as you get no message, but in meaningful words a particular sound must be produced on command if the message is to be understood [p.37].

His views have some validity, but apart from being only a vocal play, babblings do acquire meanings late in the first year (this will be discussed in chapters 5 and 6). Generally speaking, I believe that the human infant, from the start, is very active in seeking out regularities in the world around him. The child is active in a uniquely human way, converting experience into species-typical means-end structures. Every stage he passes through imprints on him an experience from

which he will carry on to the next one.

This present work has been born out of the researcher's interest, and belief, in the importance of the field. It also has been inspired by the opposing opinions of Jakobson's universals. It is mainly concerned with studying the language development of my child, Sarah, in the first eighteen months of her life, with main reference to the stages involved: crying, babbling, and first words.

AIM OF STUDY

The primary purpose of this study is to investigate the phonological development of baby Sarah, who has been exposed to two different languages, namely English and Arabic, since birth. This is done through analysis of linguistic variation observed in the child's speech. This study is intended to treat two different language developments of the child. After analyzing all the stages of development, the interaction of linguistic variation and the child's competence in using socially appropriate speech forms are examined.

SUBJECT

The subject of this study is a girl, Sarah. She was born on 30 November, 1983. She is the first child of parents who speak two languages: Arabic and English. The parents are natives of Egypt and their Arabic is colloquial Egyptian, in other words, not formal or literary. The child lived the first four years of her life with her parents in Hull, Northern England, where the parents were students at the University of Hull. The father was reading for a Ph.D. in Education, and the mother in linguistics.

The first seven months of the child's life were at home, where she stayed all the time with her father, mother, or both parents together. From seven months and two days onwards, she was attending the nursery at the university. She was admitted for part-time sessions: every day from 12 to 5p.m. Sarah is a very active child, with no illnesses or diseases. She is growing very normally, and her language appears to be developing normally. The main sources of English to which the child was exposed are: the nursery, English friends, father and mother. It is noteworthy that parents speak the standard English language, with some vowelling variations. Also, there were other vowelling variations in the English of the nursery staff who were mainly residents of the Hull area. Sources of Arabic were: mainly father and mother, and partially other friends.

PROCEDURES

Video and audio tapes were recorded for the child. My own part in the study, as the mother and the researcher, is quite central. In video films, her father was present only once, and the tape records were mainly with the mother, so his speech is not directly involved to any great extent as data. But he is certainly considered as an important influence in her development as he plays and talks with her several hours a day and all the week-end.

As to the audio tapes, (a total of 7 tapes, duration of 1 hour each) which were mainly recorded at home, I did not tie myself to a certain order of time, in other words, there are no equal intervals between the sessions. I began recording her vocalizations when she was a month-old, and I

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kept on recording every time I felt there was something worth recording. So, there could be a day between the sessions, a week, or even a month.

As to the video sessions (a total of 365 sessions, duration of 20 minutes each), the matter was quite different; they were arranged in the Audio-Visual Centre in the university. We had a session every Wednesday of the week, either in the morning, or in the afternoon.

THE SETTING

All of the tape recordings were made at home, mainly in the bedroom when the child was still young, but when she learned to walk and move around, records were made in any other place. I made no attempt to hide the tape recorder, but I tried to avoid drawing any particular attention to it. The records always ran as a conversation between me and the child. She sometimes replies, or reacts, but at other times seems uninterested or tired.

As to the video tapes, a room was prepared for us, with the camera, the microphone and all the equipment in one side. The opposite side was simply furnished with an arm chair, a rug underneath and curtains, to leave as much space as possible for the child to move freely. I used to take toys, books or whatever attracted her attention to play and talk. Occasionally, she was interested in my bag, her rubber pants, or anything else around in the room. I gave her complete freedom to do whatever she liked and to move freely.

EQUIPMENT

The tape recorder used was a two-way power recorder

with condenser microphone. It was a Superscope by Marantz, Model No.C-170. It was always plugged in, with a long cable to allow following the child as far as possible. I gave a short comment after every recording, telling the age of the child, and the general situation.

As to the filming equipment, the sessions were recorded on a Sony U-matic VO4800 portable cassette recorder fed by a National Panasonic WV 777,3-tube colour camera and a Sennheiser 815 Gun microphone. Each session lasted a maximum of 20 minutes. I always reviewed the recordings on the following day and selected the parts of value; the selected sequences were then compiled on a Sony U-matic Edit Suite with Time Base Correction, to produce a 2nd generation Master Video Cassette of three hours duration. Copies of the Master Cassette are available on U-matic, VHS, or Beta video tape standards. The selected parts are kept in the library of the Audio-Visual Centre in the University of Hull, and a copy of the Master Cassette is kept in the Department of Linguistics in the University.

Another piece of equipment used, for analyzing the crying of the child, is a sound spectrograph machine, 7029A, by Kay Elemetrics Corp., Pine Brook, N.J., Pat.No.2.615.078.

ORGANIZATION OF STUDY

The study is divided into nine chapters. First chapter is concerned with the problem statement and procedure. Second chapter is a quick review of Egyptian Arabic, mainly devoted to the reader to be conversant with a number of its features. Third and fourth chapters are concerned with the stage of crying. Fifth and sixth chapters are for the Babbling stage.

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Seventh and eighth chapters are for the One-word stage. And chapter nine is a conclusion.

CHAPTER TWO

EGYPTIAN ARABIC

As this study is largely concerned with a child who is acquiring Arabic, as well as English, it will be an advantage for the reader to be conversant with a number of features of Egyptian Arabic, to know some of the sounds the child will be exposed to.

Arabic, like the other Semitic languages, operates with roots consisting of consonants, usually three in number. Variations in meaning are obtained, first by varying the vowelling of the simple root, and secondly by the addition of prefixes, suffixes and infixes. See the following example:

The root is   'darasa'   (literally 'taught').
We derive: 'yodaris'   (to teach),
                     'modarisan'   (two teachers),
                     'modaris'   (one teacher),
                     'madrasa'   (school)..etc.

The phonemes of Egyptian Arabic are represented in the following table:

	labial	labio-dental	Inter-dental	Dental	Palatal	Velar	Uvular	Pharyngeal	Laryngeal
Stops	p			t		k	q		ʔ
	b			d		g			
Affricative					j				
Fricatives		f	θ	S	ʃ		x	h	h
		v	ð	z	ʒ		ɮ		ʕ
Trill				r					
Lateral				l					
Nasal	m			n			ŋ		
Semi-vowel	w					y			

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The status of several of the above phonemes needs more explanation:

THE PHONEMES |θ| AND |ð|

These two phonemes are generally absent from colloquial* Egyptian. |θ| is widely accepted as |s| or |t|. For example:

|sanja| for |θanja| 'a second'

|taʕlab| for |θaʕlab| 'fox'

Also, |ð| is widely replaced by |d| or |z|. For example:

|dahab| for |ðahab| 'gold'

|zarah| for |ðarah| 'atom'

THE PHONEMES |q| AND |?|

These are two separate phonemes, but, colloquially, |q| is replaced by |?| in some words:

|?alam| for |qalam| 'pen'

|?a:l| for |qa:l| '(he) said'

But, also in colloquial, words with |q| or |?| occur as they are:

|mala?| '(he) filled'.

|qɔr?a:n| 'Quraan'

MORPHOPHONEMIC ALTERNATION

In certain environments, morphophonemic alternation of consonant phonemes occurs when the phonemes are assimilated. The most clear case is the assimilation of the definite article |?il|, where |l| is assimilated before alveolar and emphatic consonants (examples (1)), and in free variation before velar stops (example (2)):

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* They are not absent from Classical Arabic.

1)	|?əʃ-ʃams|	for |?il-ʃams|	'the sun'
	|?əṣ-ṣeeʕ|	for |?il-ṣeef|	'the summer'
2)	|?ek-kɔrsi|	or |?il-kɔrsi|	'the chair'

But, when |l| is not part of the definite article (examples (3)), or before uvular and labial stop consonants, it is not assimilated (examples (4)):

3)	|kæl-mɔ:z|	'(he) ate banana'
	|?a:l-taʕa:lu:|	'(he) said come on'
4)	|?il-qamar| or |?il-?amar|	'the moon'
	|?il-be:t|	'the house'

THE VOWELS

In Arabic, there are six short vowels, six long vowels, and six diphthongs:

SHORT VOWELS:

	Front	Central	back
High	i		u
Mid	e		o
Low	æ	a	

LONG VOWELS:

	Front	Central	back
High	i:		u:
Mid	e:		o:
Low	æ:	a:	

DIPHTHONGS:

|aj|	as in	|majja|	'water'
|æj|	as in	|ʃæj|	'tea'
|ij|	as in	|mijja|	'a hundred'
|uj|	as in	|xuju:l|	'horses'
|aw|	as in	|qawm|	'people'
|iw|	as in	|niwsal|	'we arrive'

MORPHOPHONEMIC ALTERNATION

When a word ending in two consonants is followed by a word beginning with a consonant, the phoneme [ʌ] is inserted as a result of all those phonemes coming together:

|Kalt| '(I) ate' > |kaltʌ ?e:h| 'what did you eat'

Long vowels change to short vowels if suffixes are added:

|gæ:bit| 'she brought' > |gæbitak| 'she brought you'

|be̤:t| 'house' > |betna| 'our house'

THE SYLLABLE

In Egyptian Arabic, the following types are expected:

CV	CCV
CV:	CCV:
CVC	CCVC
CV:C	CCV:C
CVCC	CCVCC

In Arabic, a syllable cannot contain both a long vowel, and a doubled consonant, or cluster medially. If it happens, the syllables are separated between the two consonants:

|baj-ja:ʕa:| 'lady seller'

|ba?-?a:la:| 'grocery'

If they would appear together in a final position, the long vowel is shortened:

|ra:ḥ-ḥit| 'she went' > |ma-raḥ-ḥitʃ| 'she did not go'

If the first syllable of a word begins with |?|, it will be dropped when pronounced in close association with a preceding word. And if the preceding word ends in a consonant, the consonant becomes part of the following syllable:

|ja-wa-lad|+|?is-kut| > |ja-wa-la-dis-kut| 'boy, be silent'

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But if the preceding word ends in a vowel, and both vowels are the same, again the vowel will become a part from the following syllable, and a short vowel will result:

|ma-ʕa|+|ʔabdul| > |ma-ʕab-dul| 'with Abdul, (proper name)'.

MORPHOLOGY:

Arabic is characterised by much inflection, usually through the addition of prefixes and suffixes. Nouns are either masculine or feminine, and they are inflected for gender [usually -a is added to the masculine to form the feminine], and number: singular, dual and plural. The inflection of number for nouns is often irregular and very complicated, see the following examples:

singular	dual	plural
|bint| 'one girl'	|binta:n| 'two girls'	|tæⲗæt bana:t| for 'three girls'
|kalb| 'one dog'	|kalbi:n| 'two dogs'	|xamas kela:b| for 'five dogs'

Adjectives are inflected in the same way [gender and number]. Most adjectives follow the nouns they modify, with the exception of numerals and some adjectives of quantity and measure, for example:

|ʃwajja| for   'little bit'
                              >
|ʃəwajjet banna:t| for   'some girls', "f" *

|ʃəwajjet ṣubja:n| for   'some boys', "m" *

And:

|ki:lou| for   'kilo'
                              >
|ki:lou laḥma| for   'one kilo of meat', "f"

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* f = feminine, fp = feminine plural, m = masculine,
  mp = masculine plural.

|tӕlӕtӕ ki:lou laḥma| for 'three kilos of meat' "fp"

|ki:lou roz| for 'one kilo or rice', "m"

|seta ki:lou roz| for 'six kilos of rice', "mp"

As far as verbs are concerned, they are inflected for number (singular, plural), gender (masculine, feminine), person (first, second, third) and tense (present, past). Verbs with glottal stops, semivowels, or two identical consonants in their roots are irregular and rather difficult in their inflections.

Personal pronouns are inflected for number and gender, see the following table:

Pronoun	Number	Person	Gender	Pronunciation
I	Sing.	1	M or F	|?anna|
we	Pl.	1	M or F	|?ihna|
you	Sing.	2	M	|?inta|
	Sing	2	F	|?inti|
you	Pl.	2	M or F	|?intu|
he	Sing.	3	M	|huwa|
she	Sing.	3	F	|hija|
they	Pl.	3	M or f	|humma|

SYNTAX

In Arabic, we have mainly three types of sentences:

1) NOMINAL SENTENCE: This begins with a noun, for example: |almadrasa kabi:ra| for 'the school is big'.

2) VERBAL SENTENCE: This begins with a verb, for example: |?eʃtɔri:t ɔlfusta:n| for 'I bought the dress'.

3) EQUATIONAL SENTENCE: This begins with a subject or its personal pronoun, and if followed by a predicate, it contains no verb, for example:

|hijah nak| for   'she (is) there'

Negation is expressed by the use of the form |miʃ| as a word by
itself, or its allomorphic form |ma...ʃ|, for example:

|miʃ ʕarfæ| for   'I do not know'   "f"

                              or

|maʕrafʃ| for   'I do not know'   "f" or "m"

As for interrogation, question words are used, either at the
beginning or the end of the sentence:

|fi:n ɒragil| or |ɒragil fi:n| for   'where is the man?'.

"yes, no" questions are formed by the use of the declarative
sentence with a rising intonation:

|rɔḥtel baba| for   'Did you go to Dad?'

There is a rather difficult kind of noun phrases, which is
called a 'construct phrase'; it consists of two or three
following nouns; if it is two nouns, it expresses relationships
between them, if three, the third is an adjective, the first
two must be taken as a one unit and the adjective follows the
whole construction:

|leʕbet sara:| for   'Sara's toy'

|leʕbet sara: gæme:la| for' Sara's toy (is) beautiful'

Definite words are expressed by the use of the prefix |ʔil|,
affixed to the word. There is no indefinite article:

|ʔilʕæræbija| for   'the car'

|ʕæræbija| for   'any car'

For more information see mentioned references (Al-Ani, 1978,
Bakalla, 1976, Beeston, 1970, Ferguson, 1964, Haywood, 1984,
Omar, 1973, and Wickens, 1980).

Finally, I will give some examples of the main words
that have been used when talking with the child. The words are
given in colloquial, not classical:

Arabic Words	English Equivalent
|baba|	Dad
|mama|	mam
|xudi|	take (sth)
|hati|	bring (sth)
|maʕlaʔa|	spoon
|kɔba:ja|	cup
|ṭæbæʔ|	dish
|kɔrsi|	chair
|tarabi:za|	table
|seki:na|	knife
|ʃuka|	fork
|leʕba|	toy
|seri:r|	bed
|maxada|	pillow
|dula:b|	cupboard
|ba:b|	door
|ʕɔʔd|	necklace
|ʔedi|	give to
|kɔli|	eat
|ʔeʃrabi|	drink
|ʃæ:j|	tea
|ʔæhwa|	coffee
|laban|	milk
|maja|	water
|maṭbax|	kitchen

CHAPTER THREE

FIRST SIX MONTHS IN THE

CHILD'S LIFE

(3-1) INTRODUCTION

Frederick Tracy (1903) says,

"It might seem,then, that in this first half-year there is nothing worthy of our attention in the matter of language" [p.32].

Afterwards, he adds that during this period of life the child is busy hearing words, seeing gestures, and noting others' intonations. Out of all this, the child builds up his vocabulary, starts to use it when he babbles, and though, as he believes, this babbling is only an "awkward twittering", it yields the potent instrument of speech.

That was the generally held belief by the late eighties and beginning of the nineties. The impression was that the first six months have very little significance, if any at all. Infants' behaviour, represented through crying, cooing, sneezing...etc. demonstrates nothing except that they enter the world with the rudimentary respiratory and larygneal equipment they will need later for speech.

Murai (1963) thinks that crying, a sound directly related to need, is not the origin of speech; it may be the origin of some kind of communication, but not of the symbolic function, "It may even be true that the formation of the function of symbolization is, in its initial stages, unrelated to the satisfaction of the human infant's need. Even from the viewpoint of the formation of communication function, in the case of human beings, the development from crying produces only a matrix of communication and it cannot convey meanings of complex communication of human beings". [pp.19-20].

The idea revealed by this scholar is rather confusing. Notice the main words: crying ... related to need ... not

origin of speech ... origin of ... communication. If speech is mainly our tool to reveal our feelings, our feelings include our needs, in other words, it is our way to communicate; when, as a grown up, I cry, I might reveal sorrow, anger or weakness; so when an infant cries, he is also telling something, he is revealing his feelings, his needs; which are rather undifferentiated at the beginning. And I believe that it is from this lack of differentiation that the difficulty springs.

Cruttenden (1979) says,"it has always been a matter of dispute how far children in the first months of life (particularly the first three months) have different cries under different conditions and how far such differences are recognised and responded to by babies' mothers. On balance, it seems that gross differences in types of cry are present and that at least some mothers may be sensitive to such differences" [p.1].

The problem is clearly stated by McCarthy (1954) "there is the problem of hearing correctly the fleeting meaningless sounds and of using phonetic notation correctly in order to record them accurately" [p.505]. Lindfors (1980) believes that children's vocalizations, in the first six months, include a wide range of sounds and do not demonstrate a pattern or control [p.147].

The problem, then, is one of method and technique, and, above all, available means. The old means were as simple as a paper and a pen. That was demonstrated by scholars such as Leopold, and Lewis. Their observations were restricted for the most part to one or two children, noticing and recording everything. Due to their efforts, old ideas started to disappear when their new ideas began to spread. In one way or

another, they believed that language development starts as soon as the infant is born. In introducing Tracy's article of 1909, Leopold (1971) says that, "it will be noticed that Tracy, like many students of child language, does not recognize that cooing and babbling (Leopold doesn't mention crying) are stages of language learning which are completely different in character" [p.32].

Crying, which is the ultimate first utterance uttered by infants, was rather devalued, until the outstanding work of Lewis's appeared in 1936, in which he classified infants' crying according to the appearance of the sound elements they contain. He believed that, for a better understanding of the course of the child's development, we have to observe the actual sounds as they emerge, the order in which they occur and the circumstances in which they are uttered. His studies were conducted on children from the first month of life; this was based, in some way or another, on a belief that language develops as the child develops from the first moment he is born.

The importance of infants' early vocalizations and their relation to speech development has been increasing continually until the present time. Kaczmarek (1953) says, "the first sound of the child, i.e. the first cry, must be viewed as the first expression of independent life, the activity of breathing being connected with it" [p.133]. Nakazima (1975) thinks that crying, "seems to be the expression of the infant's discomfort and the evocation of his mother; it might, therefore, be considered the origin of speech" [p.182].

Nevertheless, an exhaustive treatment of this period of the child's life has not been achieved yet. The studies which give adequate reports of the very early stages, however, are

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much less numerous than those which are concerned chiefly with the period immediately following the appearance of the first words. Research in the early stages, as Crystal (1973) points out, is meagre and fragmented and documents the necessity for a careful account of such phenomena, particularly during the course of the first year of life, "There seems to be very little reference made to infant vocalization, apart from general remarks in the standard textbooks of child psychology, and a few impressionistic comments about vowel types and affective categories ... it is only right to say that the occasional insight is generally obscured by the unsystematic and scattered observations, the absence of anything which could be called a methodology, the vague descriptions, and the flights of fancy" [p.9].

In all the literature of the beginnings of speech during the first six months of life, one can hardly find a systematic and comprehensive account of speech development. Accounts that exist are rather sketchy and for the most part non-consecutive, with the exception of some genuine, well-ordered studies by, M.M.Lewis, Leopold, McCarthy and others.

Nevertheless, these studies, however good they are, still lack precise information. They give interesting, but not conclusive observations. They do not provide us with much information about the changing structure of utterances as infants mature; the connection of the utterances to the circumstances in which they are uttered; the actual sounds that emerge; patterns of change in duration, amplitude, and fundamental frequency ... etc. Delack, (1976), says, "Despite a rather extensive literature on the subject, most research on the nature of infant speech can be characterized as

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impressionistically descriptive, or anecdotal, or speculative, or some combination thereof. Such studies have by and large ignored the structure, function and natural history of early vocal behaviour, ... the development of infant vocalizations and of their relationship to later linguistic usage" [p.17].

It is the interest and concern of the present researcher to analyze in as detailed a way as possible, the vocalizations of the Subject in the first six months, that is by collecting as much objective and basic data as possible, to throw light on several questions in speech development by collecting as many sounds of my subject as possible with the use of tape recording and Sonagraph analyzing.

(3-2) LITERATURE REVIEW

Vocalizations in the first six months have been widely and differently interpreted. Some believe that cry, discomfort, and vegetative sounds comprise the greater part of the infant younger than six months (Stark, Rose, and Mclagen 1975). Others think that the child cries, coos, then babbles during the same period (Wolff 1969, Cruttenden 1979). Others, again, have divided utterances into comfort and discomfort cries (Lewis 1936) or crying and non-crying utterances.

However numerous, or different, are the vocalizations of children in this period, the researcher believes that crying is the most significant utterance uttered by them in the infancy of their life. The child starts with crying, then this crying, afterwards, develops into other means of communication. And, in contrast to those who deny that speech development starts from the minute the child is born, I believe that from the first cry the child is communicating. As long as he is revealing himself, gaining the other's attention and getting

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his needs satisfied, he is communicating; he is not necessarily vocalizing real words, as communication takes many forms, and the main purpose of communication is to reveal clearly one's message. People communicate through letters, T.Vs, radios, telephones, telegraphs, computers; and so many other means which, first and foremost, reveal their message, expressively, and evocatively; exactly as the child does through his crying. Buhler, 1958 (see Nakazima, 1975), thinks that expression, evocation, and representation are the three functions of speech. Major (see Blenton 1917) also, supports the same idea; he says that, "the beginnings of language are usually traced to the reflex crying of the newly born babe" [p.458].

In reviewing works on crying, we find that it has been interpreted, sometimes clearly, and at other times vaguely. Some scholars have been content to classify crying into different types, without taking the trouble to explain on what basis their classification was built. Others have tried to classify and explain, in a way, and to some extent.

Buhler is one of the people who are interested in crying, and its connection with the child's needs. In 1930, he studied a variety of infants' utterances and tried to relate them with the situations in which they were uttered. He, mainly, concluded that infant's crying is a device to draw mother's attention - mothering it, feeding or changing it ...etc. So, as mentioned before, this utterance can be seen as the beginning of communication. He also believes that infants do not communicate always by crying only. Non-crying utterance, which begins at about the end of the first month, reveals the infant's state of comfort and relaxation after feeding or pleasant awakening.

By inference, his observations are:

1) Crying always occurs closely connected with movement.

2) All causes of crying in the first four months revert back directly to bodily pains and needs. He believes that crying is mainly caused by:

a) Pain,

b) Strong sensory stimuli,

c) Abrupt and sudden changes of posture,

d) Strong disturbance during sleep,

e) Fatigue,

f) Hunger,

g) Failure of the intended action,

h) Loss and removal of playthings,

i) Fear, and

j) Social influences.

Buhler made a very good survey of crying, but he did not give us any criteria for distinguishing between the cries according to these different causes.

Vocalizations in the prelinguistic stage, were mainly recorded by the use of pen and paper, and observer's eye. The first study, made with the help of modern equipment such as magnetic recorders and the Sona-Graph machine, which gives graphic representation of the voice, was done by Lynip (1951). He was able to study crying using a modern instrument, but he was not quite able to differentiate its types, apart from the birth cry. From a study of several Spectrograms of the "hunger" cry, he found it impossible to find parallel sound values. Changes were found in all dimensions. The same was true of the "attention" cry Spectrograms. He found that one of the "attention" cries was remarkably similar to a "hunger" cry. He

concludes that he was not certain of the actual motive that causes the baby to cry at any time. He called the "hunger" cry so because he was recording it at feeding time, and the "attention" cry was recorded shortly after feeding at a time of day when the baby was usually held. From the spectrograms, he realized that a statistical comparison could be worked out to differentiate between cries. But he did not pursue this line of investigation. He classified his study into: 1) birth cry, 2) crying, and 3) non-crying utterances.

From his study, Lynip was able to trace the following levels of development which he believes to "vary slightly in time sequence with different infants but, with the exception of Items 3 and 4 which may be interchangeable, it is generally agreed that the levels are found in this sequence with every infant possessing functioning sensory organs and unretarded mental faculties "[p.245].

The levels are:

1) Irregular, uncontrolled crying.   first day

2) Crying with an awareness of actions
   of others in the room.   from 5th week

3) One syllable utterance   from 7th week

4) Audible laugh   from 8th week

5) Sounds strung together   from 18th week

6) Attempts to imitate mother's utterances   from 40th week

7) Identifies a sound she utters to
   a familiar object   from 50th week

8) Identifies a sound she utters to
   a familiar object, which sound is
   closely similar to the adult
   name for the same object   from 52nd week

By the end of his article, he raises some questions regarding children's development; he gives some answers, but he seems to be unsure of them. In the first issue for investigation, he says:

"1) It has been demonstrated that crying in this instance is differentiated. The differentiation is found in the elements of crying intonation, cadence, rhythm, attack, and duration. In the Spectrograms these are seen to change frequently. If there is a 'vocabulary' of crying in the sense that as the infant grows he attaches different meanings to different crying utterances, it would seem that one would be able to see similarities in the 'hunger' cry as it is produced from day to day. This is not the case. The 'hunger' cry is seen to be variable, just as the 'attention' cry is variable" [p.245]. His answer is, "differentiation in crying is not according to the changing wants. And this method (the use of the Sona-graph) now makes available the means of getting this answer with precision" [p.245].

The second issue for investigation is:

"2) It has been shown that this infant, according to the samplings made, did not produce a single vowel or consonant that was comparable to adult vowels and consonants until about the end of her first year and that even at that time the sound was only approximately the equivalent of an adult sound" [p.246]. He replied saying: "The past literature would have one think that even the crying of an infant is a vowel sound comparable to an 'a' or 'e'. This study and this method show that any vowel utterance may better be expressed in units of measurement more precise than the generalized forms of phonetic symbols, and this study shows how those exact units of

measurement may now be obtained and used" [p.246].

Although as I think that Lynip's argument about using other means in describing infants' early utterances is more accurate than trying to approximate them with adults' sounds, I believe that the mere looking at the sonagraphs is rather difficult and impractical, especially for the inexperienced. Beside them, we need clear figures, curves, or whatever is a good means, that show, at a glance, differences in frequences, amplitudes, durations ... etc. In this study, I also use the sonagraph in analyzing my subject's early cries, and I will attempt to find out if early cries can be differentiated and on what basis, giving as clear as possible means or figures that reveal the differences.

Lewis (1936) is one of the scholars who has made a good analysis of children's early vocalizations; his analysis was basically built on vowels and consonants uttered by his subject. Lewis believes that the child's cry becomes "expressive" within a very few hours after birth. In that, he is fully in agreement with Stern, Bekhterev, Bridges, Preyer, Major, Hoyer, O'Shea, and Buhler. Summarising Stern's observations of 1928, Lewis says, "immediately after birth ... the infant moves between two general affective conditions: a state of discomfort, manifested by the characteristic expressive cry, and a state of indifference, manifested by silence. Later, a further differentiation appears; the child now expresses discomfort and comfort, each by a characteristic utterance, and a state of indifference as before by silence" [p.21]. Stern's observations are corroborated by Bridges' (1930), who in her study of fifty children, came out with the result that soon after birth any strong stimulus produces a

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state of undifferentiated excitement; within a short time, sometimes only a few hours, the child's responses begin to be differentiated into the two states of distress and delight, each state being accompanied by specific vocalization-crying in the former case and soft gurgling noises in the latter.

Another observation of Stern's, 1928, is that after a few weeks it is possible to distinguish the cry of hunger from that of other types of discomfort. Hoyer, 1924, mentioned also by Lewis, believes that the cry of general discomfort is more nasalised than the cry of hunger.

After reviewing some of the works that have been done on children's cries, Lewis accepted their views and admitted the difficulty of observing the different cries of new-born babies as long as observations are carried out by the "unaided human eye and ear". Worth mentioning is that Lewis analyzed children's early utterances mainly on the basis of the sounds uttered, and he classified them into two main categores: (1) Discomfort cries, and (2) Comfort sounds.

Another study was made by Aldrich, Norval, Knop, and Venegas (1946) in which they observed the crying of babies in the neonatal period, in the nursery at one of the hospitals in Rochester, Minn. They were mainly interested in deciding what are the actual reasons that cause the infant to cry. They depended wholly on nurses' reports and observations. Causes of crying were: hunger, vomitus, soiled diaper, wet diaper, and unknown reasons. Hunger and unknown reasons led the list of causes of crying. They did not show at all on what basis they decided why to call a certain cry a hunger or a vomitus cry. Besides, the category labelled Unknown reasons, in my view, is rather vague and gives the impression of uncertainty. But this

uncertainty could be the result of the difficulty of deciding, when a baby cries, what is exacly the reason of his crying.

Murai (1960, 1963), as well, admits, as most, if not all researchers do, the difficulty of hearing and recording correctly infants' early utterances; he adds that as long as their utterances are not yet differentiated, they cannot be described by phonetic signs. His means are a tape-recorder, and a sona-graph, and sounds were recorded under natural conditions.

Generally, he believes (1963) that, "crying is a physiological utterance which infants utter in uncomfortable situations ... (it develops) from physiological utterance into one communicating the infant's wants. So this utterance can be regarded as the beginning of communication" [p.19]. He talks without making any clear or precise divisions, about first cry, crying, non-crying utterance, and later sounds (I mention only his conclusions of the first six months). About the first cry, which is the birth cry, he does not give any impressions about its structure; he is content to describe it as "a purely physiological function concerned with the establishment of normal respiration and oxygenation of the blood, and not as anything concerning speech development in itself" [p.19].

On the non-crying utterances which appear at the first month and a half, he says that they are "made in a state of comfort and relaxation after feeding or pleasant awakening" p.20]. Murai believes that the non-crying utterance develops into babbling, and accordingly, that this utterance is the basis of speech development, and he gives the reasons which support this conclusion:

1) Crying develops in the direction of a communication of the

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infants' needs to their mothers.

2) The non-crying utterance and babbling of human babies is of great quantity and variety as compared with that of subhuman animals.

3) Crying stops when the infants are satisfied with their needs and uncomfortableness vanishes when the desired object is attained.

4) Crying has a definite connection with infants' needs and acts as a signal, but non-crying utterance is meaningless and has no value as a signal. The latter is comparatively mobile and situation-free, and it has flexibility which is important if it is to develop into symbolic sign.

5) In relation to 3) and 4), utterance in a comfortable condition is very active as compared with that in an uncomfortable one ... most of the new sounds appear in comfortable situations and both variety and quantity of sounds are much greater in comfortable situations than in uncomfortable ones.

6) In a congenitally deaf infant and in a child suffering from a central language disorder, crying is not retarded as compared with that in a normal infant, but non-crying utterance and babbling resulted from the development of them are much retarded or regressive.

7) Most cryings are uttered in frustrated or anxious situations. In comparison with crying, non-crying utterances arise in comfortable situations which make emotion stable, thus raising intellectual activities to the stable level and increasing the learning effects upon the utterance activities.

In fact, there is close agreement between his reasons

and my results. About his final category, later sounds, he says that the earlier non-crying utterances increase in pattern, positions of resonance, range of frequency, in addition to the appearance of short utterances. And he gives spectrograms that support his findings.

To sum up, Murai's study is an interesting investigation; but still we don't get a clear, precise picture about the exact structure of cries, or how they are differentiated or undifferentiated.

Nakazima (1962,1966), in a comparative study of the speech developments of Japanese and American English, has made a useful contribution. But he does not seem to concentrate too much on crying as his notices are not very detailed. Nakazima's method is tape recording and sound-spectrograph analysis. He obtained some interesting spectrograms of his subjects' voices. He divided the first year in his subjects' life into six stages. We will discuss first, second and third stages only.

He (1962) found that in the first stage which extends from birth to one month, the sounds produced by all subjects are crying, "they cried when they were in a state of discomfort. When they cried their mother came to them and took away the causes of their discomfort. When their needs were satisfied they stopped crying" [p.29]. He believes that crying, supporting Buhler's view, is the origin of speech as it is the expression of Ss' discomfort and the evocation to their mother. In the second stage, which starts at about one month, he notices that his Ss begin to produce non-crying utterances. Subjects produced these utterances when they were comfortable, i.e. after enough sleep, food, being close to the mother, etc. At first they produced these calm sounds when they were with

the mother, and later when they were alone in bed. In the 3rd stage, from two to five months, articulations begin to develop, and he mentions the appearance of vowels and consonants in this period.

Generally talking, Nakazima does not pay a lot of attention to the specific structure of children's vocalizations during each stage, as much as he is interested in giving general statements. As far as crying is concerned, he says little about it, without mentioning anything about its structure, being differentiated or not, and even what are the differences, if any, between Japanese and Americans.

Another interesting study was carried out in 1974 by Stark, Rose, and Mclagen, in which they were interested in causes, as much as in the structure and features, of infants' vocalizations in the first eight weeks of life and their later development in speech production. They believe that cry, discomfort and vegetative sounds comprise the greater part of the output of the infant up to eight weeks. They analysed the following features:

1) Features of breath direction, voicing, pitch, and loudness.

2) Degree of constriction of the vocal tract above the glottis.

3) Features of open, vowel-like sounds, and

4) Features of close, consonant-like sounds.

They give tables that show percentage occurrence of each feature. They found out that cry, discomfort and vegetative sounds produced by the infants in their study differed from one another in both segmental and suprasegmental features; and they give the main characteristics for each category.

As to vegetative sounds, they were characterized by "non-sonorant consonant-like elements - stops, friction and clicks.

The sounds were typically brief, and very faint as a sequence of voicing accompanied by breathiness. They were produced in short series and were more often ingressive than the other two sound types". As to cry and discomfort sounds, they resembled each other closely in segmental features, and differed from vegetative sounds in that respect. They contained "consonant-like elements to a lesser extent than vegetative sounds, and the consonant-like elements were for the most part sonorants, i.e. liquids and nasals" [p.219].

A normative study was made by Ringel and Kluppel (1964) in which they studied the acoustic parameters of the crying of six female and four male neonates selected at random from the newborn nursery at the University of California, Los Angeles. The age of the infants ranged from 4 to 40 hours. They obtained normative data regarding the following parameters: fundamental frequency, harmonic spectrum, sound pressure level, and duration. They concluded that, "different cries, as produced by the same neonate, do not differ significantly from each other with respect to fundamental frequency, sound pressure level, or duration ... when comparisons are made between neonates for the fundamental frequency and sound pressure level parameters, significant differences do exist. ... Finally, it was determined that the neonatal cry is similar, spectrographically, to the (æ) and (ʌ) vowels" [pp.7-8].

Delack also (1976) has done an interesting study in which he concentrated on the vocalizations of 19 infants in the first year of life. He studied their spontaneous utterances, under normal home routines, tape-recorded them and analyzed them spectrographically. Although he observed children from as early as two weeks old, he did not pay any attention to the

features of crying.

At this point it is appropriate to give a quick review of the work of some of the researchers who briefly dealt with infant's crying in the first half year. To start with Darwin (1877) noticing one of his infants, he says that, "the noise of crying or rather of squalling, as no tears are shed for a long time, is of course uttered in an instinctive manner, but serves to show that there is suffering. After a time the sound differs according to the cause, such as hunger or pain. This was noticed when this infant was eleven weeks old, and I beleive at an earlier age in another infant. Moreover, he appeared soon to learn to begin crying voluntarily, or to wrinkle his face in the manner proper to the occasion, so as to show that he wanted something. When 46 days old, he first made little noises without any meaning to please himself, and those soon became varied" [p.27].

I am very dubious about the crying, or wrinkling being voluntary, as infants, from my study and other observations of other children,at such an early age are generally not capable of this. I myself have noticed voluntary crying in my subject, but very much later. Nevertheless, from his sketch we take the impression that, as he thinks, crying is a means of communication and develops from undifferentiated to differentiated.

Champneys (1881) noticed that, "the child appeared to cry at first for three reasons: 1) from a feeling of loneliness or fright on awakening from sleep, ... 2) from hunger, 3) from pain" [p.105]. Tracy (1903) thinks that "the cry at first is merely an automatic or reflex 'squall', without expressive modulation or distinctive timbre; the same cry serves to

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express all sorts of feelings. But very soon it becomes differentiated and assumes various shadings to express various mental states" [p.125]. Dearborn (1910) noticed that on the seventeenth day crying was differentiated according to cause. Also Blenton (1917), who studied twenty-five infants during the first thirty days of life, said "in the subjects with which I worked I did not find the cries of hunger, to noxious stimuli, to fatigue, and so forth, uniform. There were differences of vowels and consonants, of timbre and degree, but no one was used as response to one set of circumstances that was not at the same time used to others.... The cry of colic was the one exception... The 'hunger cry' has generally a well marked rhythm" [pp.458-459].

Fenton (1925) believed that during the early period sounds are reflex in character; when the vocal muscles chance to contract, sounds arise, but they are uttered without intent, and are not to be thought of as indicating particular meanings. Variations in sound are more often indicative of differences in intensity than anything else. The greater tension of muscles under stress of excitement flattens the sound and makes it more shrill in extreme hunger or pain.

William Stern (1926) says, ignoring or rather neglecting the importance of the first six months, "That first period of unconscious speech for particular occasions ..., as a rule, lasts for six months or a little more, without showing any very special progress within its own limits" [p.46]. Kaczmarek (1953), as I mentioned before, evaluates this period, and infant's crying, "the first sound of the child, i.e. the first cry, must be viewed as the first expression of independent life, the activity of breathing being connected

with it" [p.133]. And about what causes a child to cry, he adds "For a considerable time the crying or weeping caused by hunger, thirst, inner pains, wetting, etc., remains the only sound the child produces. In the beginning it is neither conscious nor does it serve a purpose. For the environment however it is the signal that the child needs help" [p.133].

Engel (1964) (see Ferguson and Slobin 1973) believes that "screaming and crying are probably expressions, but they are not language. They continue even after language is completed. Nor are gurgling sounds precursors of language. They are continued by sounds of pleasure" [p.10].

Wolff (1969) identified three types of cry during the first two weeks of life. The first is the hunger cry, which as he considered it, is a basic type of cry, and it signals that a child is uncomfortable and more particularly, he is hungry. The second is the pain cry, and the third is the mad cry which is a cry of rage or exasperation when, for example, something is taken away from the child; mad cry is similar to hunger cry, with more additional fricative noise.

Also about crying, Paula Menyuk (1971) wrote a review in which she concluded that crying can be differentiated at least into two categores: hunger and pain. Afterwards, she also indicated that cries produced by infants can be categorized as a) basic cry, b) turbulence, c) shift, and d) a combination of the described phonations (a+b+c).
She also mentioned the developmental stages of crying which are firstly "unconditioned reflex", then "motivated crying". She regards that development in infant's crying is due to its increasing control over vocal mechanism.

Lastly, Aitchison, (1983) was able to detect three

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cries, hunger cry, pain cry, and "pleasure cry", which is described as the result of the child being fed, comfortable and lying in its mother's arms.

To recapitulate, I reviewed as much as possible studies that have been made on the first six months of the child's life and which reach clear conclusions about the prelinguistic stage. It seems to me that this period has been, to some extent, only partially examined and analyzed. The point is that, no one study, up till now, stands or represents a clear coverage of the period, with main concentration on crying as the important utterance vocalized by infants in this stage. Questions as: what causes a child to cry? and, is crying differentiated or not, and how?, still need more investigation.

It is my concern, in this part of the research, to give as much coverage as possible to my subject's crying in the first six months of her life, attempting to analyze and explain it, making clear any differences in structure and content. This is the aim of the next Chapter (Chapter 4).

CHAPTER FOUR

CRY ANALYSIS

As mentioned before, in chapter three, studies on children's cries have not yet reached the level of giving a full, comprehensive account of the nature of the cries; as no general agreement has been reached. Exceptionally, in my view, two studies do give a clear treatment of children's cries. The first is by Truby and Lind (1965) in which they investigated 30 infants from less than 1 to 12 days. The study was mainly a classification of the different kinds of vocalization common to cry. They specified three primary sorts of cry-sound vocalization, with reference to which, as they believe, all infant cries can be described. In their words:

"...it became clear that there are, acoustically speaking, three primary sorts of cry-sound vocalization. The least complex and most elemental of these is the simple egressive phonation (called basic cry and later phonation)... (the second) produces clearly audible turbulent effects and leaves an impression of extremely raucous vocalization and sometimes noticeably higher pitch (called turbulence and later dysphonation)... (the third is) characterized by exceptionally high pitch - 1000 to 2000 cps - or sudden shift to or from exceptionally high pitch (referred to as shift and later hyperphonation" [pp.15-16].>

The first category, PHONATION, as they say, " is characterized by smoothness, almost symmetry, of spectral pattern and of intensity pattern. This general pattern is perhaps the most typical, even the most 'basic', of egressive cry manifestation. The infant is not registering great distress

or discomfort" [p.19]. The second category, DYSPHONATION, "is felt by the listener to have a definite 'raucousness' or 'roughness' or 'harshness' and is as distinctive on sound spectrograms as _ in audition" [p.21]. This sort of crying results in, "associated random distribution of frequency energy and thus, ultimately, in vagueness of pattern on such as sound spectrograms" [p.21]. With HYPERPHONATION, the third category, a high fundamental frequency is explicit; it is as they say, "a highly inflected vocalization which leaves an auditory impression of extremely high-pitched vocal performance" [p.24].

Truby and Lind's investigation introduced new facts in the realm of infant cries. It is highly objective as they depended mainly on electro-acoustic developments which give clear direct analysis. They used:a) sound recording and especially magnetic tape recording, b) a sound spectrograph, c) over-all intensity record, and finally d) the direct-written oscillogram. They believe that using phonetic symbols in analyzing infant cries is ill-advised, since phonetic symbols stem ultimately from articulatory considerations, and it is immediately clear that the newborn accomplishes "identifiable speech sounds" with vocal gestures and motor participations which bear little resemblance to adult articulations producing "the same speech sounds".

Finally, and most interesting, is their claim that "the performance pattern of cry is exceptionally individual - very possibly the infant's most distinctive motor activity" [p.11].

The second study was carried out by F.Franco in 1984-85 (see F.Franco,1984 and L.D'Odorico, F.Franco and G.Vidotto, 1985). In this study, they investigated cry vocalizations produced by four infants from 4 to 10 months of age. Their

research was mainly based on the communicative value in prelinguistic cry and non-cry utterances. They considered the following parameters:

      1-Temporal parameters: sequence length, pause duration, and vocalization duration.

      2-Non-segmental parameters: voicing, melodic pattern, manner of phonation.

They classified cry vocalizations*, according to their contextual characteristics, into: 1) Discomfort cries, 2) Cry call and non-cry call. Five analyses of variance (ANOVAs) were performed in order to analyse the influence of communicative value and non-segmental characteristics on the above mentioned parameters. Their results show a partial "difference at a very general level between cry and non-cry vocalizations apart from the communicative value. On the other hand, communicative value, even if in interaction with voicing, contributes to duration differentiation". Also, "Communicative value and melodic pattern independently affecting the duration of voiced vocalizations" (L.D'Odorico, F.Franco and G.Vidotto,1985,p.41).

In my view, the above mentioned works have contributed a great deal to the study of infant cry vocalizations, acoustically and functionally. Truby and Lind introduce a very precise description of the main manners of phonation observed in infant cry. Franco et al. supply a good version of the communicative value of cry vocalizations on the basis of situational context.

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* In Franco (1984), vocalizations were classified into three categories: 1) Discomfort cries, 2) Protest cries and 3) Call cries.

The missing part in their work, and that of others, is exhaustiveness or, in other words, analysis of all cry-vocalizations produced by an infant in its prelinguistic stage, regardless of the source of the cause, whether it is external, or internal. All Truby and Lind's subjects were stimulated by pinching, which is an external cause. Franco et al. tried to reduce to the minimum any possibilities of hunger, sleep, pain...etc., so as to link the origin of crying, or vocalizing, to inter-actional context.

The aim of this research is to study the prelinguistic cry-vocalizations of the subject, grouping them into main categories according to their causal or communicative context. All situations will be considered; no special attention is given to externals or internals. Vocalizations will be analyzed according to their manner of phonation, temporal patterning and melodic patterning.

METHOD

Sarah's cry and non-cry vocalizations were recorded during the period from 0 to 6 months. All recordings took place at home, mainly with mother. There was no set pattern for the sessions; in other words, whenever there was a chance to record, recordings were made. All types of context are to be included in studying her vocalizations:

1) With mother,

2) Alone,

3) Playing with toys,

4) Hungry,

5) Getting up from sleep,

6) Needing attention,

7) Tired of toys,

8) Crying for mother,

9) Happy, playing and laughing.

Cry vocalizations produced by the child are easily distinguishable from non-cry vocalizations, as the latter are not accompanied by the same facial expressions used in the first.

Classifying vocalizations according to the contextual situations in which they were produced, three main categories are introduced:

A) Call Cries:

This category has been called so because it is mainly characterised by the child's calling for someone to satisfy her needs. It includes situations such as 2), 4), and 5). For example, in 2), the child is alone and cries, then the mother

comes to her, gives her a toy, or probably picks her up, and starts to nurse her. Situation 5) is almost the same, when she wakes up and cries calling for someone to look after her. Also in 4), when she is hungry, cries and calls for her meal.

B) Protest Cries:

In situations such as 6), 7) and 8), the child is mainly protesting against her present condition. For example, if she is ignored, not paid any attention as in 6), tired of playing with toys, probably the same toys as in 7), or mother leaving her as in 8), she cries protesting against that.

C) Other Cries:

In situations (1, 3, 9), the child is mainly playing, with or without the mother. Her utterances were classified as 'other cries' because there was no specific indications revealed by them. They were also a mixture of cry and non-cry utterances.

To ensure objectiveness in classifying and deciding the true nature and general condition of the above situations, the researcher's husband and another friend were asked to listen to the cries and give their impressions. We reached a general agreement of about 96%. Situations upon which there was some disagreement or confusion, all belonged to the category of 'other cries'.

In addition to that, the researcher has been regularly, after deciding what the real condition of the child was, testing her conclusions by offering the child something else, or reacting in a different way, so to be sure of her conclusions. For example, if I could say that she is hungry, I give her a toy, or start playing with her, she goes on crying

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until she can see her meal coming ... and so on.
Vocalizations included in the above three categories, 270 vocalizations in all, will be tested according to their manner of phonation, temporal patterning and melodic patterning.

The smallest Unit of Vocalization (UV) is decided mainly according to its manner of phonation. This approach is different from that of Franco et al. (see L.D'Odorico, F.Franco and G.Vidotto, 1985), as they considered two sounds as distinct UV's "when they were separated by an interruption of phonation lasting at least 50 msec, i.e., the period considered as the minimal possible pause". That presumably implies that each UV in their case contained only one manner of phonation, which is not the case in my study, as, if we explain a UV the same way they did, it will include one manner of phonation, see figure (4-1), two manners see figure (4-2), and sometimes three manners, see figure (4-3) without any pause in between (see the Appendix for more examples);that is why we considered two units of vocalization as distinct when they either 1) have different manners of phonation and there is a pause of at least 50 msec between them, see figure (4-4), or 2) have two or more different manners of phonation with no clear pauses, see figure (4-3); accordingly in the first case, the duration of a UV will be measured from the appearance on the spectrogram of a clear vocalization, to the point where the spectrogram paper was again blank, and in the second case, duration of a UV will be measured from the appearance of a clear vocalization with a certain manner of phonation till the end of that phonation, in other words, till the appearance of the other different phonation.
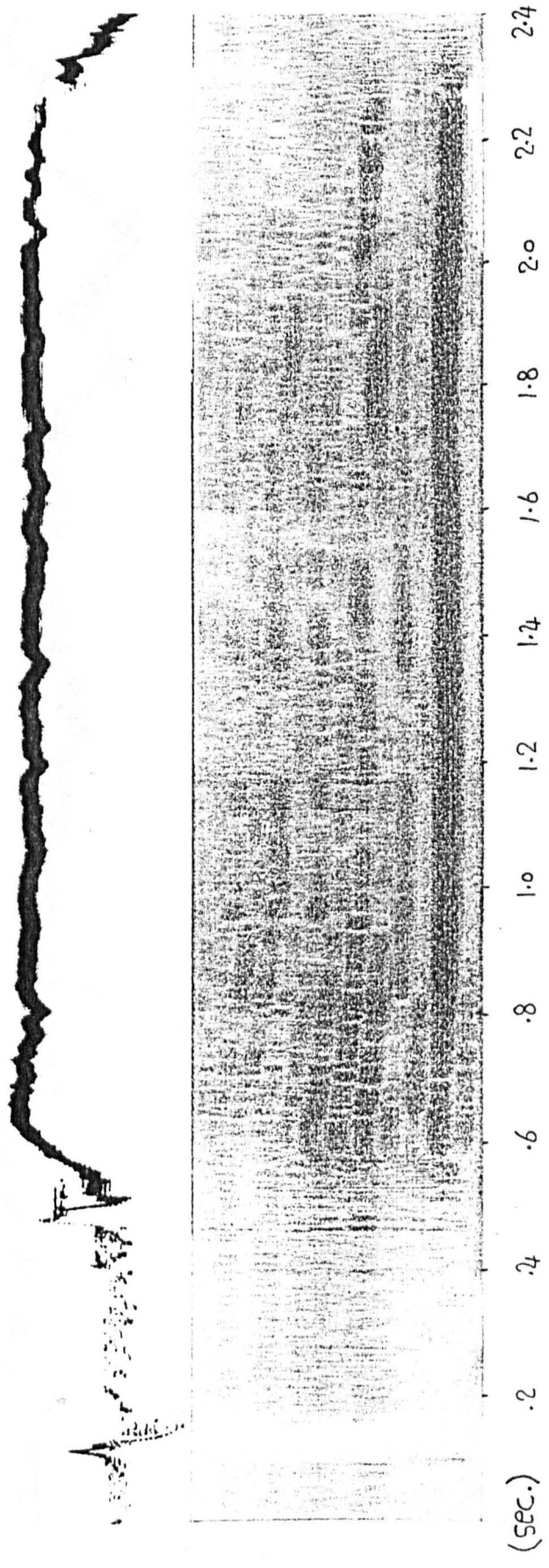
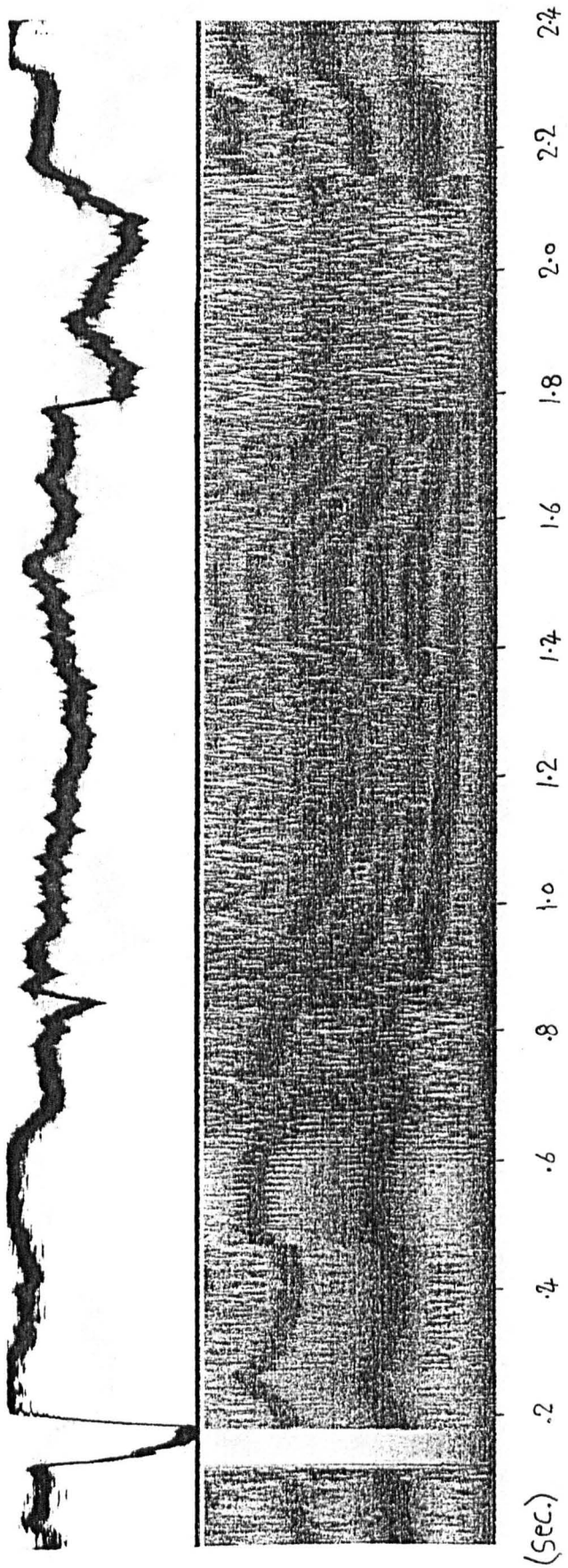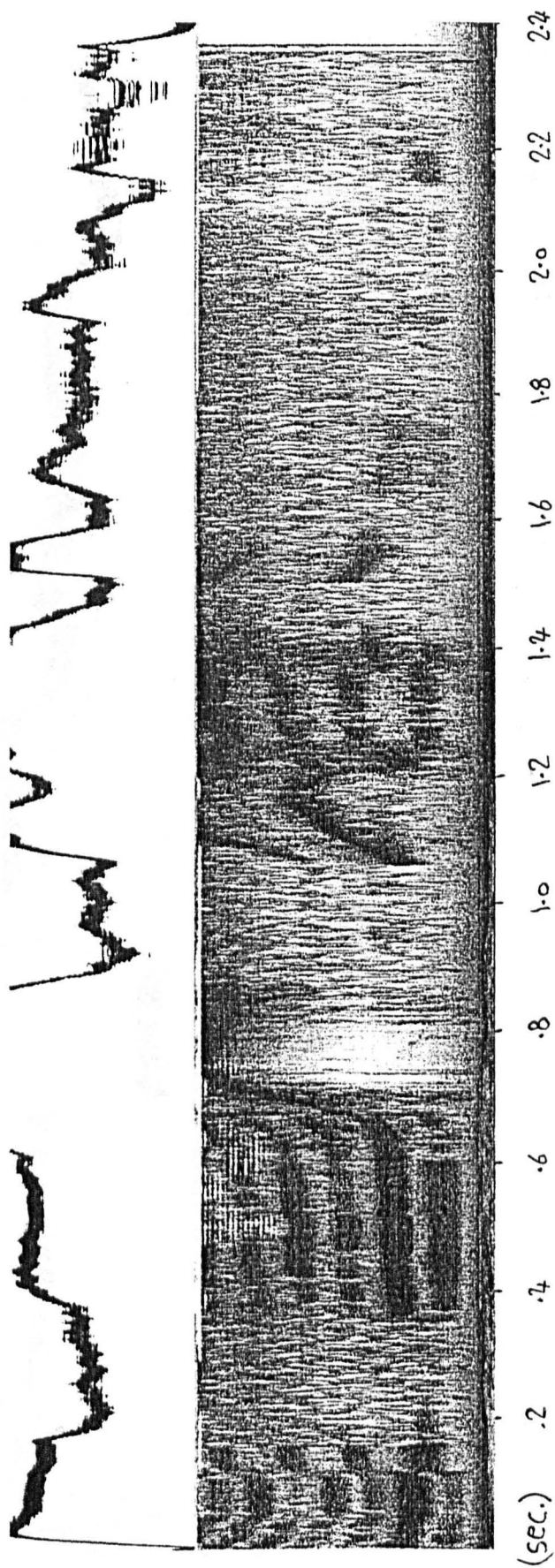Therefore, according to the manner of phonation,
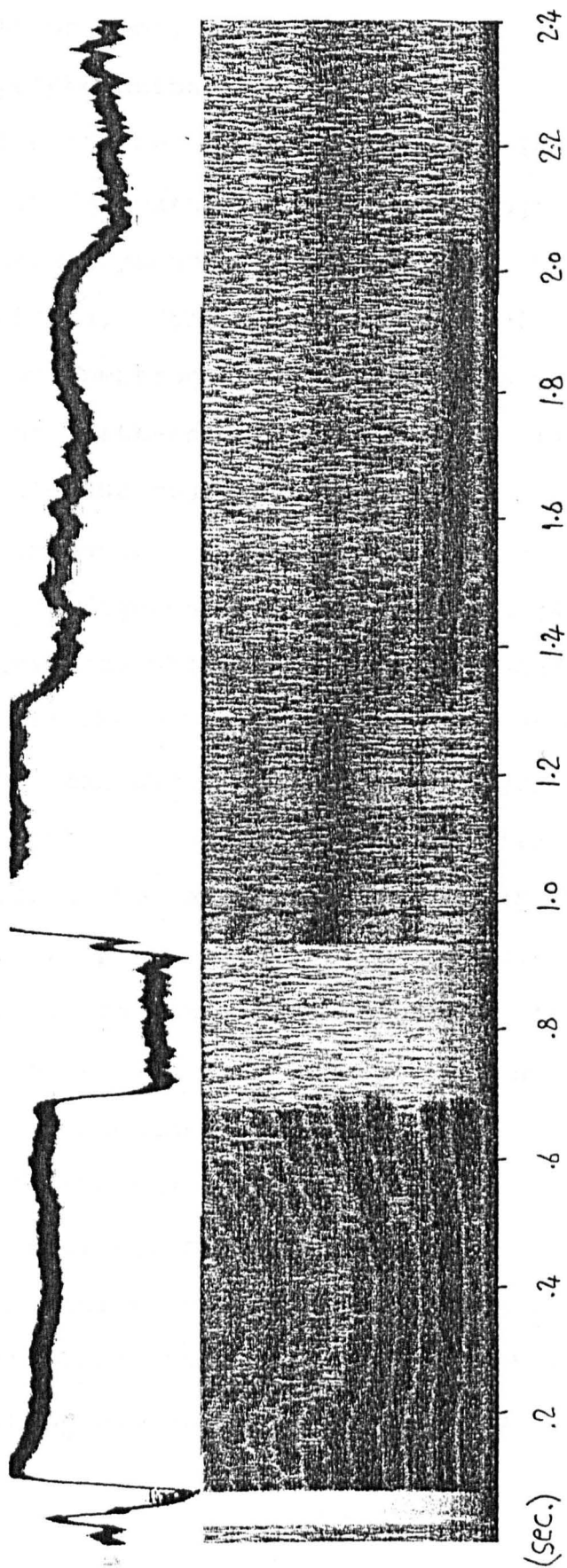
Figure (4-1)

50

Figure (4-2)

51

Figure (4-3)

Figure (4-4)

53

vocalizations will be distinguished into three kinds:

1) Simple phonation,

2) Dysphonation, and

3) Hyperphonation.

Simple phonation is the most basic and least complex of the three kinds. It appears on the spectrogram as a smooth, symmetric pattern. Dysphonation is mainly characterized by its turbulent effects, the impression of raucous, rough vocalization. On spectrograms it appears as random distribution and vagueness of pattern. Hyperphonation is of exceptionally high pitch (1000-2000 cps). Sometimes it appears as a shift from simple phonation. It could even have concurrent dysphonation, see figures (4-5), (4-6), and (4-7).

Vocalizations will be further analyzed on the basis of Voicing; they will be dubdivided into: 1) Voiced, if harmonics are clear in all the spectrogram, see figure (4-8), 2) half-voiced, if part of the harmonics only is clear, see figure (4-9) and 3) Unvoiced, if no harmonics are clear at all, see figure (4-10). Temporal patterning will be also considered, as duration of vocalizations, and duration of pauses will be measured (pauses of less than 50 msec will not be considered as interruption of phonation, see Stark, 1978).

Also, on the basis of melodic patterning, vocalizations will be either falling, rising or level; falling if F_0 of the terminal part of the sound falls more than 47HZ; rising, if F_0 rises in the terminal part more than 47HZ; and level if no clear change in F_0 happens (see D'Odorico et al. 1985).

PROCEDURES

Spectrograms were studied and analyzed according to the
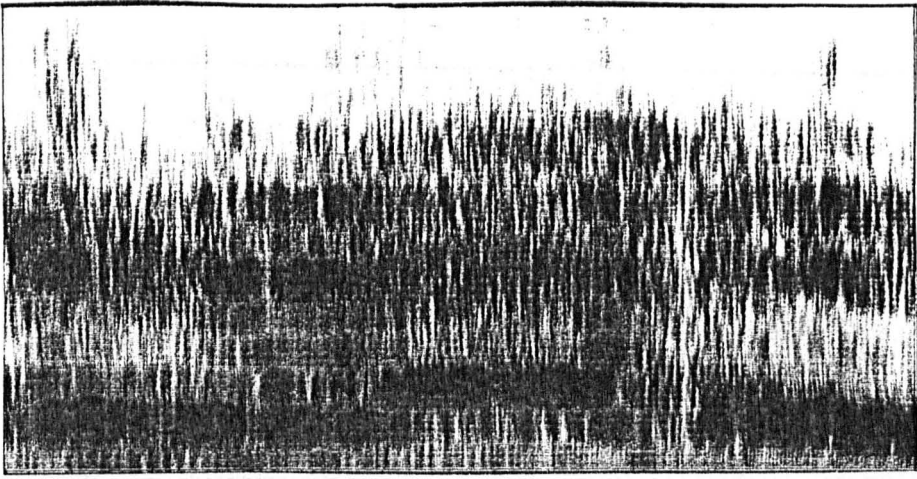
Figure (4-5) Simple phonation
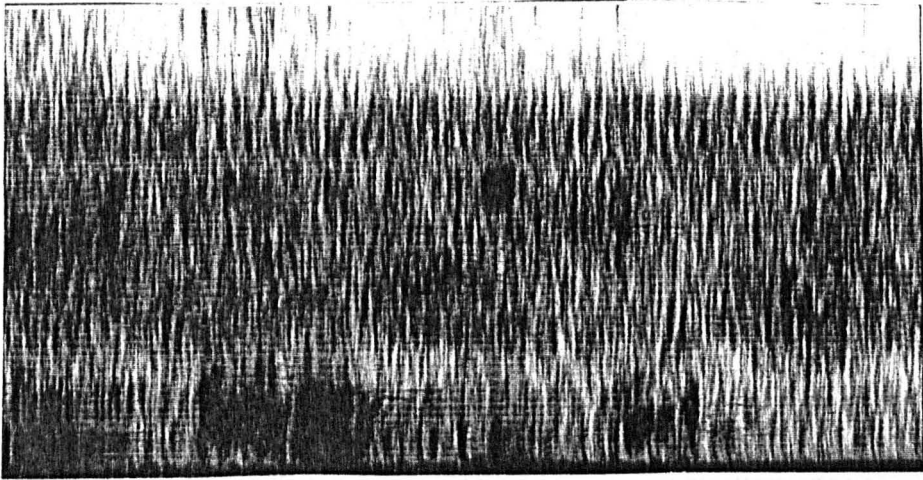
Figure (4-6) Dysphonation
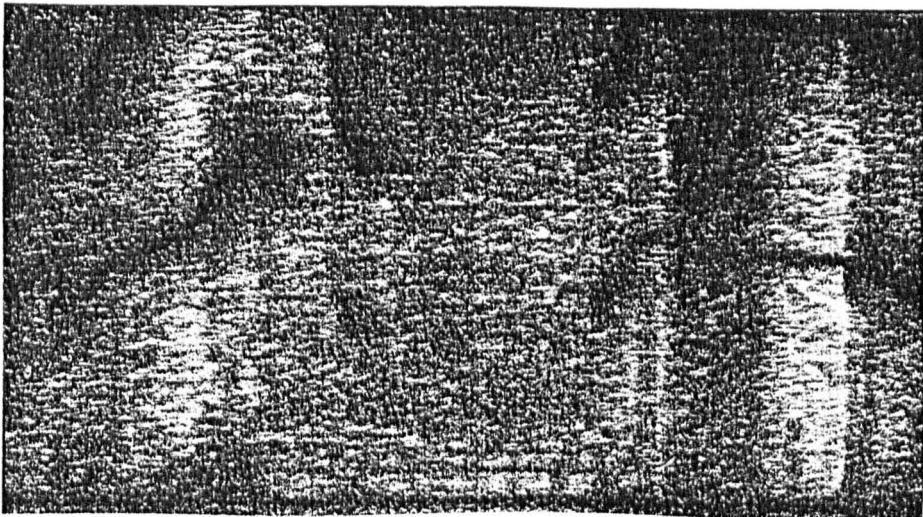
Figure (4-7) Hyperphonation
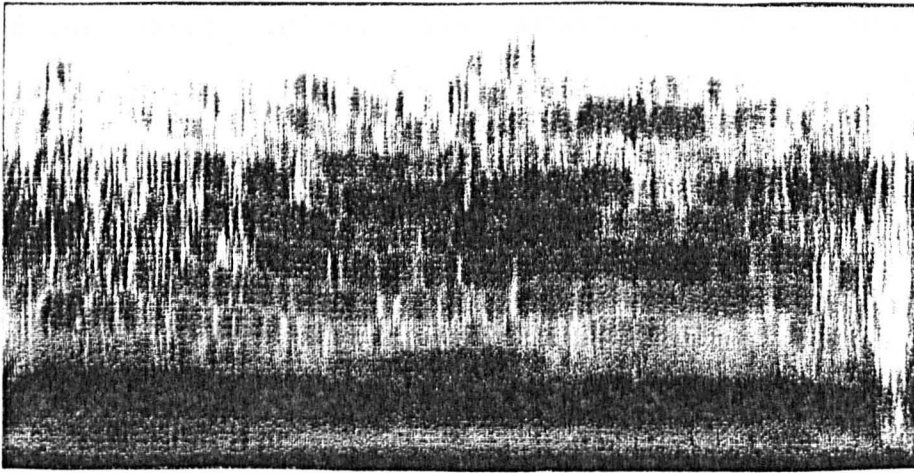
Figure (4-8) Voiced
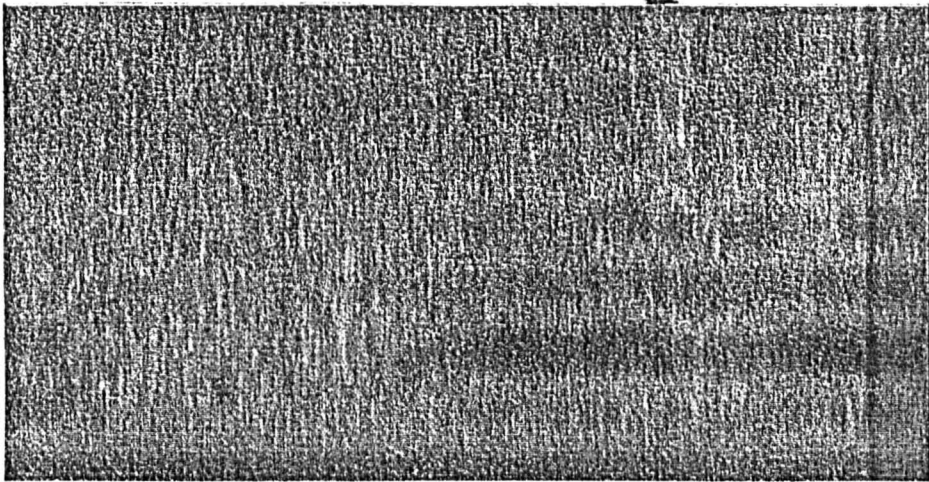
Figure (4-9) Half-Voiced
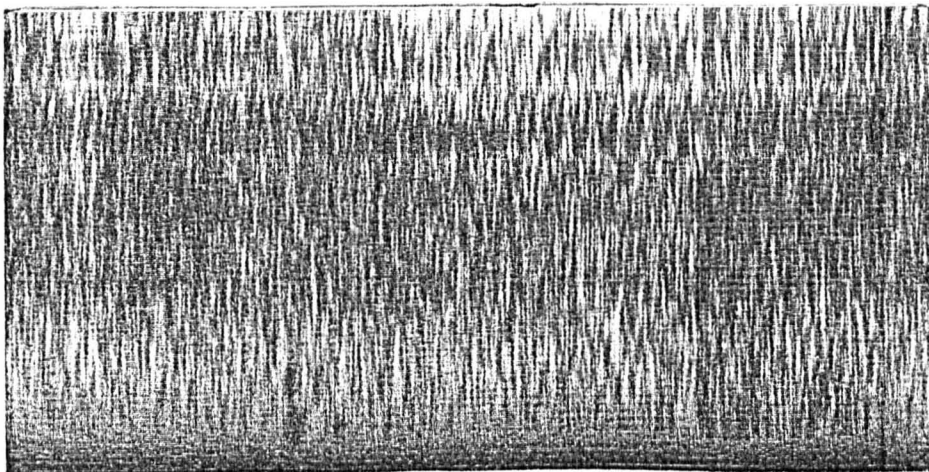
Figure (4-10) Unvoiced

56

parameters mentioned above. 270 vocalizations in all are involved (86 call cries, 146 protest cries, and 38 other cries) of which 141 are simple phonated, 56 dysphonated, and 73 hyperphonated; 15 are level, 144 rising, 111 falling; 77 are voiced, 18 unvoiced and 175 half-voiced. The following is a distribution of these figures in each cry category.

RESULTS

CALL CRIES

In call cries we have 6 samples of cries; table (1) shows their location on tape (1) and child's age:

Table (1)

Location of Call Cries and Child's Age

Cries	From	To*	Child's Age
1	00	12	--- 20 days
2	18	22	1 month 15 days
3	34	46	2 months 10 days
4	159	216	4 months -- days
5	266	327	4 months 12 days
6	631	640	5 months 26 days

Analyzing UVs in the above six samples according to the parameters involved we got the following figures (see table 2):

*In table (1), the 'From' and 'To' categories refer to the counter in my tape recorder. The figures could slightly differ in other recorders.

Table (2)

Calculated Occurrence

of Voicing, Manner of Phonation and Melodic Pattern in Call Cries.

Sample	No.of UVs.	V o i c i n g			Manner of phonation			Melodic Pattern		
		Voiced	Half Voiced	Unvo-iced	S.phon.	dyspho.	hyperph.	Level	Falling	Rising
1	26	19	6	1	20	5	1	2	12	12
2	4	--	4	--	--	4	--	--	2	2
3	7	3	3	1	6	1	--	--	3	4
4	20	5	15	--	19	1	--	--	9	11
5	18	5	11	2	15	3	--	--	6	12
6	11	--	11	--	8	--	3	5	3	3
Total	86	32	50	4	68	14	4	7	35	44

PROTEST CRIES

In this Category we have 6 samples as well, table (3) gives their location on tape(1) and child's age, table (4) will give the distribution of the employed parameters:

Table (3)

Location of Protest Cries and Child's Age

Cries	From	To	Child's Age
1	24	32	1 month 25 days
2	76	89	2 months15 days
3	224	260	4 months10 days
4	375	412	4 months12 days
5	426	539	4 months20 days
6	544	625	5 months23 days

Table (4)

Calculated Occurrence

of Voicing, Manner of Phonation and Melodic Pattern in Protest Cries.

Sample	No.of UVs.	Voicing			Manner of phonation			Melodic Pattern		
		Voiced	Half Voiced	Unvo- iced	S.phon.	dyspho.	hyperph.	Level	Falling	Rising
1	21	6	10	5	19	2	--	--	8	13
2	21	4	11	6	18	--	3	--	7	14
3	10	3	7	--	5	5	--	--	6	4
4	8	5	3	--	1	4	3	1	3	4
5	35	8	27	--	8	7	20	2	11	22
6	51	11	38	2	17	15	19	2	25	24
Total	146	37	96	13	68	33	45	5	60	81

OTHER CRIES

Four samples of cries are included in this category, table (5) shows their location and child's age, table (6) shows the distribution of the parameters employed. Finally table (7) shows only the total taken of each category on which statistics will be operated.

Table (5)

Location of Other Cries and Child's Age

Cries	From	To	Child's Age
1	49	72	2 months15 days
2	91	131	2 month 25 days
3	132	153	3 months14 days
4	347	374	4 months12 days

Table (6)

Calculated Occurrence

of Voicing, Manner of Phonation and Melodic Pattern in Other Cries.

Sample	No.of UVs.	V o i c i n g			Manner of phonation			Melodic Pattern		
		Voiced	Half Voiced	Unvo- iced	S.phon.	dyspho.	hyperph.	Level	Falling	Rising
1	11	2	8	1	--	4	7	--	4	7
2	12	4	8	--	3	3	6	2	5	5
3	7	2	5	--	1	--	6	1	3	3
4	8	--	8	--	1	2	5	--	4	4
Total	38	8	29	1	5	9	24	3	16	19

Table (7)

Total occurence

of Voicing, Manner of Phonation and Melodic Pattern in the three catetories

Category	Voicing			Manner of phonation			Melodic Pattern		
	Voiced	Half Voiced	Unvo-iced	S.phon.	dyspho.	hyperph.	Level	Falling	Rising
Call cries	32	50	4	68	14	4	7	35	44
Protest cries	37	96	13	68	33	45	5	60	81
Other cries	8	29	1	5	9	24	3	16	19

As mentioned before, the aim of this research is to verify whether cry vocalizations produced in different contextual situations are characterized by different manners of phonation, temporal patterning or melodic patterning. In other words, do these different parameters have any specific relation with the situation in which they are produced? Statistically, our Null Hypothesis is that parameters employed in the analysis do not bear any specific relation to the different categories of cries, and the Alternative Hypothesis is that the parameters have a relation with the different cry categories. To verify the hypothesis we ran χ^2-tests on each of the parameters of voicing, manner of phonation, and melodic patterning, with respect to each category.

RESULTS

Applying the notation:

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

-Testing the parameter of voicing, with respect to the three categories of crying, the result is:

$$\chi^2 = 7.43$$

-Testing the parameter of melodic patterning, with respect to the three categories of crying, the result is:

$$\chi^2 = 2.86$$

-And finally testing the parameter of manner of phonation, with respect to the three categories of crying, the result is:

$$\chi^2 = 60.12$$

With four degrees of freedom in each category, the result

concerning the first parameter, voicing, is NOT SIGNIFICANT, p>.100; this indicates that voicing does not bear any relation to the different cries. The second result concerning melodic patterning is as well NOT SIGNIFICANT, p>.200, i.e., this parameter does not also characterize any category of crying. The third result is the most important as it is highly SIGNIFICANT, p<.001; this clearly indicates that the parameter of manner of phonation has a definite relation to the different categories of cries, and that kinds of cries could be differentiated according to it.

According to these results, the Null Hypothesis is not rejected with respect to the first two parameters, voicing and melodic patterning where p>.100 and p>.200, but rejected with the third parameter, manner of phonation where p<.001; accordingly, the Alternative Hypothesis is rejected with the first two parameters and accepted with the third one.

The following table (8) shows the percentage of occurrence of simple-phonated vocalizations, hyperphonated and dysphonated, in the three categories:

Table (8)

Percentage Occurrence of Simple-phonated, Hyperphonated and Dysphonated Vocalizations in the Three Categories

Manner of Phonation	Simple Phonation	Hyperphonation	Dysphonation
Call-Cries	79%	5%	16%
Protest "	47%	31%	22%
Other "	13%	63%	24%

The table shows that simple phonated vocalizations are very

frequent and noticeable in call-cries (79%), where hyperphonations are very low (5%), and dysphonations as well are low as they form only (16%) of the whole sum. In protest cries, percentage of occurrence is, more or less, in balance, where there are no very low or very high occurrences of any special phonation. On the contrary, in other cries, hyperphonated vocalizations are very high (63%) in comparison with the other two kinds of phonation, which are comparable in range (13%,24%).

The following table (9) shows also the percentage occurrence of voicing in the three categories:

Table (9)

Percentage Occurrence of Voicing in the Three Categories

Voicing	Voiced	Half-voiced	Unvoiced
Call-Cries	37%	58%	5%
Protest "	25%	66%	9%
Other "	21%	76%	3%

It is clear from the table that half-voiced vocalizations show the highest percentages, and unvoiced vocalizations are the lowest; nevertheless, in all categories no single kind of voicing stands out on its own as to characterize a certain category; percentage occurrence of voiced, half-voiced, and unvoiced vocalizations in the three categories fall around the same range.

Table (10) shows the percentage occurrence of the parameter melodic pattern in all categories:

Table (10)

Percentage Occurrence of Melodic Pattern

Melodic Pattern	Level	Falling	Rising
Call-Cries	8%	41%	51%
Protest "	3%	41%	56%
Other "	8%	42%	50%

From this table we easily see that percentage of level vocalizations are of the lowest quantity in all categories, and the occurrence of falling and rising patterns are almost the same in all the categories also. None of the categories is more distinguished than the other for any of the cry categories.

From tables (8), (9) and (10), our main result concluding that kinds of cries can be differentiated on the basis of manner of phonation, but not on the parameters of melodic patterning and voicing, is again confirmed.

The next question to be asked is whether vocalizations produced with different manners of phonation vary in duration; in general, does the duration of a certain manner of phonation differ in relation to a certain functional category?; the following table (11) shows the average duration and standard deviation(in seconds) of each manner of phonation in the three cry categories:

Table (11)

Average Duration and Standard Deviation

Manner of phonation	Simple Phon.	Hyperphonation	Dysphonation
Call-Cries	1.1 (s.d.0.9)	0.6 (s.d.0.5)	1.1 (s.d.0.6)
Protest "	0.6 (s.d.0.7)	0.8 (s.d.0.7)	1.3 (s.d.0.7)
Other "	0.8 (s.d.1.00)	1.8 (s.d.0.9)	1.4 (s.d.0.6)

To check the differences of duration between each manner of phonation, in relation to the three categories, t tests were carried on average duration and standard deviation. In Call cries, duration between simple phonations and hyperphonations was found to be not largely significant (p <.05), and no tests were run on simple phonations and dysphonations as they have the same average of duration.

In Protest cries, duration between simple phonations and hyperphonations was found to be not significant (p <.10). But duration between simple phonations and dysphonations was found to be significantly large (p <.01).

In Other cries, duration between simple phonations and hyperphonations was found to be not largely significant (p <.05), and between simple phonations and dysphonations was not significant (p >.10).

The other temporal parameter, which will also be tested to see if it has any specific relation with any of the cry categories, is the duration of pauses between vocalizations, (any pauses less than 50 msec. will not be considered as interruption of phonation - see Stark, 1978 - and any pauses longer than 2.4 sec., which is the maximum length of the sonagram paper, will also be excluded, as they are considered as periods of silence more than pauses). The following table (12) gives average duration and standard deviation of a pause in each of the three categories:

Table (12)

Average Duration and Standard Deviation of Pauses in the

Three Cry-Categories

Call-Cries	0.18 Sec (s.d. 0.1)
Protest Cries	0.26 Sec (s.d. 0.3)
Other Cries	---- --- (s.d. ---)

To check the differences between duration of pauses in Call cries and Protest cries, a t test was carried on average duration and standard deviation. The test showed that duration of pauses in Protest cries is not significantly larger than duration of pauses in Call cries (p <.10).

In relation, t tests were also carried on differences of a vocalisation duration in each manner of phonation (table 13). It was found that a vocalisation duration in Call cries is significantly larger than that in Protest cries (p <.01), and not very significant between Other cries and Call cries.

Table (13)

Average Duration and Standard Deviation of a Vocalization in

Cry Categories

Call-Cries	1.1 Sec (s.d. 0.8)
Protest Cries	0.8 Sec (s.d. 0.7)
Other Cries	1.5 Sec (s.d. 0.8)

CONCLUSION

As has been stated at the very beginning, the researcher's aim is to study all cry-vocalizations, in general, produced by the subject in the prelinguistic stage (0-6 months). 270 vocalizations in all were studied. According to

the situations in which they were produced, cries were classified into three categories:

- Call Cries,

- Protest Cries, and

- Other Cries.

All vocalizations were tested according to their manner of phonation, temporal patterning and melodic patterning. Applying χ^2-test on the parameters of voicing, melodic patterning, and manner of phonation, the first and second parameters were shown to be not significant, (p>.100, p>.200) and the third parameter was shown to be significant (p<.001). This clearly verifies what Truby and Lind believed, that kinds of cries could be differentiated on the basis of their manner of phonation (see Truby and Lind 1965). The data shows that in Call Cries, simple phonations are very much in the majority (79%), and hyper-phonations and dysphonations are rather minor (5%, 16% respectively). In Protest Cries, on the other hand, no kind of phonation shows up as outstanding (47%, 31%, 22%, respectively) In Other Cries, a differentiation is again clear, where hyperphonations are clearly outstanding (63%), and the other two kinds are rather less frequent (13%, 24%, respectively). Testing the parameter of voicing, half-voiced vocalizations prevailed, as they occupied the highest percentages in the three categories (59%, 67%, 76%, respectively), voiced ones came second in importance (35%, 25%, 21%) and unvoiced of minor importance (6%, 8%, 3%). Melodic patterning shows no differentiation at all in three categories, as the three levels tested are more or less around the same range in all categories.

As far as duration of each manner of phonation is

concerned, t tests were carried on average duration and standard deviation. In Call cries, duration between simple phonations and hyperphonations was found to be not largely significant (p <.05), and no tests were run on simple phonations and dysphonations as they have the same average of duration.

In Protest cries, duration between simple phonations and hyperphonations was found to be not significant (p <.10). But duration between simple phonations and dysphonations was found to be significantly large (p <.01).

In Other cries, duration between simple phonations and hyperphonations was found to be not largely significant (p <.05), and between simple phonations and dysphonations is not significant (p >.10).

Other t tests were carried on duration of pauses and a avocalisation duration. It was found that duration of pauses in Protest cries is not significantly larger than duration of pauses in Call cries (p <.10). But, in Call cries, a vocalisation duration is significantly larger than that in Protest cries (p <.01), and not very significant between Other cries and Call cries.

CHAPTER FIVE

BABBLING

THE SECOND STAGE IN THE CHILD'S

LANGUAGE DEVELOPMENT

(5-1) INTRODUCTION

The babbling stage is one of the stages that most children pass through during their infancy; it is also a stage which has attracted, and still attracts, the interest and the curiosity of many researchers. Nevertheless, its nature and the role it plays in the child's language is still unclear and controversial.

Widely divergent views are held about all aspects of this stage; as to its meaning, the term "babbling" has been variously defined (see Cruttenden 1970, Oller and others 1976, Rees 1972, and others). Also, a matter of great controversy is the quantity and variety of sounds produced during this stage (see Jakobson 1968, Cruttenden 1970, Velten 1943, and others). The relevance of babbling to later speech development, discontinuity between babbling and later speech, and other points concerning babbling and around which there is a great deal of controversy will be thoroughly dealt with in this chapter (see section(5-3)).

The question to be asked here is: Why has the status of babbling remained unclear up till now? McCarthy (1929) said that "it seems that there is great individual variation in the make-up of this babbling, and there are divergent opinions as to its content, no doubt due to the fact that different writers observed different children at different stages" [p.631]. That is one reason. Others are mentioned by P.Menyuk (1971), who says that "the role that pre-babbling and babbling plays in the development of 'real' language is unknown". Her reasons are: firstly, "no objective and, thus, accurate description of the performance of the infant during this period has as yet been obtained". Secondly, "the difficulty in clearly defining the

transition from babbling to 'real' language", and thirdly, "no accurate description of the role of interaction, both verbal and non verbal, between the speaker (the baby) and the listener (the caretaker) has been obtained" [pp.54-55].

(5-2) THEORIES OF BABBLING

Three theories have interpreted the babbling stage in three different ways: the learning theory, the Maturational theory, and the Jakobsonian theory.

The learning theory (Mowrer, 1960, Winitz, 1966) holds that the child selects a repertoire of sounds that resembles those of his caretakers or parents through their reinforcing value; in other words, speech of the parents or caretakers comes to be associated by the child with primary rewards like feeding and physical warmth. Thus, the child's vocalizations that resemble the adult's will be rewarded, and in this way, the child's vocalizations will gradually assimilate to the adult's and other sounds that the adults do not produce will drop out of the child's repertoire. On the other hand, the Maturational theory (Lenneberg, 1967) holds that babbling happens as the result of biological maturation, and that children babble, not because they want to approximate to their parents' language, but because they are biologically determined to do so. Lenneberg also believes that babbling is a side effect of maturation and does not affect speech development.

Tracy (1903) and long before Lenneberg, has something in common with his theory. He believes that the child comes to the world with the ability to babble, "If, on the one hand, we observe the initial babbling of the infant and notice its marvellous flexibility, and the enormous variety of its

intonations and inflections... it will be apparent that the child has come into the world already possessing a considerable portion of the equipment by which he shall in after years give expression to his feelings and thoughts" [p.116].

The Learning theory, thus, approves of the "continuity approach"(1) in that children select speech sounds from a very large set of randomly produced vocalizations during babbling. On the other hand, the Maturational theory approves of the "discontinuity approach"(2) in that babbling sounds are randomly produced throughout the whole babbling stage and bear no connection with later speech development.

The third theory is the Jakobsonian approach (Jakobson, 1968). This theory holds that the babbling period, "brings to light in many children an astonishing quantity and diversity of sound productions. A child, during his babbling period, can accumulate articulations which are never found within a single language or even a group of languages - consonants of any place of articulation, palatalized and rounded consonants, sibilants, affricates, clicks, complex vowels, diphthongs, etc." [p.21].

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(1)(2) Continuity and Discontinuity approaches are mainly related to the Transition period between babbling and speech. Some scholars (Mowrer, Cruttenden, Oller ...etc.) believe in the continuity process, in that babbling and speech overlap, there is no gap between them, and that speech mainly develops from the sounds produced in babbling. Others (Lenneberg, Jakobson, Velten, ...etc.) believe in the other approach, in that there is always a period of silence between babbling and speech, that babbling sounds are produced randomly, and bear no connection to later speech.

He also states that after this rich and varied period, "the child then loses nearly all of his ability to produce sounds in passing over from the pre-language stage to the first acquisition of words, i.e., to the first genuine stage of language" [p.21]. In that view, babbling is a "now you hear it, now you don't" stage of random sounds.

At this point it is interesting to point out that Lenneberg's and Jakobson's theories both share the same views about the babbling period, mainly in that babbling is a more maturational than a learning process, and that babblings are randomly produced sounds that bear no connection with later speech development. But, it is also worthy of pointing out that Jakobson's theory is more explicit and extensive in exploring the stage.

Jakobson's theory is not only concerned with the nature of the babbling state, he also postulated an order for the appearance of consonants which, as he believes, is universal. According to his theory, acquisition of consonants is launched with a forward articulated stop, generally a labial. Then labials are followed by dentals. And according to his irreversible solidarity laws, a child cannot acquire fricatives until stops are acquired. More explicitly, acquisition of back consonants presupposes acquisition of front consonants, acquisition of back oral and nasal stops presupposes the acquisition of front oral and nasal consonants. Similarly, acquisition of back fricatives presupposes acquisition of front fricatives. To him, this order of acquisition is irreversible and universal, "presence of front consonants (or individual classes of them) in no way requires the presence of back consonants (or individual classes of them)". [1968, p.53].

The above theories, together with other points concerning the babbling stage will be thoroughly discussed through reviewing other works (see section (5-3)).

(5-3) LITERATURE REVIEW
(5-3-1) VARIETY OF SOUNDS

To start with older studies, as long ago as 1893, Tracy also believed that the child in the babbling period is capable of producing "a wonderful variety of sounds", and, though years before Jakobson, also believed in the child's loss of ability to produce those sounds later, as he adds, "...sounds, some of which afterwards give the child difficulty when he tries to produce them" [p.112].

Osgood also (1953) recorded the sounds of an infant in the first two months; he stated that he heard "all the speech sounds that the human vocal system can produce, including French vowels and trills, German umlaut and guttural sounds" and others that were difficult to classify [p.684]. Also Bean, in 1932, said that "one cannot fail to hear all the vowels and consonants, diphthongs, aspirates, sub-vocals, nasals, German umlauts and tongue trills, French throaty trills and grunts,.." [p.198].

Fenton also (1925) believed that there is great richness and variety in the babble as a whole. Usually it contains a far wider range of separate sounds than the child will have use for in later life. McCarthy (1929) reviewed the appearance of vowels and consonants in the babbled utterances and came to the conclusion that "there is great individual variation in the make up of this babbling, and there are divergent opinions as to its content..." [p.631].

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Opinions as to the make-up of this babbling vocabulary seem to vary considerably. Major (1906) believes that the babbling process or period has all the appearance of getting together a mass of raw material which is to be put into intelligible and significant forms later when the building proper begins.

Lewis is one of the scholars who worked a good deal on children's language (see Lewis, 1936, 1957, 1963). Concerning the aspect of variety of babbling sounds, in 1963, he says, "In babbling the child explores the possibilities of his vocal apparatus and so produces an enormous diversity of sounds, out of which a comparative few will ultimately form the speech-sounds of his mother tongue" [p.22].

Velten (1943) has his own views about babbling, which agree with Jakobson's. He also believes in the variety and richness of sounds produced during this period, "...the most outlandish sounds, i.e., speech sounds which the child has certainly never heard, may be produced and perfectly articulated during this time" [p.281]. But nevertheless this ability to produce a multitudinous variety of speech sounds, as he believes, "seems to vanish overnight" [p.281].

And to back up his point, he adds that this sudden loss of the child's ability "is not of course a physical ability that has disappeared. The use of distinctive sounds is at first severely restricted because a child does not acquire a phoneme system by random selection or by taking it over ready-made from the language of the adults, but by proceeding, step by step, from the greatest possible phonemic distinction to smaller and smaller differentiations" [pp.281-282].

And, finally, like Jakobson, Velten thinks that, "this

process is identical for children of all linguistic communities. That is to say, the relative chronology is the same, although the absolute time-scale varies considerably" [pp.281-282].

Leopold's work in 1947 is a very good descriptive representation of a child learning two languages, but it is rather limited in giving any statements concerning points of controversy in the child's language development. About babbling itself, he indicated very few. He implied the variety of sounds in that stage by saying, "In part they consist of an entirely different set of sounds, and some that are universally common at the earliest stage can later be acquired imitatively only with great difficulty" [p.138].

Fry, on the other hand (1966) has some interesting views about babbling. Like the above scholars, he thinks that the child during this period will produce all the sounds he will need for later speech, and in addition, "some classes of sound that will not be required by the phonemic system of his language" [p.189].

From 1970 onwards, new studies about child's language development have come into view, bringing with them new issues and new ideas. To start with, Cruttenden's work (1970, 1979) is one of the most interesting contributions. In his study of his own twins (1970), he mainly explored the significant value of Jakobson's hypotheses on babbling. As he says "my only purpose... was to check the truth, on at least two children of the claim often made that the child during his pre-language utterances produces a very great variety of sounds, which will include far more than he requires for any human language, according to some claims, will at the same time include all

those sounds which he requires for his future mother-tongue" [p.110].

To explore the issue of sounds, he mainly asked two questions:

"1) To what extent had the children babbled the sounds of English before using them linguistically?

2) What sounds did the children babble which they would not need for English?" [p.111].

After reviewing the sounds produced by the twins, he came to the conclusion that "two claims often made for babbling seem not to be true:

1) The children did not babble all sounds of English.

2) The range of non-English sounds covered was not as wide as is usually implied" [p.112].

In 1975, Nakazima made a statement about the variety of sounds produced by children in the pre-language period, "both Japanese and American infants, by the time they begin to use words at about 11 months, have articulated almost every sound in both the Japanese and the English phoneme systems ..." [pp.184-185].

McNeill (1970) also has the same view about sound variety in babbling, "During the babbling period children vocalize an increasing variety of sounds in ever more complex combinations" [p.130].

Finally, Vihman, Macken, Simmons and Miller, (1985) conducted a study on the transition period from babbling to speech. They collected data from 9 children for a seven-month period beginning at the age of nine months. Using their data, they compared the sound system of babbling with that of the early words in terms of the distribution of consonants,

vocalization length, and phonotactic structure. In testing Jakobson's claim of finding strange phonetic elements uncommon in meaningful child language in the whole world, they comment, "though we also find 'wild sounds' of the kind Oller et al. describe, and to which Jakobson also referred, we do not find that they are restricted to non-words. On the contrary, they occur quite commonly in the onomatopoetic words, such as yum, vroom, or the various animal sounds" [p.436].

(5-3-2) BABBLING AND SPEECH

Jakobson believed in the discontinuity between babbling and speech, and that babbling sounds bear no relationship to later speech. The De Villiers (1978), say "Jakobson made the following claim about phonological development:
1) Babbling is essentially unrestricted and bears no relation to the child's later acquisition of adult phonology" [p.39].

Oller (1980) also, comments on the same notion that the infant babbling bears no phonetic relationship to young child speech, saying, "This view was unfounded empirically throughout the period of its acceptance, and by now it has been thoroughly discredited" [p.109]. Some scholars approve, and others disapprove, of this idea.

Tracy (1893) adds to the idea of sound variety in babbling saying that this period "contains in rudimentary form nearly all the sounds which afterwards, by combination, yield the potent instrument of speech" [p.112].

Jespersen (1928) takes babbling utterances as of value for speech, "babbling time produces pleasanter sounds which are more adapted for the purpose of speech" [p.104].

Lewis (1951) gives an interesting idea when he

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describes babbling as "a form of art ... it represents the beginning of the art of language in the life of the child" [p.66]. He adds that "babbling represents in a rudimentary form the features of the aesthetic use of language. We must recognise therefore that there is much more than a vague general similarity between the two activities: the child's babbling is actually the beginning of his aesthetic use of words; so that almost from the very outset the practical and the aesthetic functions of language develop side by side. Thus there are twin impulses in the development of language in the child's life: on the one hand, the satisfaction of his primary needs, and, on the other, the satisfaction of aesthetic tendencies which, arising in the first instance out of his expression of these needs, soon become an independent activity" [p.69].

In 1957, Lewis adds more to this point, "babbling is the beginning of delight in language itself, for its own sake; the rudimentary beginning of the enjoyment of the art of language" [p.45]. He also says something which could indirectly imply continuity between babbling and speech, "Just as his other kinds of play bring him increasing skill in the movements of his limbs and particularly of his hands, so babbling increases his skill in making speech-sounds" [p.47].

Leopold (1947), on the other hand, shares Jakobson's views. He believes that what is produced in babbling has no relation with what is produced in speech, "... it is important to make a sharp distinction between two stages of sound-production. In the earliest stage, after the period of reflex cries, sounds are uttered as playful exercises of various muscles,.... The sounds produced by these exercises have no

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direct connection with those uttered later when imitative speaking begins; but in genetic retrospect, they are exercises preparatory to speaking" [p.138].

Murai (1960,1963) was interested in speech development of the prelinguistic period. In 1960, he analyzed the sounds of four infants, between 2 and 12 months, using a Sona-Graph. From his sonagram patterns, he found some changes in vowel/consonant development, duration of utterance ...etc., and he thinks that some changes "might become a very important key for speech development" [p.31].

In another study (1963), he listed the characteristics and functions of babbling; among which the relation between babbling and speech is quite clear:
"-The development of babbling is influenced by learning factors...

-Babbling offers phonetic materials out of which meaningful sounds develop... Of course, babbling itself does not consist of words but is gradually defined and refined into words...

-The babbling period should be considered one of the stages of speech development..." [pp.22-23].

Carroll (1961) had something in common with Jakobson's theory, He said that "the particular sound-types uttered by the babbling child have little relevance for later learning, for the types appear in more or less random sequences which bear little relation to the sequence observed after true language learning starts. In fact, after babbling stops (usually before the end of the first year) the child may appear to have temporarily lost the ability to produce certain sounds" [p.337].

Fry (1966) thinks that two important developments take

place at this period, "First, the child is discovering the possibilities inherent in the phonatory and articulatory muscle systems. He learns to combine articulation with phonation in a variety of ways" [p.189]. Furthermore he admits that learning that takes place at this stage "is absolutely basic to the acquisition of speech" [p.189]. The other important development is the establishment of the auditory feedback loop. To conclude, Fry thinks that the child during this period is doing two important things, "trying out mechanisms that will be needed for speech... (and) learning the acoustic effect of making certain movements and finding out how to repeat a movement" [p.190]. In his words, the child "is learning a trick, and the experience lasts him, so to speak, for the rest of his life" [p.190].

Cruttenden also (1970) has an interesting view about the transition stage between babbling and one-word utterances. He believes that "the babbling stage is important not only as an experimental period but also as a period in which the child's repertoire is shifted in the general direction of the language to be learnt, at least as regards consonants. It is as if the child's babbling develops to a point where it is ready to take off into the future mother-tongue" [p.114].

In Nakazima's work (1970) on Japanese and American children, he did not specify clearly the relation between babbling and speech, but he found out that when children move to the one-word stage "they cannot articulate correctly even bilabial plosives, which are articulated frequently at the babbling, especially at the repetitive babbling stage " [p.20]. The reason for that is that, as he indicates, at about nine months, "the turning point", children start to re-organize

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their babbling at the level of language, and when they do so, they start from the beginning, i.e., "simple sounds".

Engel (1964) (see Ferguson and Slobin 1973) briefly gives a note about babbling, which in a way points at its importance in relation to language acquisition, "Babbling sounds .... seem to be true attempts at language. They disappear when language has been mastered and reappear only with speech difficulties such as stuttering or the acquisition of a foreign language. Furthermore, babbling sounds occur at a time when the child already understands some spoken things" [p.10].

Oller (1976, 1980, 1982) is another scholar whose works concerning child language are of interest. Oller and others (1976) carried out research in which they showed that the phonetic content of babbled utterances exhibits many of the same preferences for certain kinds of phonetic elements and sequences that have been found in the production of meaningful speech by children in later stages of language development. As they claim, they "have obtained evidence that babbled utterances are not 'random vocalizations' but are rather a systematic expression, manifesting many of the same basic phonetic preferences which have been shown in later childhood pronunciations of adult words and in certain phonological universals of adult languages" [p.2].

They have analyzed babbling utterances observed from ten infants between the ages of 0;4 and 1;1 according to initial and final consonants, deaspiration, final devoicing...etc. After examining their data, they found that, "it is possible to predict quite accurately the nature of the most commonly reported substitutions and deletions which occur

in meaningful child speech" [p.9].

Their data showed that phonetic tendencies of early speech could be seen in babbling, "both in early speech and babbling:

a) Singleton consonants outnumber clusters,

b) Initial consonants outnumber finals,

c) Initial stops outnumber initial fricatives and affricates,

d) Initial unaspirated stops outnumber aspirated ones,

e) Glides outnumber liquids,

f) Apical consonants outnumber dorsal ones,

g) Final voiceless obstruents outnumber final voiced ones, and

h) Final fricatives outnumber final stops" [1980, p.109].

Cross-linguistically, Oller et al.(1982) also have reached some interesting conclusions. In a study of babbling in Spanish and English infants, they discovered some similarities as both groups produced predominantly CV syllables with voiceless, unaspirated plosive consonants. In that work also, they aimed at furthering their understanding of the 1976 work about the relationship between babbling and speech [see 1982 work for more details].

The De Villiers (1978) have another view about babbling and speech. They believe in the idea of silence intervening between babbling and speech. They say that "while the babbled noises sound like speech and often seem to occur in sentence-like sequences with rising and falling intonation, at this stage none of it seems interpretable". They also add that "the frequency of babbling declines as interpretable words take over the child's verbal repertoire, and for a few children there may even be a short period of near silence intervening between babbling and the emergence of the first clear words" [p.35].

McNeill (1970) also believes in the idea of discontinuity, "there are, in fact, two discontinuities during the first year of life - one at 4 months and a second at 11 or 12 months. They together roughly bracket the babbling period" [p.132].

On the other hand, Ferguson and Macken (1983), disapprove of the idea of discontinuity between babbling and speech as "no supporting evidence from either naturalistic observations or experimental studies has ever been adduced for this position. The discontnuity view has been based on the fact that many children may utter sounds quite freely in their babbling that they later acquire only slowly and apparently with great effort in their speech. This kind of reduction in inventory as well as the more structured nature of the sound system of speech, however, do not preclude continuous aspects of development bridging the two" [p.236].

They also give an interesting piece of evidence about the connection between babbling and speech, "probably the most striking connection between babbling and speech is the phenomenon of increased vocal play with a particular sound at about the same time that the sound first appears in the phonological repertoire of speech" [p.239].

Locke's book "Phonological acquisition and change", (1983), gives a very detailed, valuable study about babbling and its main issues. He raises a very interesting question, concerning continuity or discontinuity between babbling and speech, "If babbling and speech are related, would not the former blend smoothly and continuously, almost imperceptibly, into the latter?" [p.52]. On that he replies by bringing up the evidence, "... I have been able to find no testimony that

babbling and speech are temporarily discontinuous. On the other hand, I have located several accounts to the contrary", and he quotes the following scholars: Blount, 1969, who observed that "babbling behaviour continued to be exhibited during the early one-word utterance stage"; also Leopold (1947), who observed that "during the later months, 0;9 - 1;3... babbling and speaking overlapped"; and Tuaycharoen, 1979, who concluded that "there is a gradual transition from babbling to speech"; as well as Olmsted 1971 who noted that his investigation of phonological development, beginning at 15 months, was complicated by the fact that the younger subjects "tended to relapse into babbling on occasion"; also in her study of two Czech and two Latvian children, Ruke-Dravina, 1965, noted similarity between the presence or absence of certain sounds in babbling and speech, "quite early in the speech of small children one comes across the bilabial |P|- sound... This sound occurred quite often in the case of both the Latvian children during the babbling stage... the rolled apical |r|, on the other hand, was never registered during the first two years of life, neither in the case of Czech children nor in that of the Latvian children, not even during the babbling period..."; and many others [pp.52-53].

Elbers (1980, 1982,1985) is another believer in continuity. In 1980, she states that babbling and speech overlap in her Dutch son, "when jargon babbling appeared I stopped recording... I had an implicit naive idea that, now that jargon appeared, repetitive babbling would be over. This, however, was not the case. Two types of babbling now were to be observed; incomprehensible jargon and comprehensible repetitions. When the first words appeared there were three

types of 'babbling'; meaningful babbles, jargon, and repetitions" [p.12].

She also said (1982) that "repetitive babbling not only seemed to be the starting point for jargon babbling but for the first words as well. Babbles from the repetitive babbling repertoire could be used as words (i.e., they could acquire meaning) or as a springboard towards the gradual approximation of adult word forms" [p.60].

In another recent work (1985), Elbers and Ton aimed at proving that "child's word production and his concurrent babbling are very much related. Babbling and talking cannot be considered as separate developmental processes that do not interact, nor even as related processes of which one is subordinate to the other" [p.552]. Analyzing their data, they concluded that, "word acquisition and concurrent babbling are related, at least as far as the production of word babbles is concerned. One of the functions of babbling in the first words period seems to be the practising of the word forms that are beginning to be used in interactive speech... and the consolidating of the word repertoire..." [p.561]. They also add that "the production of a new word, and the emergence of a phonological preference, may be preceded by the establishment of relevant new speech patterns in babbling. This suggests that babbling may not only 'adapt to' but also 'prepare for' the selection and/or production of new words" [p.562].

Most interesting is their claim that babbling even serves in the formation of the new words, "the babbling of the first words period appeared to serve at least the following functions:

1) The function of practising newly acquired word forms and

consolidating the word repertoire;

2) the function of practising differentiating features of newly acquired words;

3) the function of providing the talking system with 'preparatory' forms, suitable for 'fitting' new word forms without too much effort" [p.563].

Their final claim, and the most important, is that "the general picture which arises is that of a continuous interplay between word acquisition/production and concurrent babbling: word production influences the course of babbling and vice versa" [p.562].

In the Labov's study (1978) of Jessie, whose favourite words are cat and mama, they observed one repertoire in babbling and speech; they commented that Jessie "did not stop babbling when she began to use words" [p.833]. They also commented that "in formulating her first words, Jessie had at least [her babbling] inventory... to draw on"; also in her production of her famous words cat and mama, they noticed a babbling-speaking relatedness, such that "the sounds used to form cat and mama were included in the set · of sounds that Jessie used in babbling" [p.819]. More generally, they added that "Jessie's phonological inventory was only a small subset of her babbling inventory... phonological development was hardly an independent process" [p.849].

Another piece of evidence comes from Vihman et al. (1985); they found "striking parallelism between babbling and words within each child, across time and within time period. The data constitute strong evidence for continuity" [p.397]. They also found "closeness of fit and movement together of word and non-word curves", and these, as they say, "provide evidence

for dependent systems, and hence for continuity" [p.433].

Analyzing their data, Vihman et al. found that, "the gradual acquisition of words took place concurrently with the continued use of babble for all our subjects", also, "the development of phonotactics... which was roughly the same for all the children, showed movement mainly from V to CV and then to (C)VC, both in babbling and in words". More interesting is their conclusion that they "did not find such a period (silent period) in any of the ten children we observed" [p.435].

(5-3-3) MEANINGLESS AND PLAYFUL

As far as this issue is concerned, most scholars have concluded that babblings are mainly meaningless, and are produced for the sake of pleasure and playing. Only a few have disagreed.

Jespersen (1928), for instance believed in the former, "cooing, crowing, babbling - i.e. uttering meaningless sounds and series of sounds - is a delightful exercise like sprawling with... " [p.104]. He also regards sounds of babbling as muscular exercies, "the first sound exercises are to be regarded as muscular exercises, pure and simple, as is clear from the fact that deaf-mutes amuse themselves with them... " [pp.104-105].

Lewis too (1936), claims that babbling is "the utterance of sounds only for their own sake" [p.55]. He gives the steps which a child passes through to reach the babbling stage:

"(i) At an early stage - from within the first month onwards - the child utters characteristic isolated sounds in a state of comfort.

(ii) Repetitive chains appear after a time which vary according to the child....

(iii) The child seems to take delight in some of these sounds for their own sake; they often seem 'meaningless' i.e. to have no expressive function.

(iv) In this respect, as babbling, they are to be regarded as 'play'; thus they have some of the rudimentary characteristics of language as a form of art" [pp.55-56].

These steps simply indicate his conception of babbling as playful, meaningless sounds that have the rudimentary characteristics of language. In his book also, he discussed the point whether babbling begins in comfort or discomfort conditions, he concludes that, "babbling may be not only a transformation of sounds originally expressive of comfort, but also of sounds originally expressive of discomfort" [p.57].

Another point which Lewis (1957) dealt with expressly concerns the pleasure that a child gets when it babbles; he thinks that "two kinds of experience combine to give the child pleasure when he babbles. First, there is the pleasure of achievement - the sense of mastery in being able to make sounds at will, sounds that until now have been wrung out of him, willy-nilly by his bodily states. Secondly, there is pleasure in the patterns of the sounds themselves, pleasure in their rhythms and their tunes" [p.44].

Babbling to Leopold (1947), is the production of spontaneous "meaningless sound-combinations as a playful exercise of the organs of articulation" [p.140].* Murai

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* Notice that Leopold did not mean all babbling, as he adds that babbling will later acquire a meaning.

(1960) also noticed that during this period children utter meaningless sounds for the sake of pleasure. Among what he listed as characteristics and functions of babbling are: "-Babbling... is uttered in comfortable situations and is often uttered as play.

 -Babbling has a function of phonetic play. It has been said that babbling is playing with sounds. That this is true is made clear by the fact that infants in this period often seem to be delighted with the various sounds they can make by forcibly twisting their tongues..." [1963,p.22].

     And like most scholars, Fry (1966) also thinks that "the significant feature of this stage is that the child is now uttering sounds for the pleasure they give him, and not as an expression of his reactions to some particular situation" [p.188].

     In 1979, Cruttenden explains babbling, as mainly "playing with sounds without meaning" [p.3]. He also reviewed two suggested functions of babbling, one of which is the pleasure the infant gets from making movements combining his breathing, laryngeal and articulatory apparatus. This will develop later in the child's knowing of how to produce sounds by using these means.

     In 1970, Nakazima pointed out that in babbling children utter sounds, not as means of communication, but as "playing with their articulatory organs" [p.20].

     Babbling, as playing with sounds, is one of the issues that interested Ferguson and Macken in 1983, as they claim that "sound play is a very frequent childhood behavior... language play, and more particularly sound play, is of considerable importance to language development in at least three different

ways: as contributing to the phonetic substrate, as a factor in phonological development, and as something to be learned as part of the socially accepted use of language", and they discussed their point in connection with babbling in the first place as it is an "early vocal play contributing to the mastery of the phonetic substrate" [.p.231].

EXplaining their idea about play in babbling, they add, "In general, most babbling meets the criteria customarily set for play: it gives the appearance of voluntary, pleasurable activity with no utilitarian purposes, it has behavioral similarities to the non-playful speech, which later replaces it as the predominant vocal behavior of the child; and it is marked as fun by smiles... "[p.235].

JUSTIFYING SARAH'S BABBLING WITH
REFERENCE TO BABBLING THEORIES

As mentioned before, babbling has been interpreted in three different ways:

    1) The Learning theory,

    2) The Maturational theory, and

    3) The Jakobsonian theory.

Thorough observation of my subject gives support to the first two, but fails the third. I think that babbling proceeds consistently with both Lenneberg's Maturational view and Mowrer's learning view.

As a first child, Sarah had a mother (myself) who was not at all experienced in bringing up children, she was also very far away from any relatives who could have given her any advice; this made her totally dependent on her own decisions. Concerning the child, she often realized things after they had

already happened. As to babbling, mother hardly spoke to the child up to the age she actually started babbling. Apart from looking after all her needs, mother did not realize the role of talking to the child; that does not mean that she did not talk at all, but no mentioning of mama, dada, or any of the other contents of the child's babbling that appeared were inlcuded. That process inclines me to believe in Lenneberg's view that the child is biologically determined to babble. If a child does not hear any babbling syllable, then babbles by itself, this clearly indicates that babbling is a biological effect rather than a learning effect. There is also another strong support, that has been mentioned in some studies, to this theory, and that is the case of deaf children who babble although they lack the ability to hear. Deaf children babble, but only for a time, then they stop; why?

This brings us to the other theory of babbling, which is learning. Deaf mutes start babbling because they are bioligically determined to do so, and stop it because they lack the ability to hear the sounds around them which would otherwise stimulate the development of their babblings. After Sarah started her babbling, and after realizing the process, both parents started to repeat different sorts of babblings to her and reward her whenever she uttered any; this could, although we cannot prove it, have stimulated the development of her babbling. If it did, it would support the learning theory of Mowrer.

Agreeing with Lenneberg on this point does not imply agreement with all his views, as I have a different opinion concerning the relation between babbling and speech (see Section (5-3-2)).

As I said before, my observations fail to support Jakobson's view, as well as those who supported him before - or afterwards. Jakobson believed that when a child babbles, it can accumulate sounds that are never found in one single language, a wide variety and richness of articulations; then suddenly, moving to real speech, the child loses all its wealth of sounds. Many scholars agreed with him, for example Velten who believed that the child loses that ability overnight.

Apart from my observations of Sarah, I think that those scholars have greatly overstated their case. In other words, however various or rich a child's babbling might be, it would not include, "all the speech sounds that the human vocal system can produce" (Osgood, 1953).

More precisely, as Cruttenden (1970) and Oller (1976, 1980, 1982) found, some strange* sounds could appear, but not as wide a range as is usually implied. We cannot yet claim that this is probably not true of any one child. But, as our analysis will prove (Chapter 6), Sarah babbled with labial, dental and velar sounds, which are normally acquired by most children in this period, as most researches reveal. Few strange sounds appeared, but even then they are partly and not entirely strange.

Another point, claimed by Jakobson and his supporters, is the child's sudden loss of the ability to reproduce the same sounds of babbling when it moves to the speech stage. Jakobson (1968) says, "It is easy to understand that those articulations which are lacking in the language of the child's environment

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* Strange: The word is used in the literature to refer to those sounds which do not exist in the sound repertoire of the child's mother language.

easily disappear from his inventory". He probably has some validity in there. But, as he adds, "it is striking that, in addition, many other sounds which are common both to the child's babbling and to the adult language of his environment are in the same way disposed of..." [pp.21-22].

It is natural, as observed from Sarah, that when a normal child grows and matures, all his abilities grow and mature with it, linguistically as much as physically. Every day she grows, her ability to produce more (or same) sounds increases. Her old repertoire gets more stable, and, in the same time, she adds new sounds to it. Jakobson believes that the loss of certain sounds is attributed to the lack of a connection between the acoustic and the motor image. And when the child starts his language, he seeks to conform to those around him, "to recognize the identity of the phonic phenomenon which he hears and which he emits, which he retains in his memory and which he reproduces at will " (1971,p.9).
On the contrary as shown in the present study, and as Oller et al. (1976) proved babbling utterances manifest many of the same basic phonetic preferences which have been shown in later childhood pronunciations of adult words. Stark (1980), in her review of the phonetics of infant vocalizations in the first year of life, traces a gradual evolution toward language in the course of the babbling period.

About those strange, or wild sounds* (to borrow Jakobson's term), as I said before, they are partly and not entirely strange. Partly in the sense that they are not widely

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* Jakobson calls the sounds of babbling as 'wild sounds', see his book (1968) p.25.

articulated by children in the babbling period, and not entirely in the sense that they are found in the English, or Arabic phonetic system. Those sounds will be acquired by the child, but later, probably in the two-word stage, or even after that.

Moreover, as those sounds were very rarely uttered, this inclines me to think that they probably have been accidentally uttered through accidental contacts of the articulators involved.

My opinion, concerning the variety and richness of babbling, is that I cannot deny that children's babblings are rich and various, but not noticeably full of strange sounds as much as in easiness and flexibility of production and variety of babbling intonations. Flexibility of articulation, as agreed in the literature, is not a product of the child's control of its vocal apparatus; on the contrary, the child by the first six months of its life still has not gained that kind of control; if it had, it would have been able to produce, or imitate all kinds of sounds. Lack of control makes the easiest, simplest movement of the vocal apparatus a sound. Also, when listening to a child's babbling, one hears the same babblings repeatedly, but with widely varying intonations: high, low, mid, exclamatory, questioning, shouting, crying... etc.

(5-3-4) WHAT IS BABBLING?

What babbling exactly is, is one of the points upon which scholars have different views. For instance, in 1929 Foulke and Stinchfield described babbling as sounds uttered by the child in comfort or discomfort, "During the prelinguistic period of the early months of the first year, the infant's

sounds and cries are associated with feelings of comfort or discomfort, caressing, or cooing and clicking sounds often called babbling" [p.140]. But they did not specify clearly what are these sounds: vowels only, consonants only or a mixture of both.

Leopold (1947) has a different opinion, which includes rather more under the heading of "babbling". He says that babbling, "means, to produce spontaneously meaningless sound-combinations as a playful exercise of the organs of articulation. These sound-combinations are usually composed of vowels and consonants, both increasing in variety with progressing skill. Repetition of the same combination, the source of reduplication, is frequent, but less so in the earliest stage". Then he adds a very interesting view, "Babbling combinations can secondarily acquire a meaning. In that case they pass from the category of 'babbling' to that of 'speaking'. Imitative child words can have exactly the same form as babbling combinations, and frequently do at the stage when babbling and speaking overlap" [pp.140-141].

So, in his view, babbling is a combination of vowels and consonants, playful exercise, meaningless (will acquire meaning later on), repetitive and overlaps with speaking.

In 1963, Murai admits that there are many confusions in the definition of babbling, "But, however babbling is defined, one should make, both phonetically and functionally, a clear distinction between undifferentiated sounds in 0;1 - 0;3 and those repetitious sounds after 1;5 which have much variety and are phoneticized pretty clearly" [p.21]. Babbling, as he says, "is meaningless utterance in a comfortable condition. It results from the development of undifferentiated non-crying

utterance and takes the form of repetition or of succession of unit utterances which show almost the same duration of utterance as adult utterance" [p.22].

Cruttenden (1970) has a rather different, purely phonetic, point of view. He first claims that "Most... definitions (of babbling) are rather unsatisfactory in that they rely on a combination of phonetic and psychological criteria" [p.110]. He believes that defining stages of child's development using "purely phonetic criteria" will lead to a very clear definition of babbling. Using this technique, he noticed a change between the third and fourth months in both his twins. That change is marked by the appearance of what he calls "pulmonic-lingual consonants". Before this stage, the twins "were limited to vowels around [æ], [a], [ə] and to glottal [h], [?] and labial [v], [w] consonant-type sounds... But in the fourth month dental, alveolar and velar plosives, an alveolar lateral and a palatal nasal were produced as well as a greater variety of vowel-like sounds including back rounded. This suggests a new 'awareness' of the possibilities of combining tongue movements with breathing" [pp.110-111].

Oller et al. (1976), believe that a babbled utterance should include a consonantal element. They exclude crying, laughing... etc. from their definition. They also insist that babbling utterances should be meaningless so as to avoid the possibilities that they are imitations of adults' utterances. They clearly maintain that in their study, "a babbled utterance was defined as consisting of at least one syllable wherein a consonantal element... could be identified, and wherein the child was not crying, laughing, etc.... a babbled utterance had to possess at least one vowel as well as at least one

consonant." Then they add that their "definition of babbling also required that the infant vocalization be apparently 'meaningless', in the sense that it was not an apparent approximation of some adult word the child might have learned or imitated" [p.3].

As I said before, definitions of this period are different and rather confusing. In the present study, I will first discuss the main features of babbling in relation with the subject, then I will put forward my definition. The features concerned are mainly:

1) differentiation,

2) meaninglessness,

3) playfulness,

4) Phonetic content,

5) Function,

6) Comfort and/or discomfort,

7) Single, repetitive, and lastly

8) the three-sided relation: babbling-imitation-speech.

As far as differentiation is concerned, it is quite clear from the stages that Sarah passed through that the babbling period is clearly differentiated from the early crying stage; differentiated in that by the age of four months the child started articulating consonant-like sounds which did not appear before as the crying stage was mainly limited to vowel-like sounds. That is a clear distinction between crying and babbling, because, in my view, as Oller et al. indicated, a babbling utterance should include a consonantal element; that is why I consider the first time a child utters a consonant as the start of babbling, regardless of its meaning, condition... etc.

That is a difference between the crying stage and the babbling stage; but they both share another feature: as crying starts undifferentiated and ends up differentiated, babbling is also so, but with rather different categories.

I believe that Sarah's babblings are clearly differentiated the first moments they started. The specific uttering of a specific consonant does not, in itself, reveal a meaning, but babbling in crying, for instance, reveals the general condition of the child. So, babblings as a whole reveal the general condition of the child.

On that basis we conclude, in relation to point (2) of meaning, that babblings are not meaningless as long as the general condition of the child is revealed. There is a question here to be asked; most scholars, if not all, have agreed that crying starts undifferentiated and ends up differentiated; the crying stage is followed by the babbling; should not that crying differentiation develop into more differentiation as the child proceeds? Is it reasonable that after being able to differentiate its crying at such an early stage, when it enters another, it loses this ability and becomes undifferentiated again! But, on the other hand babbling is undifferentiated in that ma, na, da... etc. do not specify a clear meaning at the very beginning. What is meant by ma or da is not clearly understood. I think that is probably what leads scholars to say that babblings are meaningless. But, as Leopold and others said before, as the child matures, these babblings accumulate meaning, and gradually pass from being babblings into speech. Also, in relation to point (6) of comfort and / or discomfort, it was observed that Sarah babbled for the first time while she was crying, then later while playing. This suggests that

babblings, do happen in both conditions of comfort and discomfort. They are not peculiar to any condition.

Playfulness is another feature about which there is disagreement. Scholars have agreed that babblings are playful sounds; but some of them go much further and claim that children babble for the mere pleasure they gain from that. This takes us again to point (6). If babblings are uttered in both conditions, what makes us think that they are for play and pleasure only. Are those uttered in playing different, or rather clearly distinguishable, from those uttered in crying, screaming or illness. Sarah's babbllings, whether uttered in comfort or discomfort, have, more or less, the same phonotactic structures. They only differed in intonation and facial expressions.

Phonetic content, as I believe, is what clearly gives this stage its main character. I share Cruttenden's and Oller's opinion that babblings require the existence of a consonantal element. A babbling utterance is better identified as containing a one syllable combination of a consonant and a vowel. Repetitions of syllables may be of the same quality or may differ.

As far as function is concerned, I believe that babbling serves the development of the child's language. It is actually an intermediate stage between crying and real speech. Though producing only few consonants at that stage, the child becomes more able to exercise its vocal apparatus; babblings, as time passes, acquire meanings, they reveal the child's different conditions and most importantly they encourage people around him to talk more with the child, and start repeating words to him which later lead the child to imitate, then to

speak. This clearly leads to point (8), as babbling develops into imitation, or rather imitation starts as babblings, then imitation develops into speech. Through babbling, the child practises the newly acquired word forms, and through it consolidates his repertoire. It will also help him to differentiate between the newly acquired words, when meaning is distinguished.

As for point (7), all scholars agreed that babbling is a mixture of both single and duplicated utterances, but some said that children start with single then develop into duplicated. In the present case, that did not happen. From the first time Sarah babbled, both combinations overlapped; sometimes her babblings are as short as ma, or as long as mamamama.

From the above discussion, I define babbling as an important stage that intervenes between the crying stage and the first-word stage. It contributes a great deal to the child's growth of language. A babbling utterance is defined as including a consonantal element. Babblings may be meaningful. Their meaning develops as the child matures until it enters the stage of true speech (by true speech I mean approximating adults' words through imitation by having some of the phonetic elements, number of syllables in her string). Babbling sounds are various, but not as various as has been claimed by Jakobson and others.

In the following chapter, my main concern will be verifying the value of the main claims discussed in this chapter; that is, of course, in the light of analyzing the data I got from my subject. My main concern will include the following:

-Babbling reflects the entire range of possible human speech sounds (Jakobson and others);

-Babbling is essentially unrestricted and bears no relationship to the child's later pronunciation of adult words (Jakobson);

-Discontinuity (Jakobson, Lenneberg); and finally,

-Babbling as play, and as meaningless.

CHAPTER SIX

THE BABBLING STAGE

DATA ANALYSIS

SARAH'S BABBLING

That all children babble, is more or less a universal view; but they differ chronologically in age. As far as Sarah is concerned, she started babbling by the age of four months. Her babbling, generally speaking, more or less resembles the babbling of any child reviewed before in the last chapter (Chapter 5), mainly in content and characteristics; with few exceptions!

PROCEDURES

Data for this period is a collection of audio tapes, video tapes, in addition to my observations. Audio tapes cover all the period of study - from 1 month old up to 18 months. For the babbling period recordings starting from 4 months old - first time child babbled up to 12 months and 22 days old - first time child uttered a word - will be analyzed in this part (a total of 21 sessions of different durations). Video-taping started rather later, when the child was 48 weeks (about 11 months old) up to 18 months. Video sessions had been weekly regulated (audio sessions were not, as they have been recorded at home whenever suitable). For this period, video recordings starting from 48 weeks up to 57 weeks - first word produced in video - will be analyzed (a total of 9 sessions of the same duration, 20 minutes each).*

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*Video-tapes have been all edited on one tape with only the parts in which the child is productive; referred to as the 'Master tape'; some sessions are missed on the tape where we had a fault in the camera, a vacation, or the child ill. But complete notes about the whole sessions are recorded in my diary.

DATA DESCRIPTION

As mentioned above, data for the babbling stage is a collection of Audio and Video tapes. In both, audios and videos, the situation will be described, then a list of the sounds uttered by the child in each session will be given, using the IPA transcription symbols.* Concentration will be on any combination of both consonants and vowels, articulations of mere vowels will often be excluded as consonants help more in identifying the period. Consonants will be analyzed later according to place and manner of articulation. Repetitions of the same utterance, i.e. the same in length, as mama, mama, mama... etc., will be also excluded. The following scales will be mainly considered for each session:

-Vocalization length in Syllables	monosyllable
	disyllable
	trisyllable
	quadrisyllable ...etc.
-Phonotactic structure	consonant + vowel CV
	vowel + consonant VC
	CVC, VCV... (any
	combinations appear).
-Consonant manner	stop (including nasals)
	fricative
	glide (including liquids)
	glottal

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* Apart from the transcription of the researcher, another linguist was asked to give his transcription of the child's utterances. We had a general agreement of about 94%. Most disagreements were upon vowels rather than consonants.

-Consonant place   labial

                                            dental

                                            palatal

                                            velar

SESSION (1)

CHILD'S AGE: 4 MONTHS

SITUATION: Mother being in the same room with the child, child is quiet and following mother's movements with her eyes; then mother leaves and the child starts crying where babblings appear for the first time:

SOUNDS UTTERED: [mama nananana ən nana - silence - na: mama - repeated until mother comes back].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	VC,CV
Di -Syllabic	$C_1V_1C_1V_1$
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$

IMPLICATION: Strings uttered by the child, especially those with the nasal stops, [m] bilabial and [n] alveolar, do not indicate a clear meaning, but the whole situation indicates loss of the mother and wanting her back.

SESSION (2)

CHILD'S AGE: 4 months, 12 days

SITUATION: Child is hungry and crying for a meal.

SOUNDS UTTERED: [em: na ?ə na: ha? na: aha? ?a: nanana - goes

on until calmed and fed].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	VC, CV, C_1VC_2
Di -Syllabic	$V_1C_1V_1C_2$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: We get new consonants in this session: the glottal stop [?] and the glottal fricative [h]. The appearance of those sounds is very interesting, as they appeared very early in Sarah's case in contrast to what is presumed by Jakobson that they are late acquisitions, and that they do not appear until similar stops and fricatives are acquired (see section 5-2). This, on the other side, gives support to Cruttenden's study (1970), in which he noticed that the babbling period is marked by the production of 'pulmonic-lingual' consonants.

We also notice the structures C_1VC_2 and $V_1C_1V_1C_2$, where the first consonant differs from the second. The strings do not indicate a special meaning, but the whole situation reveals hunger.

SESSION (3) AND SESSION (4)

CHILD'S AGE: 4 months, 20 days and 4 months, 27 days respectively. Both sessions are excluded as child was mainly vocalic. Notice that : being vocalic in these sessions does not indicate in any way that the child stopped uttering consonants from session (2) up to session (5); it is merely a failure to produce any in these two, i.e. in the recording sessions, but she did not produce consonants in that time.

SESSION (5)

CHILD'S AGE: 5 months

SITUATION: Again, child happy being with mother, mother leaves the room, child cries, settles down and plays with toys for a while, then starts to cry again.

SOUNDS UTTERED: [na na: e: a: ma mam na nan].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_1

IMPLICATION: Again no specific meaning for m or n, but the whole situation is a call for mother.

SESSION (6)

CHILD'S AGE: 5 months, 13 days

SITUATION: Same as (5)

SOUNDS UTTERED: [na ən: nana an neʔa naʔa ne nan mama nana a: mama nana].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_1
Di -Syllabic	$C_1V_1C_1V_1, C_1V_1C_2V_2,$ $C_1V_1C_2V_1$

IMPLICATION: We get the string $C_1V_1C_2V_2$, which is a di-syllabic utterance with two different phonetic elements in both, also the structure $C_1V_1C_2V_1$ where there are two different consonants. No specific meaning for the utterances is clear,

but the whole situation is a call for mother.

CHILD'S AGE: 5 months, 26 days

SITUATION: Child wakes up and cries for attention.

SOUNDS UTTERED: [ma ma? ma emama ma - goes on until being attended to].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Tri -Syllabic	$V_1C_1V_2C_1V_2$

IMPLICATION: Structures with different consonants appear, as in the string C_1VC_2 [ma?]. Still no new consonants are uttered. We notice that the consonant [m] prevails, and although the whole situation is a call for attention, normally by the mother, we can't yet claim that [ma] stands for mother.

CHILD'S AGE: 6 months, 15 days

SITUATION: Child is alone for a long period; situation is a mixture of crying, settling and playing

SOUNDS UTTERED: [dadada dah nanah nana na dada da a nanana nana na dah deh dada dadu: dada jajaja dada dede dadadada dada dede da dada baba dada].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Di -Syllabic	$C_1V_1C_1V_1C_2$, $C_1V_1C_1V_1$, $C_1V_1C_1V_2$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$

IMPLICATION: Utterances are rather longer in this session, we get up to four syllables in the string. Also new consonants appear: the voiced alveolar stop [d]; the labial stop [b], and the palatal approximant [j]. But still no specific indication is revealed by any consonant; the whole situation reveals boredom, being left alone, or settling down, when interested in toys.

SESSION (9)

CHILD'S AGE: 7 months, 7 days

SITUATION: Child is having a meal

SOUNDS UTTERED: [tata ta:ta mama: əm: eda dad da:dada da ja].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	VC, C_1VC_1, CV
Di -Syllabic	$C_1V_1C_1V_1$, V_1CV_2
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: A new consonant is introduced, the voiceless alveolar stop [t]. The whole situation could reveal happiness, or getting satisfaction being fed, but no specific meaning is tied to a specific consonant.

SESSION (10)

CHILD'S AGE: 7 months, 20 days

SITUATION: A sort of conversation between mother and child

SOUNDS UTTERED:

S*: [a dada nana dad dede dadada e:ga:gi eda: ada eʁə ege da:da
dada na ada]

M*: Come on Sarah, let us play, here is your doll

S: [dadada], looking at the doll

M: [dadada], shaking the doll

S: [ed], still looking at the doll

M: [dadada], Sarah come on, look [mamama]

S: [ene]

M: [dadada]

S: [ekəx], laughs with [a: hihi ha]

M: You happy, come on say [dadada mamama], this is your little
duck beautiful, [mama dada]

S: looks at toys, no vocal response.

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	C_1VC_1, VC,
Di -Syllabic	$C_1V_1C_1V_1$, V_1CV_2, $V_1C_1V_2C_2$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_3$

IMPLICATION: New consonants are introduced, the velar stops [g]
and [k], the uvular fricative [ʁ], and the velar fricative [x].
We get the structure $V_1C_1V_2C_2$, with two different phonetic
elements in each syllable. The whole situation is a playful

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* 'S' stands for Sarah, 'M' for mother.

conversation between mother and subject. First consonants said
by the child reveal no specific meaning, apart from playing;
saying [dadada] after mother's doll could be an approximation
of the word, taking in consideration that the child was looking
at the doll. Also [ed] could be another approximation. [ene] is
not clear, neither is [ekə̀χ] . Taking all in all, the
conversation reveals a growing understanding by the child.

<u>SESSION (11)</u>

<u>CHILD'S AGE:</u> 8 months, 8 days

<u>SITUATION:</u> The child is happy playing with toys, then cries
when mother leaves the room, and calms down when she comes
back.

<u>SOUNDS UTTERED:</u> [dadi e: a: haha hi enan gege: anananan egege
dadada nan nan]

<u>ANALYSIS:</u>

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_1
Di -Syllabic	$C_1V_1C_1V_2$, $C_1V_1C_1V_1$, $V_1C_1V_2C_1$
Tri -Syllabic	$V_1C_1V_1C_1V_1$
Quadri-Syllabic	$V_1C_1V_1C_1V_1C_1V_1C_1$

<u>IMPLICATION:</u> Meaning of specific consonants still not clear,
but situation reveals happiness being with mother and toys, or
boredom when left alone crying.

<u>SESSION (12)</u>

<u>CHILD'S AGE:</u> 8 months, 28 days

<u>SITUATION:</u> The child first cries for attention, then cries

again because she can't reach a doll.

SOUNDS UTTERED: [nana:na nan a: nan e: - when cries for the doll she uses dada:]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	C_1VC_1
Di -Syllabic	$C_1V_1C_1V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: Using only the consonant [n] when needing attention could be of some meaning, but we cannot yet specify it. The use of [d] when she needed a doll is observed for the second time, but also we cannot yet confirm it.

SESSION (13)

CHILD'S AGE: 9 months, 10 days

SITUATION: Another situation of losing sight of mother and crying for her, then calming down when mother is seen and playing.

SOUNDS UTTERED: [dadada na lalala awawawa dadi e:na nanana e:? ananan nanana enan - calms down seeing mother, then plays - dadada nanana dadadadi nanʃh dada adada]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC,
Di -Syllabic	$C_1V_1C_1V_2$, V_1CV_2, $V_1C_1V_2C_1$, $C_1V_1C_1V_2C_2$, $C_1V_1C_1V_1$,

Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1V_1C_1V_1C_1$, $V_1C_1V_1C_1V_1$
Quadri-Syllabic	$V_1C_1V_1C_1V_1C_1V_1$, $C_1V_1C_1V_1C_1V_1C_1V_2$

IMPLICATION: Two new consonants appear: the alveo-lateral [l], and the labio-velar [w]. We get the string $C_1V_1C_1V_2C_2$ where the last consonant differs from the first two. Separate meanings for the separate consonants, especially [n] which is repeatedly uttered in almost all conditions, is not yet clearly specified; that is apart from the meaning revealed by the whole situation.

SESSION (14)

CHILD'S AGE: 9 months, 28 days

SITUATION: In this situation mother is nursing the child, child is very happy touching mother's face: nose, mouth, eye and hair.

SOUNDS UTTERED: [dadada dadadah da]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $C_1V_1C_1V_1C_1V_1C_2$

IMPLICATION: The consonant [d] has been used twice before when the child was trying to babble, or approximate, the word 'doll'. Including this session, the same consonant is uttered almost in all playing sessions. Could it be tied with playing situations? We cannot yet claim that.

CHILD'S AGE: 10 months, 8 days

SITUATION: The child is crying because she wants the mother to stay with her.

SOUNDS UTTERED: [a: nanana e: nanana dada da?a: nana dade adada anana dada ejaja uwa e ja a: ʊɘwɘwɘ wɘh a mamama nanananah dadada e: nanana nene amama mama enana]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2,
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_2V_1$, $C_1V_1C_1V_2$, V_1CV_2
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_2$, $V_1C_1V_1C_1V_1$
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1C_2$

IMPLICATION: As the child is crying vigorously in this situation, I imagine she used her whole repertoire to express her anger. We get structures as C_1VC_2, $C_1V_1C_2V_1$ and $C_1V_1C_1V_1C_1V_1C_1V_1C_2$, where the last consonant differs from the first.

SESSION (16)

CHILD'S AGE: 10 months, 19 days

SITUATION: Mother and child are playing together; the child is interested in mother's bag.

SOUNDS UTTERED:

M: [mamama]

S: [aja]

M: [mamama]

S: [mamama]

M: [mamama eja], what you doing,[eja mamama] Sarah, come here

S: [?e:]

M: [eja jah dada bababa]

S: [mamama mama ma]

M: [mama]

S: [a: mama e: mama]

M: [mama aja], come to me Sarah, come on, [baba mama]

S: [mama e:] plays with mother's bag, emptying it.

M: [bæg bæg]

S:[emama mama ma]

M: [bababa]

S: [mamama]

M: [mamama]

S: [bababa a: wawa wawa]

M: [wawa]

S: [wawa]

M: [bababa]

S: [bababa mama dada]

M: [dada]

S: [da da:da] holds her dad's shoes

M: This is dad's shoes, [dada,ʃu:z]

S: back to mam's bag [mama mama]

M: [dada dada] takes her purse from child, child cries, mother
   leaves child and goes out

S: Crawls after mother [mam mamama]

M: Come on Sarah, can you say come on

S: [na]

M: Can you say [dada baj dada]

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S: [dadada]

M: [baj baj]

S: [ebah] waving

M: Sarah [taʕa:li:] * come here

S: [mama emama]

M: come here, [dada baba]

S: [wawawa ema]

M: [wawa]

S: [mamamama ta: mama emamam nana dadadu]

M: [dada dududu nana]

S: [dad: e: aj]

M: [eja eja]

S: [baba jejeje dadu   daha   baba   dada   wawawa dududu   wawawa hɔ

   jajaja ejah nah dadada jaja baba... goes on for a long time].

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_1, VC, C_1VC_2
Di -Syllabic	$V_1C_1V_1$, $C_1V_1C_1V_1$, $V_1C_1V_2C_2$
	V_1CV_2, $C_1V_1C_1V_1C_1$, $C_1V_1C_1V_2$
	$C_1V_1C_2V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_2$,
	$V_1C_1V_2C_1V_2C_1$, $C_1V_1C_1V_1C_1V_2$
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$

IMPLICATION: The child from around 10 months old started imitating some of the words said to her. Imitation started as babbling repetitions; some of the repetitions are a sort of

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* This word means 'come here' in Arabic.

direct imitation of mother' word with no meaning or understanding revealed by the child. Others may reveal something. For example, in lines (3) and (10) of the conversation, when mother says 'mama' and child repeats 'mama', that can be considered as just repetitions, but in line (15) when mother says 'bag bag' the child says 'mama mama' as if knowing that this is mama's bag, also in line (26), and without any interference from the mother, she holds her dad's shoes and says [da:da] in which she reveals her sense of belonging, then she goes to mam's bag again saying 'mama' which reveals the same sense, as if the child is telling that she knows that this is mother's and that is father's. In line (31), when she crawls after mother saying 'mama', it is very obvious that 'mama' is mother. Another good example is her imitation of 'bye', which is a good effort at the word, also reveals a very clear understanding as she waves. In her utterances we get many strings that have different consonants, e.g., C_1VC_2, $V_1C_1V_2C_2$, $C_1V_1C_2V_1$.

SESSION (17)

CHILD'S AGE: 11 months

SITUATION: In this situation I tried a rather strange, or unusual, way to elicit the child's utterances. I was cutting her nails, which children normally hate.

SOUNDS UTTERED:

M: Come on Sarah, you like cutting your nails, don't you.

S: cries (mainly vocalic)

M: stops, calms her with a toy, then tries again

S: cries again as screaming [a: e: ana e: a:h aja]

M: give me your hand, no, not the toy

S: cries, sees the recorder and tries to play with it.

M: (uses the situation), can you say [mama], child does not

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reply, mother takes recorder away, child cries, mother gives it to her back.

S: Happy, [eh eh o: o:], knocks on it making noises

M: [nou nou repeatedly] stop that, hits her on the hand.

S: [e:] with the same pitch pattern as "no" and hits mother on the same way.

M: tries to give her a toy to stop recording noises, but she refuses and cries.

ANALYSIS

Number of Syllables	Phonotactic Structure
Mono-Syllabic	VC,
Di -Syllabic	V_1CV_1

IMPLICATION: The child's fear of cutting her nails, then her interest in the recorder are very clear. The interesting thing in this situation is her imitation of mother's "no" and hitting her on the hand like mother did, as if she is saying "no, don't hit me or don't stop me, I want to play with it."

SESSION (18)

CHILD'S AGE: 11 months, 5 days

SITUATION: Another unusual situation: child is taking bath.

SOUNDS UTTERED:

M: Come on Sarah, time for your bath, let us wash your hair first, put some shampoo (every special word like shampoo or parts of her body are repeated by the mother many times; such repetitions are excluded from the writing).

S: [edada]

M: [dada], come on, good girl

S: [a:j aha ajaje] starts to cry

M: finishes the hair, baby is calming down, then plays with the
   water happily

S: [aja ja jaj]

M: Sarah, who is sitting in the water

S: [ajaja]

M: Sarah, can you say no

S: [tatatata]

M: you wash your body with the soap

S: [mamama]

M: soap

S: [ma e: mama]

M: let's wash your hand

S: [e: mam dada dad]

M: wash your arm

S: [a: ajaj ja da]

M: your back

S: [a: a: nanana aja]

M: your tummy

S: [dadadada]

M: your leg

S: [ah mamamam dad]

M: [mamamam]

S: [e mama dada aja] (bath is finished)

M: [jajaja]

S: laughing [e: dadada ajaja]

M: [jaja]

S: [ajaj dada jajaja]

ANALYSIS:

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Number of Syllables	Phonotactic Structure
Mono-Syllabic	VC, CV, C_1VC_1
Di -Syllabic	$V_1C_1V_1$, $C_1V_1C_1V_1$, $V_1C_1V_1C_1$
Tri -Syllabic	$V_1C_1V_2C_1V_2$, $V_1C_1V_1C_1V_2$,
	$V_1C_1V_1C_1V_1$, $C_1V_1C_1V_1C_1V_1$,
	$C_1V_1C_1V_1C_1V_1C_1$,
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$.

IMPLICATION: The child is very interested in playing with things around her, e.g. water, soap,.. etc; she does not seem to be paying any attention to mother's talking. So, all her utterances are babblings with no clear understanding or imitation.

SESSION (19)

CHILD'S AGE: 11 months, 20 days

SITUATION: Mother is concentrating on the word 'no' to test the child's imitation.

SOUNDS UTTERED:

M: [nou nou]

S: [jaja]

M: [nou]

S: [no]

M: [nou]

S: [dada da a:]

M: [nou nou] say [nou]

S: [da da ada daj]

M: [nou]

S: [e:mama ajaj]

M: [jaj ?e:da[1] læ?æ[2] nou]

(1) This word means "what is that" and (2) means "no" in Arabic.

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S: [?ah ?ah ?a]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2,
Di -Syllabic	$C_1V_1C_1V_1$, $V_1C_1V_1$, $V_1C_1V_1C_1$
Tri -Syllabic	$V_1C_1V_2C_1V_2$.

IMPLICATION: The child's imitation of M's "no" is a good attempt at the word; she almost uttered the same phonetic elements. I also think that the string [?ah ?ah ?a] is an attempt at the Arabic [læ?æ], as they both have the same pitch pattern. But I cannot yet claim that she showed any understanding of the word, as no action of refusal is included.

SESSION (20)

CHILD'S AGE: 12 months, 6 days

SITUATION: Another test on her imitation and understanding of words said to her.

SOUNDS UTTERED:

M: [nou nou]

S: [e no]

M: [nou nou]

S: [no ɔu ɔu ɔu:h no]

M: no doggie

S: [deh] for doggie, plays with the wire

M: no, no wire

S: [?ɔh] leaves the wire

M: no

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S: [e:h no eh adaju a juju ɔh]

M: Sarah, doggie, this is a doggie, dog

S: [da] points at the dog, [ju ja o: eh]

M: look the dog, his eye, eye, nose, eye

S: [aja] looks at the eye, [dadada]

M: eye, nose, dog

S: [ǝde:h dad]

M: dog, tail, eye

S: [ʔɔ: jaja edididu]

M: dog

S: [deh] for dog

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2, VC
Di -Syllabic	V_1V_2C, $C_1V_1C_1V_1$, $V_1C_1V_1$, $V_1C_1V_2C_2$, $C_1V_1C_1V_2$
Tri -Syllabic	$V_1C_1V_1C_2V_2$, $C_1V_1C_1V_1C_1V_1$,
Quadri-Syllabic	$V_1C_1V_2C_1V_2C_1V_3$

IMPLICATION: The child's understanding is growing, to a certain extent. We can now say that she knows a few things around her, e.g., the dog, the wire, some parts of the body, as the eye, the tail, and the mouth. Her utterances, as well, show good attempts at some words. "No", for example, is uttered very well. Also, the two approximations at the word 'dog' are fairly good, as she gets the consonant right, [deh] & [da].

SESSION (21)

CHILD'S AGE: 12 months, 22 days

SITUATION: From about this session on, all situations run in a sort of conversation between the mother and the child.

SOUNDS UTTERED:

M: Sarah, come on take the paper

S: [?etah] (as Arabic [?e:da])

M: paper, paper, no (you don't want it)

S: [?ɔ:h ?eda da edi du nouh aja ?eda]

M: no, no (meaning you don't want it)

S: looks at the recorder saying [?ede]

M: [?ede], that, what is that, no don't touch it, no

S: [no: no:], does not touch

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	C_1VC_2, CV
Di -Syllabic	$C_1V_1C_2V_2C_3$, $C_1V_1C_2V_2$, V_1CV_2
	$C_1V_1(V_2)C_2$, $V_1C_1V_1$, $C_1V_1C_2V_1$

IMPLICATION: As the child matures, she shows more understanding, and her vocalizations gain meaning. Her imitation, for example, of the Arabic word [?e:da], meaning 'what is that', is very good; she replaced the voiceless alveolar stop with a voiced one. She also used it correctly when asking about the paper, then the recorder. The word 'no' is now fixed in her repertoire, phonetically and semantically. Her other strings do not show any clear indications; they are more close to babblings than to imitations of words.

MAIN OBSERVATIONS:

1) As far as vocalization length is concerned, the child's babblings, since the very first time she babbled, are of different lengths, up to four syllables. No preference of any

special length is noticed over the whole period.

2) Phonotactic structures are very various, starting from the simple CV, up to CVCVCVCV; repeated syllables may share the same Cs and Vs, or differ. Syllables with different phonetic elements are becoming more apparent as the child starts to imitate adults' words, which could be a step towards the next period of the first word. The following table (6-1) gives a summary of the phonotactic structures that appeared during the audio sessions:

Table (6-1)

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_1, C_1VC_2.
Di -Syllabic	$C_1V_1C_1V_1$, $V_1C_1V_1C_2$, $C_1V_1C_2V_2$, $C_1V_1C_2V_1$, $C_1V_1C_1V_1C_2$, V_1CV_1, $V_1C_1V_2C_2$, $C_1V_1C_1V_2$, $V_1C_1V_2C_1$, V_1CV_2, $C_1V_1C_1V_2C_2$, $C_1V_1C_2V_2C_3$, $C_1V_1V_2C_2$.
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_2$, $V_1C_1V_1C_1V_1C_1$, $C_1V_1C_1V_1C_1V_1C_2$, $C_1V_1C_1V_1C_1V_2$, $V_1C_1V_2C_1V_2C_1$, $V_1C_1V_1C_2V_2$,
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$, $V_1C_1V_1C_1V_1C_1V_1C_1$, $C_1V_1C_1V_1C_1V_1C_1V_2$, $C_1V_1C_1V_1C_1V_1C_1V_1C_2$.

And to add more clarification to the above table, table (6-2) shows in detail the new consonants produced by the child in each session, and the syllabic structure (sessions with the same sounds or structures are not included):

Table (6-2)

Age	Session	Open Final Syll.	Closed Final Syll.	New Sounds
4	(1)	na, na^2, na^2, na^4	ən	m, n
4.12	(2)	na^3, ?a, ?ə	aha?, ha?, em	?, h
5	(5)	ma	nan, mam	
5.13	(6)	ne, na?a, ne?a	ah	
5.26	(7)	emana	ma?	
6.15	(8)	ba^2, da^4, de^2, ja^3, dadu, da, da^2, da^3	dəh, nanah, dah	d, b, j
7.7	(9)	ja, eda, ta^2	dad, əm	t
7.20	(10)	ha, hi^2, ene, egɛ, ebə, ada, egagi	ekəx, ed	b, x, g, k
8.8	(11)	egege, $ʃe^2$, hi, ha^2	an^4, enan	
9.6	(13)	$dadi^3$, ena, awa^3, $adá^2$, la^3	nanəh, an^3, e?	l, w
9.28	(14)		$də^3h$	
10.8	(15)	$ená^2$, ama^2, ne^2, ma^3, wəh, $wə^3$, uwa, $ejá^2$, $aná^2$, dade, da?a	$nə^4h$	
10.19	(16)	ta, ma^4, ema, $wá^3$, $wá^2$, ba^3, $emá^2$, du^3, ?e, daha, aja, ja^2	aj, ebah, ejah, nah	
11	(17)	ana	eh, ah	
11.5	(18)	$ajⁱ^2$, ta^4, $ajá^2$, ajé, aha, eda^2	aj^2, jaj	
11.20	(19)	no	?ah, daj	
12.6	(20)	?ɔ, ju, ju^2, adaju, su	ɔh, ?ɔh, hɛ, ədeh, əuh	
12.22	(21)	?ede, du, edi, ?eda	nouh, ?etah	

* The number of repeated syllables is written above the syllable.

Looking at the above tables, with the structure C_1VC_2, we got the following utterances:

[ha?]

[ma?]

[dah]

[weh]

[nah]

[?ah]

[daj]

[deh]

[?ɔh]

From those structures we notice that preference is mainly given to stops in initial positions, and to fricatives in finals positions [h]. In the mean time, stops also cluster in final positions, and fricatives cluster in initial positions.

3) As to consonants, the child started mainly with the two stops, m and n, then uttered, as she matures, other consonants in the following order:

?, h, d, j, b, t, g,ʁ , k, x, l, and w.

Re-capturing again the main features of babbling and for the sake of verifying this part of the data, data description shows that: babbling is a very interesting period in the child's life. Babblings are differentiated and meaningful, in the sense that if they don't reveal separate meanings for the separate consonants, they, all in all, do reveal the child's condition. The same early meaningless babblings used by the child will, as the child matures, acquire new meanings and will develop into first words. Babbling is not wholly playful; the child babbles when she is in pain (cutting nails), happy (with mother and toys), disapproving (taking

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bath), or crying (wanting mother or anything). That proves that the child babbles, whether she is in comfort or discomfort. Babblings are either single or repetitive; they are also various, new consonants are introduced; but no strange consonants are involved. In Sarah's case, in addition to the normal consonants which are normally uttered by all babbling children, she also articulated the consonants and x, which may be strange consonants as far as English is concerned, but they are not in Arabic as they are main consonants in the language. Her uttering of these consonants may, on one hand, be an influence of hearing Arabic when at home with parents, as both languages are used in home, or, on the other, they are just accidentally uttered through an accidental closeness of the articulators. Worthy of mentioning is that these two consonants appeared only once or twice in that stage, then disappeared until the child was two years old. As Cruttenden and Oller found out, various consonants do appear, but not as wide as have been claimed.

Finally, as the sessions show, as the child matures, babblings are developed into imitations which respectively acquire meanings and develop into first words. This again disproves the discontinuity process. No periods of silence have been observed whatsoever. Babbling and speech do overlap.

(6-2) VIDEO TAPES

Just to recapitulate, video-sessions for this period are 9, starting from age 48 weeks (11 months, 6 days), up to age 57 weeks (13 months, 9 days), the age by which a first meaningful word is produced in video. As I said before, video sessions are not kept exactly as they have been recorded, they were reviewed by the researcher and the only parts, in which

the child was vocally active are edited on a Master tape; but complete notes of the complete sessions are recorded.

Contrary to what we have done in audio-tapes, the situation will not be specified every time in videos, as it was more or less the same every time; a room prepared for the child with the same decoration and camera-man every time, same toys, with few new added, were used every time; child was always carefully prepared for every session: fed, changed... etc., and she was normally very awake during the sessions. When the child was crying for any reason, or upset by anything, we stopped recording until she settled down, then we carried on again. At the beginning, everything was quite strange and confusing to the child, she kept on looking and wondering most of the time, but session by session, especially when she started walking around 12 months old, she got used to everything around her, very used to the camera-man who was very friendly and understanding, and behaved very normally. Repetitions are excluded.

SESSION (1)

CHILD'S AGE: 48 weeks (11 months, 6 days)

SOUNDS UTTERED: (conversation is mainly used, and reduced to the sounds only used by mother or articulated by the child)

M: [baba]

S: [dada]

M: [dada]

S: [dada dada dada]

M: [dada]

S: [da e da]

M: [dada]

S: [dadada]

M: [mama] can you say [mama]

S: [dada]

M: [dada] you like [dada]

S: [dada], then laughs [hihi] and holds a doll

M: [mama baba]

S: [dada e: a:]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: No special meaning is included, but in that session, as the first one, the child was mainly wondering and confused. First [dada] was produced after a long concentration on the camera, it had a questioning pitch pattern rather than just babbling. Consonants uttered are [d] and [h]. [t] and [n] were also produced, but not recorded on the Master tape.

SESSION (2)

CHILD'S AGE: 49 weeks, (11 months, 13 days)

SOUNDS UTTERED:

M: Sarah, say [mama], where is [mama]

S: [dadada] wondering

M: Not [dada] again, say [mama]

S: [da]

M: [dada] is not here, come on, [mama], bye then (mother
   pretends to leave her)

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S: Not very concerned, [dada]

M: [ma:ma]

S: [dadada], screams to take a toy [ta tata a:]

M: [mama] come on

S: In a very soft tone, pointing at the toy [dadada]

M: I'm leaving you Sarah

S: looks at mother, [jajaja]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: As it seems from the conversation, no clear meanings for specific consonants are very recognizeable; but, differing from audios which give only a stream of recorded voices, videos in addition show movements, impressions, expressions... etc; so,reviewing the child's utterances with consideration to her facial and bodily expressions, we can get some meanings. For instance, her first, second and third utterances of da still reveal her wonder and confusion about the environment around her. Then using the same da when pointing with soft tone at the toy, is a very polite begging as saying "can you give me that, please". Usage of t, and j, is yet not clear. Worthy of mentioning, Sarah's most favourite consonant is d. which will accordingly be involved in lots of meanings. Also, from my notices (not edited on Mt), at the very beginning of the session, she used the expression [?e:h], as if asking 'what is going on', which is probably an effect of

Arabic, as this word is normally used when enquiring about anything.

<u>SESSION (3)</u>

<u>CHILD'S AGE:</u> 50 weeks, (11 months 20 days)

<u>SOUNDS UTTERED:</u>

M: [mam mam]

S: [ʔaː]

M: where is [mam], (mother hiding her face)

S: looking for mother, saying repeatedly [mama mama]

M: Playing something like hide and seek, [hɛluː, mamama] see the toy

S: laughing, happily playing the game [ʔa(l)uː]

<u>ANALYSIS:</u>

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_2V_2$.

<u>IMPLICATION:</u> Sarah's mama is repeatedly said after mother's mama, so it could be an imitation of the word. Her imitation of the word 'hallo' is fairly good; she replaced the glottal fricative with a glottal stop, the lateral can be heard, but it is very weak.

<u>SESSION (4)</u>

<u>CHILD'S AGE:</u> 51 weeks, (11 months, 27 days)

<u>SOUNDS UTTERED:</u>

M: Sarah, give this (toy) to mam, [taːh] meaning thank you.

S: gives it to mother [taːh]

M: And this (pointing at another)

S: [da] for this

M: [ta: ta:] meaning thank you, you can take it now, come on give it to me again

S: gives it back [ta:h]

M: Asks for another toy

S: [da]? asking, this?

M: yes, give it to me

S: [tah], [tete]

M: [tete]

S: [dede]

M: Bye [dada]

S: [dadada dadada]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	C_1VC_2, CV
Di -Syllabic	$C_1V_1C_1V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: The two words [ta:h] and [da] have a very clear usage in the child's repertoire since the tenth month. The first could reveal a meaning like 'thank you', or 'here you are' or whatever is close to that, the second is her approximation of the words 'this' or 'that' when pointing at anything, which is a good attempt at them, where she replaces the fricative with a stop.

SESSION (5)

CHILD'S AGE: 53 weeks (12 months, 11 days)

SOUNDS UTTERED:

Child is playing with mother's bag

M: Come on Sarah, can you bring the chocolate (from the bag)

S: [da:]

M: Chocolate, let us eat it

s: happily [a:h]

M: yes open it, it is yours, no it is mine

S: Hits mother on hand, taking the chocolate [am]

M: Is it [mamma], meaning food

S: [mamama], then takes a tissue from the bag saying, [tah] as if taking permission, then taking the chocolate again [da dah]

M: Oh, you took the chocolate

S: happily [a:h a:h], dropped it [da: da:]

M: Oh look what happened

S: showing mother empty chocolate bag [?aja]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_2
Di -Syllabic	$C_1V_1C_2V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: [da:] could be her word for 'this' or 'that'. Her utterances in this session reveal meanings more than imitations, e.g. her expression [a:h] when she saw the chocolate reveals her happiness. [am] is a fairly good approximation at M's "mine", [mamama] could mean something to eat, but not very clear in the situation, although used very often in her every day talking in appreciation with food. Looking at the mother and taking a tissue from the bag gives 'permission' sense to the word [tah], then, with an expression of success, when she found the chocolate again using [da dah]

as if saying "I found it." With a soft tone knowing that she did something wrong when she dropped the chocolate, she says [da: da:] as if saying "look what happened, I dropped it." Then picking up the empty bag saying [ʔaja] as if saying 'look'. As I said, her strings do not show any clear approximations of imitated words, but from her reactions to the situations, they may reveal meanings.

SESSION (6)

CHILD'S AGE: 54 weeks (12 months, 18 days)

SOUNDS UTTERED: From this session on, mother started repeating everything the child sees around her in the room, and her toys to test her understanding, imitation... etc.

M: Come on Sarah, take this toy

S: takes it [ta:]

M: Toy, this is a toy

S: [tata]

M: Can you say toy Sarah, come on, toy, give it to mam

S: [ta:]

M: Toy, toy

S: looks at mother, laughs [ta ta]

M: goes on repeating toy

S: goes on saying [ta ta:]

Other words, rug, chair, duck, were also repeated to her, but she did not respond to any.

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_1$

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IMPLICATION: Giving or taking something with the use of [ta:]
may be approximated with the two meanings: 'thank you' or
'there you are'. Other [ta] utterances could be attempts at
the word 'toy', it is not very clear.

SESSION (7)

CHILD'S AGE: 55 weeks (12 months, 25 days)

SOUNDS UTTERED:

S: Started playing with my bag again, taking two pens from it
   putting them in her mouth

M: No Sarah, not in your mouth, pen, pen, give it to mam, see
   that toy, look sweets

S: cries as mother takes the pens

M: Where is the light Sarah, light, [lala], see the curtain,
   curtain, camera, bye camera, say bye to the camera, bye,

S: looks at the camera [a:]

M: See the light, [lala]

S: [e: e: jajaja]

M: [lalala]

S: [e ma a ma], tired

M: See your leg, leg. Come on let's play [ḥædi bædi] *

S: laughs knowing the game [dididi]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

* A game known in Egypt, It is more or less like the English
  Pat a cake.

IMPLICATION: She knows what the word 'bye' means, she normally waves and blows kisses when she hears it, but her imitation of the word is not very clear, [a:], but it is said with more or less the same pitch pattern as mother's 'bye'. She also knows the implication of the word 'light', when asked about it she normally looks in its direction saying [lala]. [dididi] is her approximation of the words 'Hady Bady', and she knows this game since she was 7 months old, as the mother very often plays it with her.

SESSION (8)

CHILD'S AGE: 56 weeks (13 months, 2 days)

SOUNDS UTTERED: In this session, her daddy was present; I thought that his presence would encourage her to talk, but she was completely silent, interested only in playing and moving around; she only repeated one utterance after her dad, which has no meaning in itself; it is only an utterance which he used much in playing with her at home.

D: Sarah, look (putting a toy near his mouth) [ʕæḍ ʕæḍ]
S: Doing the same action [ʕæḍ ʕæḍ]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	C_1VC_2

IMPLICATION: As I just said, the only utterance produced by the child has no meaning by itself, but she used to repeat it after her daddy whenever he utters it. A new consonant is uttered: the emphatic voiced dental [ḍ].

SESSION (9)

CHILD'S AGE: 57 weeks (13 months, 9 days)

SOUNDS UTTERED:

M: Come on Sarah, look, the monkey, give it to mam

S: [ta:], gives it to mam

M: look his mouth

S: [ja hæhæ]

M: And his nose

S: [ɘna]

M: Bring the ball Sarah

S: [a]

M: Come here, give it to mam

S: [ta:], then looks at the light

M: the light, you want to go up to the light, up, up, light

S: looks up

M: Come on, throw a kiss to the light, kiss, you want the chair, you want to sit, no.

S: [ɔ nɔ da]

ANALYSIS:

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_1$, V_1CV_2

IMPLICATION: Every word uttered by Sarah, from around 12 months old always meant something, the word is not necessarily an imitation, it could be invented by her then forgotten, but it does reveal that she wants to say something.

[ta, ta:] as usual could mean 'thank you' or 'here you are'.

[ɘna] could be an approximation of 'nose', as she repeats it

after the mother, and she gets the correct consonant. [nɔ] is a clear attempt at the word, and we think it is understandable by the child.

MAIN OBSERVATIONS:

The video-tapes, for this stage, are clearly a continuation of the main observations we got from the audio-tapes:

1) As to vocalisation length, the child's utterances are of different lengths; quadri-syllables did not appear.

2) Phonotactic structures are also various. The following table (6-3) gives a summary of the phonotactic structures that appeared during the video sessions:

Table (6-3)

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_2.
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_2V_2$, $C_1V_1C_2V_1$, V_1CV_2.
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$.

Table (6-4) gives more details about the new sounds and structures produced by the child:

With the structure C_1VC_2, we got the following utterances:

[tah]

[dah]

[ʕaḍ]

from which we notice that stops prevail in initial positions, and fricatives prevail in final positions (mainly [h]). Meanwhile both can cluster initially or finally.

Table (6-4)

	(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)
Open Final Syll.	hi^2 da^3 da da^2	ja^3 ta^2 ta	$?alu$ ma^2 $?a$	de^2 te^2	$?oja$ ma^3 ma	di^3	ja $?ay^2$ ua cu	
Closed Final Syll.				tah ah	dah am	$sæd.$		
New Sounds	d, h	t, j	$?, m$ l					
Age	48w.	49w.	50w.	51w.	53w.	55w.	56w.	57w.
Sessions	(1)	(2)	(3)	(4)	(5)	(7)	(8)	(9)

3) "Strange" sounds that appeared in audios did not in videos, apart from [ʕ] and [ḍ] which appeared only once.

It is worth mentioning that Sarah's vocabulary at this age was not limited to what occurs only in audios or videos. She had other words like [aja:] which she used normally when looking for, or asking about, something. Also [ʔe:] which she used when refusing to give anything she holds to another person, [ada:] when she looks for something and finds it.

CONCLUSION

Data demonstrated above show that:

1) Babblings are meaningful in that, though each consonant doesn't separately indicate a meaning, they indicate the general condition of the child.

2) Babblings are not entirely playful, as they are also uttered in discomfort conditions.

3) Her babblings vary widely, but not as widely as has been indicated by Jakobson and others; she did utter "strange" sounds; but strange in the sense that they are normally acquired later, but not strange to both languages.

4) Babblings are either single or repetitive from the start they do not develop from the first to the second.

5) Babbling works very actively in the child's language development; late babblings develop into first, meaningless, imitated words, then the latter acquire meaning and develop into first words.

6) Sarah's babblings are of various phonotactic structures. Table (6-5) gives a summary of them in the babbling period. And table (6-6) gives more details about the new sounds and syllabic strutures:

Table (6-5)

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_1, C_1VC_2.
Di -Syllabic	$C_1V_1C_1V_1$, $V_1C_1V_1C_2$, $C_1V_1C_2V_2$, $C_1V_1C_2V_1$, $C_1V_1C_1V_1C_2$, V_1CV_1, $V_1C_1V_2C_2$, $C_1V_1C_1V_2$, $V_1C_1V_2C_1$, V_1CV_2, $C_1V_1C_1V_2C_2$, $C_1V_1C_2V_2C_3$, $C_1V_1V_2C_2$.
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_2$, $V_1C_1V_1C_1V_1C_1$, $C_1V_1C_1V_1C_1V_1C_2$, $C_1V_1C_1V_1C_1V_2$, $V_1C_1V_2C_1V_2C_1$, $V_1C_1V_1C_2V_2$.
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$, $V_1C_1V_1C_1V_1C_1V_1C_1$, $C_1V_1C_1V_1C_1V_1C_1V_2$, $C_1V_1C_1V_1C_1V_1C_1V_1C_2$.

Table (6-6)

Age	Open Final Syll.	Closed Final Syll.	New Sounds
4	na, na^2, nva^2, na^4	ɔn	m, n
4.12	na^3, ?a, ?ɔ	aha?, ha?, em	?, h
5	ma	nan, mam	
5.17	ne, na?a, ne?a	an	
5.26	emana	ma?	
6.15	ba^2, da^4, de^2, ja^3, dadu, da, da^2, da^3	deh, nanah, dah	d, b, j
7.7	ja, eda, ta^2	dad, ɔm	t
7.20	ha, hi^2, ene, egr, ebɔ, ada	ekɔx, ed	b, x, g, k
8.8	egege, ge^2, hi, ha^2, egagi	an^4, enan	
9.16	$dadi^3$, ena, awa^3, ada^2, dadi, la^3	nanɔh, an^3, e?	l, w
9.28		$dɔ^3h$	
10.8	ta, ena^2, ama^2, ne^2, ma^3, wɔh, $wɔ^3$, uwa, eja^2, ana^2, dade, da?a	na^4h	
10.19	ma^4, ema, wa^3, wa^2, ba^3, ema^2, du^3, ?e, daha, aja, ja^2	aj, ebah, ejah, nah	
11	ana	eh, ah	
11.5	aj^2, ta^4, aja^2, aje, aha, eda^2	aj^2, jaj	
11.20	te^2, ?alu, no	?ah, daj	
12.6	?aja, ?ɔ, ju, ju^2, adaju, ɔu	am, ɔh, ?ɔh, hc, ?ah, ɔuc	
12.22	di^3, ?ede, du, edi, ?eda	tah, nauh, ɔdeh, ?etah	
13.2	nɔ	ʃæd	ʃ, d

It was observed, as to the structure C_1VC_2, that stops prevail in initial positions and fricatives in final positions, and both can cluster occasionally in any. This will be later compared with the structure of her first words.

7) As analysis of the above data, and actually identification of the babbling period, was mainly built on the appearance of consonants, Sarah's consonants appeared in the following order: m, n, ?, h, d, j, b, t, g, b̵ , k, x, l, w, ʕ , d̦.

With reference to Jakobson's theory of the order of the appearance of consonants (section 5-2), we find a relevance of the first consonants uttered by the child [m,n], as he believes that acquisition of consonants is launched with a forward articulated consonant, generally a labial. Labials, as he believes, are followed by dentals. In my case, labials were followed by glottals. Glottals and palato-velars appeared very early in Sarah's vocabulary, although Jakobson predicts that they might be very late, or even last sounds acquired by the child. Also, his irreversible laws do not seem very irreversible, as Sarah acquired back fricatives before any front ones.

8) As far as the influence of Arabic on the child's language is concerned, it does not seem that it affected her as much as English did. The reader probably thinks that she was not exposed to as much Arabic as English, as the sessions were mainly vocalized in English. Actually, Arabic was spoken during the day more than English, and the sessions being in English does not imply at all that Arabic was lessened to the child. The only explanation we can propose here is that the quality of the English phonetic sounds does not differ very much from those of Arabic; the actual use of the two languages in terms

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of real words is the main difference. So, as babblings are sounds, or strings of sounds, more than words, they probably are not very much effective in revealing any influence of a specific language. This view will again be examined after analysing the child's first words.

CHAPTER SEVEN

THE FIRST-WORD STAGE

(7-1) INTRODUCTION

After passing through the stages of crying and babbling, normal children usually start the first stage of talking, in other words, start approximating the adult-based language, and uttering adult-like words. Entering a new phase does not actually imply decline of the preceding one, as most scholars agree that babbling and words do overlap, and babbling continues up to a certain age then starts to fade away.

Children's first words are not always meaningful. When they utter a word, this does not imply that they also understand it; just imitating an adult is sometimes the case. As they grow up, their perception and production normally grow as well.

Unlike the Babbling stage, there are no widely divergent views concerning this stage. But this does not mean that there are no matters that need discussion. Pinning down the appearance of the first word is a matter for argument. Semantically, does this word play the role of a sentence (holophrase is the term used in the literature for one-word sentences) or is it rather an "expression" or "a string of sounds" uttered by the child and which would probably reveal a meaning if understood by adults? Overextension in first words is another matter. Do first words develop, phonemically speaking, from the preceding babbling utterances or are they newly built?....etc. These questions are discussed in the next section (section 7-2).

(7-2) LITERATURE REVIEW

(7-2-1) APPEARANCE OF THE FIRST WORD.

As each child is an individual, words appear at different ages, but, generally speaking, most investigators have agreed that the first word appears in the period between 9 and 12 months. Few appearances before the ninth month have been indicated in the literature, but children might be as late as 18 months or more before they can utter words.

Tracy (1893) believes that between six and twelve months, children make a very remarkable advance in imitation, use and understanding, of sounds, but "Many children, a year old, cannot speak a single word, while the average vocabulary does not probably exceed half a dozen words" [p.114]. He also adds that the child might understand some words, but he cannot pronounce any, and if he does, he pronounces them "in a mechanical way without understanding", even children who have the ability of using some words "show by their use of them how inadequately defined is their meaning" [p.115].

Between 12 and 18 months, as he says, the child's understanding and production of words increases. "During this period, marked progress is usally made in the understanding of words, and in their intelligent application, though the vocabulary is still limited, and the pronunciation imperfect" [p.116].

In a study of the first words, Bateman (1917) also believes that the age of the first word varies in different children from 8 to 15 months. He gives a table which shows the distribution of the time of using the first word in some languages [p.392]:

Time of Using First Word

Age	8	9	9.5	10	10.5	11	11.5	12	13	13.5	14	15	Total
English	1	2	–	5	1	3	–	3	1	–	2	–	18
German	–	1	2	2	2	1	2	–	1	–	1	–	12
Others*	–	–	–	1	–	–	–	–	1	2	–	1	5
Total	1	3	2	8	3	4	2	3	3	2	3	1	35

Lewis (1936) investigates the same topic of age, and raises the question: when does the child first speak words drawn from the adult language, with meaning? He quotes Stern who found out that in children of educated parents the first word normally appears in the first quarter of the second year. Lewis thinks that social status has something to do with the appearance of the first word, and that children in less favoured circumstances may be retarded in this development by as much as 6 months. He says, "The point of importance for us here is that in children of similar social status, there is a concurrence in the period of the first meaningfully uttered words..."[p.125]. Lewis's point about the social status is very interesting, but we can't back it up, as there is not that much discussion in the literature around the same idea. Mostly, if not mainly, researchers specify the professions of the children's parents as a sort of completion to their work, they even sometimes put them in tables without drawing any conclusions about their importance in respect to the child's language development.

* Other languages are: French, Bulgarian and Polish.

In 1957, Lewis says further, "It is certainly true that many children reach this stage by about their ninth month. But, as we have said, there is a great deal of variation. In some children it occurs as early as the sixth or seventh month, in others not until the middle of the second year, or even later" [pp.79-80].

McCarthy (1954) finds some difficulties that surround the determination of the exact age at which the child uses his first word, "the first use of sound with meaning is usually considered to constitute the child's first word. This event is so eagerly anticipated by parents that they often read meaning into the child's early babblings which happen to coincide with the presence of certain persons, objects, or events in the environment" [p.523]. In saying this, McCarthy explores one of the important problems of unreliability in some researches where investigators take their data from the parents of the child; parents tend to read meanings into the child's early utterances.

McCarthy also reports some of the studies concerning this stage. Leopold for instance, in his study of his daughter, gives four possible ages (8, 9, 16 and 17 months); she quotes him stating, "The hesitation concerning the starting-point (of the 1-word sentence stage) arises from the question whether the interjection listed as the first word 0:8 is recognized as a word or not" [p.542]. She also quotes Cattell 1940, who puts it at 11 months, Shirley 1933, who puts it at 14 months, and Feldman 1833 who puts it at 16 months...etc [p.524].

Winitz and Irwin (1958), in a study of early words, choose age levels seven (months 13 and 14), eight (months 15 and 16) and nine (months 17 and 18) for analysis as their

investigations showed that these levels are the periods of infancy "during which infants are reported to utter their first words" [p.251].

Murai as well (1963) adds to the idea of the difficulty of pinning down infant's first words, "It is very difficult to determine when infants use their first words... Putting the past studies together, it seems to be true that the first one or two words appear at about the end of the infant's first year" [p.26].

Riper (1950) also believes that the first word appears at around the first year, "This speech-readiness period begins about the end of the first year in the average child, but may appear as early as the ninth month in some children..." [p.47].

Cruttenden (1970) finds it very difficult to determine the first word, "Indeed I found it extremely difficult and perhaps rather pointless to pin down the occurrence of the first word" [p.114]. In another work (1979), Cruttenden places this stage at about the end of the first year. But he expresses his idea in a rather different way, as he calls the child's first utterances "expressions", rather than "first words", as is more usual in the literature, this is because many of these utterances do not relate to adult's words, "Sometimes towards the end of the first year of life children begin to produce expressions which have meaning. Babies' utterances during this year have become more like adult utterances both in their sounds....We call them expressions rather than words because many do not have any relationship to words in the adult language" [pp.9-10].

As it appears from the above review, there is no exact age for the appearance of the first word; children do vary.

Nevertheless, it is mostly placed around the end of the first year. The point I wish to argue, concerning this matter, is the difficulty of pinning down the first word. I do agree that it is difficult, but not so difficult as implied by the above scholars. In my view, the matter is more concerned with the observer than with the child. As long as the observer puts a clear definition to the concept of a "word", all the difficulty will be centred on the child until he utters that word with that concept. This leads us to the following point.

As I said it is not only the age of the child that determines that word, identification of the first word is itself a matter for argument among scholars. Apart from those who tend to talk about it without putting forward how they identified it, some observers consider it to be the child's first spontaneous utterance of a word with meaning understood by adults (which as McCarthy (1954) said before confronts us with the problem of reliability in analyzing the child's vocabulary as adults, especially parents, tend to read meaning into their children's words). Others consider it as the first word the child utters with understanding. In addition, some have taken it as entailing clear imitations * of adults' words.

Actually there is not that much argument over the role of imitation in the child's progress of language. Generally

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* As imitation is a wide term, and it could refer to the end of the process, or the process itself, the researcher wishes to make it clear that she talks about the end of the process without getting involved in the process itself, and that is mainly because the stage of imitation is not considered in this work.

speaking, almost all children start learning the language through imitation. I have not found anything in the literature that contradicts that view. But, we have to make it clear that children do imitate adults' words, whether they understand them or not. McCarthy (1954) reports of the role of imitation, "Children imitate all aspects of the behaviour of others....Imitative behaviour is reported most often after the ninth month and is especially prominent around the end of the first year.... when language proper is just beginning to emerge" [p.517].

Other writers look upon the first words in a rather different way. Lewis (1957) for instance sees words as an approximation to adult words, with meaning, and he believes that meaning does not come to words all of a sudden, but that it is "changing and developing". He gives the example of the word "mama": the child "will sometimes use the word mama with little or no direction towards his mother, often with equal attention to the food she or someone else brings, or with equal attention to this someone else.... this state of affairs continues for some time to come, until the word begins to have a more precise and limited meaning" [p.84].

Winitz and Irwin (1958), in a study of infants' early words take an utterance as a word if it could be categorized as: (1) a word approximation,

(2) a standard word, or

(3) a self-language word.

A Word Approximation is "a phonetic pattern which is interpreted by the observers at the time of the transcription as an attempt by the infant to pronounce a standard word", and to further delimit it, they required that one or more of the

phonetic elements of the standard word must be present. A Standard Word is required to be of the same phonetic form as the adult's. A Self-Language Word is an attempt by the child to produce a standard word, though not one of the phonetic elements of the standard word is present [pp.250-251]. I take their categorization to be insufficient. They are more interested in the phonetic form of the child's utterance, than in the circumstantial surroundings of the utterance itself. In other words, they pay no attention to whether the child understands that utterance, or just imitates it, as children do imitate a number of words with no understanding at all. I rather prefer to look for meanings in children's utterances as well.

In a study of the first 50 words in three children (age range from 0;11 to 1;2), Ferguson and Farwell (1975) required that utterances must be meaningful in order to count as words, "utterances were considered meaningful if there was sufficient consistency to allow recognition of the form, and if there was some consistency in reference or accompanying action - not necessarily exactly that expected from the meaning of the adult word". In addition, they did not require a specific equivalent of the adult word, as "it was found that a child would consistently use a form for which no probable adult equivalent could be imagined". [p.220]. This is a view which I find very convincing. As long as a certain string of sounds, uttered by a child, reveals meaning and is understood and recognized by adults, why not take it as a word? The string might include sounds which have no phonetic equivalent in the phonological system of adults, as the following study by Vihman et al. shows.

In a study of the relation between babbling and speech, Vihman, Macken et al. (1985) put their definition of a word, "We take a word to be a conventionalized sound-meaning correspondence. We don't require that words conform to the core phonological system of the adult language.... so long as they are used by the adult with a consistent conventional meaning" [p.402]. According to this, they accepted, or counted as, words utterances as uh-oh, forms of yum (mmmm), vroom-vroom, and animal sounds.

Regarding the above discussion, as far as Sarah is concerned, she started her first word when she was about a year old. That word was considered as a word because:

1) It contains a meaning, as I believe that an utterance can be taken as a word only if it conveys a meaning, not just a mere repetition or imitation. According to that, when Sarah pronounced her first word (no) as just imitation of the mother's, it was not accounted as a word until it acquired a meaning, i.e., until it was produced spontaneously in an appropriate situation, with gestures or facial expressions that are appropriate to the word in that situation. (see Audio Sessions No. 19-20-21).

2) Also, in the following analysis of data (ch.8), any utterance with a conventional understandable meaning, following Vihman and others, will be taken into consideration.

3) Imitated words will be included, as most, if not all, of the child's words at this age are imitated, also at such age, as Ferguson and Farwell say (1975), "There is very little purely spontaneous data", also "children this young can repeat, or imitate things said by adults at some distance of time...." [p.422].

(7-2-2) HOLOPHRASES

A holophrase is simply a one-word sentence. The term holophrase has been applied to the child's first words, because they are not only words, but they convey the meaning of a whole sentence. That issue gives rise to a great deal of controversy, as some people deny the whole idea, as the literature will reveal.

Riper (1950) for instance, believes in the one-word sentence, "These first words are much more than mere names of labels.... they are a sentence in themselves, 'tick-tock' may mean 'give me the clock', 'I see and hear a clock'...."[p.58].

Stern (1926) also supports the idea that the child's first utterances are not words, but whole sentences "for the novice in speech does not talk to express concepts as such, but rather his own attitude to them. .... It is not enough to translate the child's mama into adult speech by the one word 'mother', but sentences must be used...." [p.148]. Stern goes on to give his reasons, "The child cannot as yet express the manifold variety of his psychic feelings by a corresponding variety of utterances, and he therefore compresses everything he has to say into the one single sound-form, which corresponds to the culmination of his psychic feeling, and therefore stands in greatest readiness at the moment to cross the threshold of speech" [p.149].

McCarthy (1930) gives another explanation of the idea. She uses the traditional (but in fact rather misleading) grammatical explanation of the sentence as a group of words that expresses a complete thought, and, as she adds, we cannot deny that the child expresses his thoughts long before using a sentence, "Certainly he (the child) expresses his wishes,

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needs, and attitudes in a most expressive gesture language long before any true language has appeared .... Moreover, when we consider only the vocal expression, we must admit that the child expresses, by inflection at least, complete thoughts long before the appearance of the first true sentence" [pp.10-11]. As well as delimiting the use of the large term 'thought', McCarthy's word 'complete' refers here to semantic completeness, not to syntactic completeness. For a sentence to stand as a sentence, syntactic completeness is necessary. If a word reveals a complete thought, this does not mean that it has become a sentence. Also, a complete thought could take a whole book to express. Take for instance novelists who write whole novels or sometimes a series of books to reveal a 'thought'. But I think also that she uses the term with regard to that little simple creature, the child, whose mind is only concerned with his simple needs as eating, drinking ....etc.

Lenneberg (1967) gives another different discussion of the idea of the holophrase. He starts by giving some examples from the adult's language. He starts by asking this question "Is it correct to say that the unit of discourse is the sentence?" [p.281]. Two objections, he argues, are raised in connection with this question: the first is that we often find single words uttered by adults, for example, if someone opens a pack of cigarettes and asks another, "Smoke?", which is a reduced form of the sentence "Do you smoke?". Someone might answer this question by saying "yes", instead of "yes, I smoke". He concludes that "The single word utterances are only interpretable by virtue of the listener's ability to supplement the omitted parts of the sentence", and that "the meaning of words is uninterpretable in social commerce, unless we have

enough clues with which to construct a sentence for that word" [p.282].

The other point is that in colloquial English (or any language), people do not normally speak in grammatically full sentences, but hearers usually have the ability to interpret such incomplete or fragment sentences, or as he calls them "semi-sentences". Are these observations on adult language false, or irrelevant? Neither is the case, "To the contrary, if we assume that the child's first single word utterances are, in fact, very primitive, undifferentiated forms of sentences, and that these utterances actually incorporate the germs of grammar, a number of phenomena may be explained" [p.283].

He further adds to the idea that single word utterances are primitive syntactic units, and he supports this semantically and phonologically. "Semantically, and in terms of communication, the single words seem to function in the same way that sentences come to function later on: they cover a complete proposition .... Phonologically .... a variety of intonation patterns influences the utterance - such as declarartive, interrogative...."[p.283]. His final conclusion is that "the one-word stage is simply a transitional stage during which the rules are extended from the interaction of articulatory movements to the interaction of larger language units, namely morphemes and words, and that the eventual acquisition and mastery of grammar has its origin right at the beginning of language development ...."[p.283]. I think that there is some validity in Lenneberg's argument. He is trying to support the child's word semantically, syntactically, and phonologically. Semantically, he looks at the sentence as not the core of speech; a one word utterance can be used to reveal

one's proposition or intention. That is what we call fragmentary sentences. In that view, a child's word could be interpreted or taken as a reduced form of a sentence. Syntactically, the child at this stage is too primitive and could not support all the syntactic parts of a sentence; during his language development, he will develop and master grammar gradually. Phonologically, his words have various intonation patterns that add meanings to them.

A study by Menyuk and Bernholt 1969 was undertaken to examine the hypothesis of the one-word sentence (see Menyuk, 1971). They recorded the utterances of a girl during the one-word stage, and asked two listeners to classify them into declaratives, questions, and emphatics. Spectrograms were made of the utterances, and they found a general characteristic of each type of utterance (falling fundamental frequency contour for declaratives, rising for questions, and a sharp rise then fall for emphatics).

Paula Menyuk comments on that saying, "These results indicate that first one-word utterances are not simply the names of things and events. It is illogical to suppose that 'door!' and 'door?' as well as 'door' are all being used simply to state that 'That's a door'". Although she thinks that these data do not provide conclusive answers to the main issue, "they nevertheless indicate that the child probably did intend to produce these different sentence types since specific purposeful effort is needed to generate question and emphatic utterances" [pp.61-62].

The above literature reviews those who have dealt with the child's first words mainly semantically. Other investigators have dealt with them grammatically (McNeill,

1970, Bloom,1973, Dore,1974, Greenfield and Smith,1976.... and others). I will review them only briefly, as grammar is not intended to be demonstrated in the present research which is not concerned with any stage beyond that of one-word utterances.

McNeill (1970) is among the first to give a theoretical account of one-word speech. Like Chomsky, he argues that the child has an innate knowledge of basic syntactic relations. But children's limited experience with language only provides them with little information for learning the relevant surface structures of their native language. He also argues that single-word utterances have the underlying representation of a full sentence, but only one element of this underlying structure is realized in the surface structure.

Unlike him, Bloom (1973) thinks that children do not have that innate knowledge. She also argues that children do not produce only one word at a time. Children produce utterances of more than one word, but they do not contain more than one meaningful element. She adds that when children start producing words in combination, they do that by producing successive single-word utterances in which each word relates to some aspect of the situation. Finally, she concludes that children produce one word at a time because they have not yet learnt any rules for combining words.

Arguments over the one-word sentence are not yet settled. But my observations of Sarah (Chapter 8) lead me to think that the semantic approach to the child's first words is more revealing. In a child's words, it is rather hard to trace any syntactic rules; it is also questionable to suppose any. But one can easily infer a meaning.

To make the idea more clear, when we say that children's single words are sentences, this does not mean that we apply to those words all the syntactic properties of the sentence. Rather, they only share some of its features; on the semantic level, they do reveal a meaning, and on the phonological level, they do carry different intonation patterns. I therefore believe that at such an early stage it is not particularly revealing to apply any grammatical rules to the child's language. This is supported by Crystal's discussion (1976). He also thinks that the one-word utterance functions as a sentence, for the resemblance between them in intonation contours and meaning. He says, "It is tempting to conclude that here the intonation and gesture add up to the use of statements, questions and commands; but while there is a certain semantic resemblance, it would be misleading to say that the child has learned the grammar of English in these respects" [p.40]. He further makes it clear that if we say that when the child says dada, he is actually saying 'Is that dada?', omitting only the first two words, we are attributing more linguistic knowledge to him than he probably possesses. He concludes, "all we can say with confidence is that dada is being used as a one-element sentence .... In other words, the "first words" are really "first sentences", though they lack the specific structure and function that we come to associate with the syntactically developed sentences of later life" [p.41].

(7-2-3) OVEREXTENSION

There is comparatively little argument over this issue, as almost all investigators agree that children always

overextend their first words; that is mainly because they do not know fully the criteria for applying terms to objects. They see objects from one or two angles, for instance applying the word 'dog' to all four-legged, or furry, animals; the word 'daddy' to all males.... etc. But this ambiguity soon clears itself as they grow and achieve complete understanding.

Tracy (1893) supports the idea. He observes that at such an age "names are applied much too widely. .... It is interesting also to note how the principle of association enters as a factor in the determination of the application of the name. When a child calls the moon a lamp;.... calls everything bow bow which bears any sort of resemblance to a dog .... it is evident that one great striking resemblance has overshadowed all differences in the objects" [p.117].

Grant (1915) in a study of his daughter, Elizabeth, also noticed that feature, "The meaning of most words in E's vocabulary is continually changing. .... Not many of them, if any, have the meaning to her that they have to adults..." [p.199], then he gives some examples of her words, as the word "dirty" which is applied to all black objects, even blackberries ....etc.

Menyuk (1966) noticed that children not only over-extend, but sometimes they do not generalize, and do not differentiate, "Children initially use words to name objects as a whole rather than observing the properties of these objects .... overgeneralization occurs, the same lexical item is used when talking about different things (hot for both hot and cold); no generalization occurs, an item is used only when talking about a specific thing (chair used for a specific chair); non differentiation occurs, several lexical items are

used when talking about the same thing (horse and dog are used for dog)" [p.221].

Further support for the occurrence of over-generalization, or overextension, is to be found in Lenneberg (1967). He believes that there are dramatic deviations in the realm of semantics during the first stage of single words; for example, a word like "daddy" covers a wide range of objects, "There is overgeneralization. However, at no time does the multitude of reference relationships and the multilevel overlap of synonymy, homonymy, metonymy or the names of particulars as against the names of generalities, of aspects, qualities, or objects to which the language-learning child is exposed from the beginning cause a chaotic use of words" [p.281].

Crystal (1976) also believes that the meaning of the "first words" is different from the adult's meaning. Children's early words are usually "much more diffuse, over-extended". The child may use the word daddy to refer to his father or the milkman, "On the basis of such usage, it is clear that the word is being used in a very broad sense...." [p.40].

Clark (1977,1979) puts a semantic feature hypothesis to children's first words. In (1979) she states that "when the child first begins to use identifiable words, he does not know their full (adult) meaning. He only has partial entries for them in his lexicon, such that these partial entries correspond in some way to some of the features or components of meaning that would be present in the entries for the same words in the adult's lexicon". She adds that "the child's use and interpretation of words may differ considerably from the adult's in the early stages of the language-acquisition process, but, over time, will come to correspond to the adult

model" [p.197].

From the child's perception of the properties of the objects around him, his over-extensions, as she observes, are based on: shape (like the word moon applied to round objects), movement (the train sound applied to all moving machines), size (worm applied to all small insects), sound, texture and taste. She concludes (1977) that, "the child's resources are very limited. His vocabulary is still very small and, in fact, his overextensions clearly reflect his reliance on a strategy that will maximize what he has acquired so far. He seems to apply the word that fits best in context" [p.151].

Nelson (1974) argued against Clark's approach (which is mainly based on perceptual similarity). She argued that children lack the ability to analyze objects according to their perceptual components like 'round', or 'four-legged', and to use these components to classify objects. She rather believes that children view objects as unanalyzed wholes, and classify them according to the actions associated with them and the relationships into which they enter. For example, they regard things as similar if they function similarly, or act spontaneously in a similar way. [p.264].

Clark predicts that words will be extended over objects if objects are perceptually similar, and Nelson predicts that they will be extended if objects are functionally similar. I think that perception, as to the primitive simple child, comes first. The functional approach needs more thinking and experience. Also, it could be sometimes misleading. If we give a simple example of a 'spoon' and a 'dish', functionally speaking, they are both means of eating, so the child will call them both a 'spoon', or a 'dish', but perceptually, he will use

the objects correctly. In saying that, I do not deny the functional role, but it will be delayed a little to a certain stage when the child's understanding grows.

In Bowerman's study of two girls (1978), she examines the issues raised by Clark and Nelson. She concludes that "an adequate theory of the acquisition of word meaning has to be flexible enough to account for the child's ability, even from a very early age, to classify experiences on the basis of many different kinds of similarities. Theories built around only one basic class of similarities, whether perceptual or functional, are too restricted to account for the rich diversity of ways in which children can recognize constancies from one situation to the next" [p.269].

CHAPTER EIGHT

THE FIRST-WORD STAGE

DATA ANALYSIS

PROCEDURES

Like the babbling period, data for this stage is a collection of audio-tapes and video-tapes taken of the child up to the age of 18 months. Audio tapes start from age 13 months and 5 days up to age 19 months (a total of 10 sessions). Audio tapes are not of fixed duration, as the videos, but for this stage they are rather longer than the babbling stage, as the child's ability to talk and produce new utterances was increasing. Video tapes start from age 13 months, 16 days up to age 19 months, 4 days (a total of 19 sessions). *

DATA DESCRIPTION

Using the same technique used before in the babbling period, in both audios and videos, the situation will be described, then a list of sounds uttered by the child, followed by data analysis in regard of the following measures:

- Vocalization length in syllables,

- Phonotactic structure, and

- Consonant manner and place.

With the use of the above measures, the following assumptions will be tested:

- Do first words, or rather "expressions" or "strings of sounds" as we called them in Chapter 7, have the same vocalization length and phonotactic structure, as late babblings, and do they develop from there, or do they have a different source? Also, the assumptions "holophrase" and "overextension", will be considered.

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* Parts selected from the video-tapes are recorded on the 'Master tape'.

SESSION (22)

CHILD'S AGE: 13 months, 5 days.

SITUATION: The situation in all the following sessions is usually a conversation between the mother and the child.

SOUNDS UTTERED:

M: (Shows S a dog toy), dog, doggie, where is the dog, on the T.V.

S: [a:a:] points at the dog.

M: You want it, here you are, doggie, tele (T.V.).

S: [jeh] (meaning yes.)

M: doggie,

S: [o:h] admiring,

M: doggie, [hæw,hæw],

S: [aja] happy,

M: Where is the dog Sarah, it is on the floor, can you bring it?

S: Points at the T.V.

M: No, it is not on the T.V., on the floor, there (mother gets the toy), here you are.

S: [hija], sounds like M's "here you are".

M: dog.

S: [ʔe:h ʔe:h].

M: Sarah [fein baba]*

S: [mamama baba ada], [e:h] looks at the dog.

M: dog, teddy bear.

S: [de] points at the recorder.

M: no,

---

* Arabic words mean 'where is daddy'

S: [aja,no:] cries.

M: no.

S: [no:] points at the teddy,

M: teddy,

S: [da].

M: light, lala, bed

S: [da],

M: bed,

S: [da da], [da] points at the light.

M: that, light,

S: [aja],

M: what is that, doll, look her eyes, doll.

S: [de dede],

M: eye, hat, [Sarah points at the clown], clown, see his eye,
   can you say eye.

S: Points at the eye.

M: Throws the clown up, see Sarah, it goes up, up,

S: [?a] like up.

M: Sarah, say hallo, give me your hand (like shaking hands) say
   hallo,

S: [haj],

M: hallo, [father opens the door] it is baba, dada,

S: [bah ba],

M: names things around, tele, chair, doggie, where is it, can
   you get it (Sarah looks at it) good girl, you know it, get
   it Sarah,

S: [aja eh] gets it,

M: [hæw hæw] like a dog,

S: [?æw aj] imitates,

M: say hallo to doggie,

S: waves,

M: Say bye,

S: [da: da:] pitch pattern like M's utterance of 'bye', She
   waves.

M: bye doggie,

S: waves [deh],

M: where is baba, hallo baba,

S: [da ha ja jaja],

M: come here baba,

S: [jaja dada baba], points at toys [?ed],

M: dolly, doggie, can I have the doggie [gives it to me, takes
   it again).

S: [dah] wants to put it on the television [de de],

M: tele,bring another toy Sarah, can you say your name, Sarah,
   ball, teddy ....etc.

ANALYSIS

Length of utterance	Phonotactic Structure
Mono-Syllabic	VC, CV, C_1VC_2
Di -Syllabic	V_1CV_1, $C_1V_1C_2V_2$, $C_1V_1C_1V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: Late in the babbling period, some of the child's
strings of sounds are starting to acquire a more word-like
shape. Some of these word-like strings could be understood by
adults as the child attempts to imitate some of their words, or
use other strings of her invention to point at, or ask for
things she wants. Such strings of sounds are not known to
adults, but they normally try to follow the child's gestures to
help her understand.

As to the syllabic structure of her vocalizations, they are

either mono-, di-, or tri-syllabic. In most strings, we still get the same vowel or consonant repeated. Apart from that, we get a few syllables in which the consonant or vowel repeated is different. This could be a start at word approximation rather than babbling.

As for mono-syllables, we get the structure $[C_1VC_2]$ for strings as [?e:h] which is of no clear meaning in her repertoire, but is often used, [haj] which is an attempt to imitate mother's hallo, as it has the same first two phonetic elements. [?æw] which is also considered as an imitation of mother's [hæw] with same last two phonetic elements and a glottal sound at the beginning (fricative in mother's, plosive in S's).

In di-syllables, we get the structure $[C_1V_1C_2V_2]$ for strings as [hija] which has the same pitch pattern of mother's 'here you are', also it has some of the phonetic elements [h,j,a].

Apart from that, the child has some clear words which are now fixed in her repertoire, and which she appears to use and employ with understanding. Words as [jeh] for yes, used mainly when asked if she wants something. [no] for refusal or protesting, [o:h] for admiration and [?a] for up. Correct implications of such words by the child are revealed during the situations, as it appears that she applies them correctly.

SESSION (23)

CHILD'S AGE: 13 months, 5 days

SITUATION: Child is playing alone

SOUNDS UTTERED:

[ta: ebah gu:h e:h ?u: da ta]

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_2
Di -Syllabic	$V_1C_1V_2C_2$

IMPLICATION:

No clear string-like words could be identified. Structures with different consonants are uttered.

SESSION (24)

CHILD'S AGE: 13 months, 6 days

SITUATION: Conversation

SOUNDS UTTERED:

For a long time the child babbled in this session uttering the following utterances:

S: [dedah nene a: nanana de da dede: nenene]

M: You want some tea Sarah, tea,

S: [ja] yes.

M: tea, say tea,

S: [tete].

ANALYSIS

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_1V_2C_2$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: Apart from the word [ja] for yes, [tete] could be the child's approximation of the word tea, with the same initial consonant. I think there is some understanding as well

from her behalf, as her looking and pointing at the cup reveal that. I do not claim that she knows tea as a sort of drink. She probably knows in her heart that cups are associated with things to drink.

SESSION (25)

CHILD'S AGE: 13 months, 23 days

SITUATION: Conversation, while mother is changing child's nappy

SOUNDS UTTERED:

S: [dada da:da dadu: da: aja dudu].

M. dirty,

S. [de],

M: Your nappy is dirty,

S: [de e: da nana],

M: Your trouser is dirty,

S: [tete],

M: Sandal,

S: [da dada], points at the nappy

M: Yes, nappy is dirty, wet.

S: [dada],

M: [?allah]*,

S: [?a:ha],

M: [?allah],chair

S: [?ajah] pitch pattern like M's utterance of [?allah].

M: what is that, flower, beautiful, can you bring a toy,

---

* Literally speaking, the word means "God" in Arabic, but is used as a term for showing admiration. When said in Arabic, the nearest meaning intended could be translated as the English "Oh my God, isn't that beautiful".

S: [a:], babbles, not interested in anything.

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_1V_2$, V_1CV_1, $C_1V_1C_2V_1$, $C_1V_1C_2V_1C_3$

IMPLICATION: The child's imitation of the word [ʔallah] is very approximate to the mother's word, with most of the phonetic elements [ʔ,a,h] present, and a replacement of the middle liquid [j] for [l]. I don't think there is a clear understanding in there. Her word seems to be more like a direct imitation of mother's word. It is also noticed, from the previous session and this one, that the strings [da] or [de] are often uttered when hearing words with the consonant [d] involved as bed, doll, recorder, teddy ....etc. In this, she is probably attempting to imitate, as she gets the first consonant, but it is not clear which word is exactly aimed at by her.

SESSION (26)

CHILD'S AGE: 14 months, 2 days

SITUATION: Conversation

SOUNDS UTTERED:

M: Where is the ball, Sarah.

S: [de a:]

M: What are you doing, pushing the chair, push, you want to sit
   down, where is your book, ball,

S: [a: da:]

M: ball, throw it up, you want it,

S: [dah]

M: where is it, there,

S: points at it, [da:] as there, then points at the table,

M: table,

S: [ta:]

M: You want the ball, throw it up.

S: throws it up.

M: where is the light [Sarah looks up], where is the dog [she looks at it], yes you know it.

S: [dada ada tata].

M: who is tata Sarah,

S: looks at the tea [tata].

M: you want tea, tata is tea, good girl.

S: [tatata tata]. Then she throws the ball,

M: get the ball Sarah,

S: [dah], looks around as if asking where is it.

M: It's gone Sarah, I can't find it.

S: wondering, [tete].

M: go find it,

S: [tah] points at some place,

M: there, no, not there,

S: looks around, sees the recorder, and forgets everything for its sake; mother tries to attract her attention to other things, but without success.

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Di -Syllabic	$C_1V_1C_1V_1, V_1CV_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: [C$_1$VC$_2$] structures are used twice by the child in [dah] and [tah]. These two strings are of her invention, mainly used when pointing at, looking for, or inquiring about, something. It is not possible to draw any intended meanings for them as yet they are not tied to any clear situations. Her [da:] for mother's "there", with the same pitch pattern could be an imitation with a plosive replacing the fricative; this sort of replacement is very frequent among children. As to her knowledge of things around her, e.g. the table, light, dog ...etc., I think, it may fairly be assumed that she knows them, as she normally reacts appropriately when these words are used in the context. Also, [ta:] for table could be a reduced imitation with the same initial phonetic elements. As to the word "up", I do not claim that in contexts like when asked "where is the light", and she looks up, that she knows the word itself. Her behaviour indicates that she understands the concept of location that is "up", although knowing the concept does not necessarily entail knowing the word.

[tata] for tea, in the context, is not clearly used by the child, as the same string was used before and after the mentioning of the word with no clear indication.

SESSION (27)

CHILD'S AGE: 14 months, 12 days

SITUATION: Conversation, using a baby book.

SOUNDS UTTERED:

M: Come on let's read in the book, see the baby,

S: [baba] looks at the picture of the baby,

M: baby

S: [baba]

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M: not baba, baby, what else in the book, see the hat,

S: [no],

M: no hat, see the teddy, dolly, baby again,

S: [ababa],

M: see the ball,

S: [ba],

M: ball, book, dog, bath, Sarah takes bath, water,

S: [e: no],

M: apple, orange, see the bus,

S: [da] points at the book

M: that, what is that, book, bath, ball, car, baby,

S: [a: a: aj],

M: See the dolly,

S: [de no],

M: not the dolly, teddy, duck, baby,

S: [baba ba], points at many pictures, mother names them,

M: brush, comb, book, socks, shoes, hat, you want the hat,

S: [no],

M: See the spoon,

S: [no],

M: you want the ball, can you say ball, ball,

S: [no],

M: Sarah, where is mam [points at my face,touching my nose], oh
   that my nose, where is my nose [points at it], where is your
   nose.

S: [no en:no]

M: See the cat, apple, house, sun,

S: [tata] points at the apple,

M: apple,

S: [ta] points at the umbrella,

M: what is that, umbrella, see the tele, box,

S: [no], seems tired,

M: you want to sleep, go to bed, where is your milk,

S: [ta] points at the book,

M: you want the book, see the tree, rabbit,

S: [aja] points at the yacht,

M: yacht, [Sarah goes near the fire], watch the fire, it is hot

S: [ha ha hə],

M: don't touch it,

S: points at it [no no],

M: yes, no.

ANALYSIS

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, VC
Di -Syllabic	$C_1V_1C_1V_1$, $V_1C_1C_1V_2$, V_1CV_1
Tri -Syllabic	$V_1C_1V_1C_1V_1$, $C_1V_1C_1V_1C_1V_1$

IMPLICATION: Her approximation of the word baby as [baba] is strongly connected with her knowledge of the word, as she had used it, since the end of the first year, to point at any young child calling him or her [baba] but she still cannot get the vowels correct. The repetition of the word 'no' is not haphazard as it is always connected with her refusal of what I choose, and pointing at another picture. [ta] or [da] are used in the same sense as [dah] and [tah] in session (26), also [aja] is sometimes used for the same purpose. [ha ha hə] is her approximation of the word 'hot', she always uses it when she wants to indicate that something is hot, especially for heaters.

SESSION (28)

CHILD'S AGE: 15 months, 3 days

SITUATION: Conversation

SOUNDS UTTERED:

M: (shows Sarah some of her photographs) look Sarah, who is that in the photo.

S: [?ou] like who,

M: who is that.

S: [aj] points at herself.

M: Sarah

S: [ja] like yes, agrees.

M: And who is that, mama

S: [mama] points at me.

M: where is daddy in the photo.

S: [da dadi] points at him.

M: And who is that little girl

S: [a: je] points at her photo

M: Sarah.

S: [eh ema].

M: Who's sleeping there, come on kiss Sarah in the photo,

S: kisses her photo [?o:h meh ?o:h babi],

M: Is that you, baby Sarah,

S: [babi], points at herself,

M: baby,

S: [baba], tries to imitate mother,

M: go get the book, let us see the baby in the book,

S: goes to bring the book [baba e wa baba],

M: open it.

S: [bah] approximation to open.

M: where is the baby

S: points at the baby [baba]

M: baby

S: [a: bæj]

M: see the brush,

S: [no],

M: brush,

S: [baba],

M: shoes, socks,

S: [ba ʔo: pej] points at the apple,

M: see the comb, comb your hair,

S: [no].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	VC, CV, C_1VC_2
Di -Syllabic	CV_1V_2, $C_1V_1C_1V_1$, V_1CV_2, $C_1V_1C_1V_2$

IMPLICATION: The string [ʔou], for M's 'who', is an entailed imitation, as we can't claim at all that she knows the usage of the word. [ja], or [jah] in other contexts, is her approximation to 'yes', and she seems, by that age, to be using it correctly whenever agreeing on something.

Strings like [aj], [eh ema], [ʔo:h meh ʔo:h babi], and [ba ʔo: pej] have no clear indication or imitation of adults' words, except for [babi] which is another attempt at baby. [bæj] is also an attempt at the same word, from which it is clear that she is working on the vowels.

SESSION (29)

CHILD'S AGE: 17 months, 9 days

SITUATION: Conversation

SOUNDS UTTERED:

M: Sarah can you say bye,

S: [ba:j] exactly pronounced, then tries to put on her dad's
   slippers.

M: what are you doing,

S: [dadi] she knows they belong to her dad.

M: slippers, can you say slippers,

S: [dada babenda],

M: come on, wear your pyjama,

S: [ana no no] runs,

M: Yes,

S: [nananana],

M: can you say slipper (the word is repeated many times),

S: [beh] tries to imitate the word.

M: can you get your socks,

S: [tet∫] points at them,

M: socks,

S: [tet∫ dete:],

M: no, not dirty, they are clean,

S: [dete: dete:] points at them,

M: clean....

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2, C_1VC_1, $C_1VC_1C_2$
Di -Syllabic	$C_1V_1C_1V_2$, $C_1V_1C_1V_1$, $C_1V_1C_2V_1$
Tri -Syllabic	$C_1V_1C_1V_2C_2C_3V_1$
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$

IMPLICATION: When asked before in other contexts to say 'bye', she only waved, now she can utter the word perfectly well. Although she couldn't utter the word 'slipper', she did make an imitative effort to say it; [beh] could be a correct attempt at the last syllable. Apart from that she knows very well the implication of 'slippers', as well as their belonging to her dad. She also knows the word 'dirty' and applies it very well. Even her imitation of it is fairly close. Also her imitation of 'socks' is interesting as she replaces the fricative with a plosive and, as mentioned before, this replacement is widespread among children.

SESSION (30)

CHILD'S AGE: 17 months, 14 days

SITUATION: Conversation

SOUNDS UTTERED:

M: Come on Sarah, fill your bag with toys, we are taking it tomorrow with us (we were preparing the bag for a video session on the following day), which one you want, the music box,

S: [meh] points at it, then puts it in the bag,

M: you want the doll,

S: [dɔh],

M: What else, dog,

S: [dodo dodo] puts it in the bag, and the teddy as well.

M: You taking the teddy also,

S: [edudu] agrees,

M: can you say bag,

S: [maneh je neh],

M: see the head of the teddy, head,

S: [deh de] points at the head,

M: head, head,

S: [dede dade],

M: Is that his tummy,

S: [teh], points at it,

M: His leg,

S: [deh], points at it,

M: what else you want to take, the ball,

S: [beh], points at it,

M: the duck,

S: [jeh] agrees,

M: the clown, the baby,

S: [beibi:] very clear,

M: put the ball in the bag, good girl, oh I forgot the arms of
   the teddy,

S: [a:h] as if surprised, then picks up a toy [tah] as if
   asking 'are we taking this',

M: yes, you want your boot,

S: [no],

M: what is that, dolly,

S: [deh] points at it, then at its eye [da du],

M: eye

S: [ʔaj] sounds as eye.

M: where is the eye of the doll Sarah,

S: [jaj] points at it,

M: eye,

S: [ʔaj]

M: where is the nose of the dog,

S: [dede]

M: [hæw hæw] imitating the dog,

S: [ʔæw ʔæw],

M: Is that your shoe,

S: [ʃu:]',

M: you want the brush, say brush,

S: [bʌʃ].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_2, C_1VC_1
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_2V_2C_3$
Tri -Syllabic	$V_1C_1V_2C_1V_2$, $C_1V_1V_2C_1V_2$

IMPLICATION: From around 15 months up, Sarah almost knew all the names of her toys; she correctly picked up whatever she was asked to; also names of body parts, e.g., nose, tummy, leg...etc. She also gives reasonably good approximations of the words involved: strings such as [ʔaj] for 'eye', [ʃu:] for 'shoes', and [bʌʃ] for 'brush' are fairly close. Also her [beibi:] for 'baby' is very clear. In most of the other words, she gives a good attempt at them, especially when uttering the first consonant almost correct with everyone. But yet, her imitations are not stable, as she changes in the vowels probably attempting to reach the correct form.

SESSION (31)

CHILD'S AGE: 19 months

SITUATION: Conversation

SOUNDS UTTERED:

M: Come on Sarah, let's play with the elephant.

S: [de] points at it asking (as this?).

M: Yes, elephant, look his eye,

S: [ʔaj]

M: His ear, mouth, (Sarah picked up a brush), what are you doing, can you say brush,

S: [bʌʃ], (she noticed the recorder),

M: Say babye to the recorder,

S: [babaj],

M: see you,

S: [e:ju:],

M: See my elephant,

S: [se: jot...] she gets confused with the long sentence.

M: where is your mouth Sarah,

S: [mɛs] points at it,

M: your nose,

S: [nɔ:s], points at it,

M: Is that your foot,

S: [no],

M: Yes,

S: [ades mnan damena] tries to say something,

M: you want your boot, say yes mam please,

S: [de:z],

M: can I have the teddy,

S: [tede],

M: can you say apple,

S: [a:],

M: you want to pick the teddy up,

S: [ʔap],

M: see the dog,

S: [dod], sees the recorder,

M: can you say recorder,

S: [a:j se:],

M: can you say bath,

S: [bæs],

M: see the pussy cat,

S: [tat tat],

M: duck,

S: [dʌt], looks in the book,

M: which one (of the pictures) you want,

S: [beibi] points at it,

M: can I have a kiss,

S: [es],

M: what is that, socks,

S: [dos],

M: can you say hallo,

S: [jaʔuː],

M: nice to see you,

S: [juː], then she points at her nose,

M: Is that your nose,

S: [nuːz],

M: can you say Sarah,

S: [jaja] tries to say her name,

M: Sarah,

S: [ajaja],

M: bye Sarah,

S: [sesese],

M: you want some tea,

S: [te],

M: you want milk, say milk,

S: [me],

M: you want the clown, no it is mine,

S: [mæjən] points at herself,

M: oh, look the duck,

S: [dʌt],

M: (mother opens her book and points at some pictures, Sarah names them correctly with the following pronunciation).

S: [ʃu:z, bʌʃ, beibi, te:(tree), e:(key), beis(basket), beske: (basket again), nana(banana), bas(bus), ʔa:(car), be:(boy), dɔ:t(coat), bu:t(boot), jes(dress)].

M: you want some orange, coke,

S: [nӕjәs]

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_2, $C_1C_2VC_2$, C_1VC_1
Di -Syllabic	V_1CV_2, $V_1C_1V_2C_2$, $C_1V_1C_2V_1$
	$C_1V_1C_2V_2$, $C_1V_1C_1V_1$, $C_1V_1V_2C_2$,
	$C_1V_1C_2C_3V_1$, $C_1V_1C_1V_1C_2$,
	$C_1V_1C_2V_2C_3$
Tri -Syllabic	$C_1V_1C_2V_2C_3V_1$, $V_1C_1V_1C_1V_1$
	$C_1V_1C_1V_1C_1V_1$, $C_1V_1V_2C_1V_2$

IMPLICATION: It is clear that the child's vocabulary is growing, as well as her willingness to attempt to imitate any word said to her, which makes her approximations more and more close to adults' words, e.g., strings such as [babaj], [ʔap], [te], [mӕjәn], and [nӕjәs] for 'baby, up, tea, mine and nice'. She also gives very good attempts at see you [e:ju:] where she dropped the fricative. It seems as if she is working on that fricative [s]; it is uttered very well and clear in final positions as in[nɔ:s] and later [nu:z] for 'nose', [es] for 'kiss'...etc., but yet unstable initially, e.g., sometimes missed as in [e:ju:] for 'see you', or uttered as in [sesese] attempt at 'Sarah'. Apart from that, her knowledge of the

meaning of most of the strings, if not all, is fairly correct, and that is evident in the way she applies them.

MAIN OBSERVATIONS:

From the previous analysis, we can notice that:

1- The child's language progresses gradually from her babbling to her first words; the two stages do overlap. Also when she starts uttering words, she attempts at them so many times until the right age form is reached. See for instance the process of the word baby:

[baba]	$C_1V_1C_1V_1$	14m. (1)	12d. (2)
[babi]	$C_1V_1C_1V_2$	15m.	3d.
[bæj]	C_1VC_2	15m.	3d.
[beibi]	$C_1V_1V_2C_1V_2$	17m.	14d.

Some of the words are fairly well approximated from the first time, e.g.:

'boot'	[bu:t]	C_1VC_2	19m.
'nice'	[nɜjɑs]	$C_1V_1C_2V_2C_3$	19m.

Others are not yet uttered correctly up to the last session, and afterwards up to 3 years old, e.g.:

'duck'	[dʌt]	C_1VC_2	19m.
'banana' (3)	[nana]	$C_1V_1C_1V_1$	19m.
'tree'	[te:]	CV	19m.

2- Up to 14 months of age, the child's understanding is rather limited; she either imitates without knowing the correct application of the word imitated, or vice versa. As time goes by, and it is very noticeable by the end of the sessions, her

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(1) (2) m=month, d=day.

(3) Loss of pre-tonic syllables persists for quite a while after post-tonic ones are correctly dealt with.

repertoire grows, also her understanding and pronunciation become more clear and correct.

3- As to phonotactic structures, table (8-1) gives a summary of them, and table (8-2) gives in details the syllabic structures:

Table (8-1)

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC, $C_1C_2VC_2$, $C_1VC_1C_2$, C_1VC_2.
Di -Syllabic	V_1CV_1, $C_1V_1C_2V_2$, $C_1V_1C_1V_1$, $V_1C_1V_2C_2$, $C_1V_1C_1V_2C_2$, $C_1V_1C_1V_2$, $C_1V_1C_2V_1$, $C_1V_1C_2V_1C_3$, $V_1C_1C_1V_2$, CV_1V_2, $C_1V_1C_2V_2C_3$, V_1CV_2, $C_1V_1V_2C_2$, $C_1V_1C_2C_3V_1$, $C_1V_1C_1V_1C_2$.
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $C_1V_1C_1V_2C_2C_3V_1$, $V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_2$, $C_1V_1V_2C_1V_2$, $C_1V_1C_2V_2C_3V_1$.
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$.

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Table (8-2)

	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)
Tri Syllabic utterances	ma³		ne³ nä³		ta³	hɔ³ abuba	babendu		beibi edudu	se³ ujaja damena
Di Syllabic utterances	da² dɛ² bɔ² aja	ja² ada hija	te² nɛ² dedah	?ajah du² dadu nɔ²	?aha ta²	enno	babi dadi ?ou / ema ma² / dete ana		dade maneh dɛ²	tede mæjɔn, beske / beis ja?u / ades mæjɔs / eju babaj
Mono Syllabic utterances	dah ha aj bɔ haj da de ?eh jeh	ja deh ?æci bah ?a no eh oh	?u guh ta		tah	?o wa ?oh je / pej bæj meh eh	tetʃ beh	bʌʃ	?aj ah neh dɔh / ʃu du teh jaj	but be me nuz dos dʌt bɑs ?ap mnan mɛs se / jes dɔt ʃuz te ju es tat dɛd dez nɔs jot
Age	13.5	13.5	13.6	13.23	14.2	14.12	15.3	17.9	17.14	19
Sessions	(22)	(23)	(24)	(25)	(26)	(27)	(28)	(29)	(30)	(31)

Looking back at the table, with the structure C_1VC_2, we got the following utterances:

[jeh]	[meh]
[ʔeh]	[baj]
[haj]	[pej]
[bah]	[neh]
[hæw]	[teh]
[ʔæw]	[ʔaj]
[deh]	[bʌʃ]
[ʔed]	[mɛs]
[guh]	[nɔs]
[dez]	[ʔap]
[bæs]	[dos]
[dʌt]	[nuz]
[but]	[jes]

It is very clear that stops significantly prevail in initial positions and fricatives prevail in final positions, but they both can cluster occasionally in both positions.

4- As far as length of utterance is concerned, we have up to 4-syllable structures. But unlike the babblings, where we had repeated syllables with the same Vs and Cs, we are finding different syllables with different phonetic elements. This is considered as a contribution towards word building. The child is almost approximating the same number of syllables as in adult words, see for example:

'teddy'	[tede:]	$C_1V_1C_2V_1$	19m.
'babye'	[babaj]	$C_1V_1C_2V_1C_2$	19m.
'basket'	[beske]	$C_1V_1C_2C_3V_1$	19m.

5- Although we have structures as long as:

| $C_1V_1C_2C_3V_1$ | [beske] | 'basket' | 19m. |

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the child's most popular structure in most attempts is the C_1VC_2 structure, e.g.:

'slippers'	[beh]	C_1VC_2	17m. 9d.
'brush'	[bʌʃ]	C_1VC_2	17m.14d.
'mouth'	[mɛs]	C_1VC_2	19m.
'please'	[de:z]	C_1VC_2 ...etc.19m.

(8-2) VIDEO-TAPES

Video sessions for this stage cover the period from age 58 weeks (13 months, 16 days) up to age 82 weeks (19 months, 4 days), a total of 19 sessions. As I said before, some of the sessions are missed either because of sickness or holidays. Selected parts are edited on the Master tape. All the sessions are, more or less, a sort of conversation between mother and child, concerning toys and books.

SESSION (10)

CHILD'S AGE: 58 weeks (13 months, 16 days)

SOUNDS UTTERED: (child is playing with toys)

M: dog,

S: [dɒ],

M: dog,

S: [da],

M: where is the doggie Sarah,

S: looks at it [aja da],

M: see the nice teddy,

S: [eda],

M: can I have the teddy,

S: [tah] gives me the dog,

M: no, this is the dog,

S: [jah] agrees.

M: this is his nose,

S: [e: a: ja deda gege]

M: let's put them on the chair, can you bring the teddy,

S: brings the dog,

M: this is the dog, can you get the teddy, that one,

S: goes beside the heater [hɔhɔhɔ], then gets the teddy,

M: can you say hallo Sarah,

S: [ajah],

M: say bye to doggie Sarah, bye,

S: [ah, eh, dah, tah] many attempts at 'bye', she waves while uttering.

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2, VC
Di -Syllabic	V_1CV_1, V_1CV_2, $C_1V_1C_1V_2$
	$C_1V_1C_1V_1$, $V_1C_1V_1C_2$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: At this stage the child's vocabulary is still unidentifiable. She does try to approximate some of the words, but is still confused between them. See for instance her mis-identification of the 'dog'. Meanwhile, she gives a sort of entailed imitation to the word as [dɔ], then [da]. It is not clear if [gege] is another approximation at the word 'doggie' or not. Teddy is approximated as [eda]. As I said, at this stage, the child is still not sure of the application of the words, so her imitation of them could be a sort of repeating some of the sounds, especially those which are well stable in her repertoire; take [d] for instance.

Taking all in all, the child does know a few words, which she understands and approximates fairly well, e.g. 'hot' as [hɔhɔhɔ]. she also knows 'bye', as she waves, but her approximations are unrecognizable.

We get some C_1VC_2 structures as in [tah], [jæh] and [dah]. Also $V_1C_1V_1C_2$ structures as in [ajah].

SESSION (11)

CHILD'S AGE: 60 weeks (14 months)

SOUNDS UTTERED:

M: see Sarah, toys on the chair, teddy, monkey, doggie, dolly,

S: looks [da],

M: can you give me the teddy,

S: [ta:] gives me the teddy.

M: [ta:] and the dolly, (then the monkey),

S: hands them correctly [ta:],

M: come on can you say bye,

S: [jaja, da, dada] attempts at bye.

M: come on let's play [ḥædi bædi]

S: [a:ja:] repeats the exact pitch with pointing at mother's fingers.

M: [ḥædi]

S: [a:ja:] exact imitation of pitch, other approximation is [ja:ja:].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_1
Di -Syllabic	$C_1V_1C_1V_1$, V_1CV_1

IMPLICATION: Her understanding is growing, as she is handling

her toys correctly. She also knows the game [ˌhædi bˈædi] very well. Her imitations are sometimes closer to babblings than to words, as she attempts to imitate in a sort of repeating the same syllable with the same C and V, for instance [da, dada, ja, jaja]. [ta:] is her word used when 'giving or receiving' something. The string could be approximated with meanings like 'thanks', 'here you are', or whatever is close to that.

SESSION (12)

CHILD'S AGE: 61 weeks (14 months, 7 days)

SOUNDS UTTERED:

M: come on Sarah, put the pussy cat on the chair, look, pussy cat.

S: [a: jaja aj].

M: where is the eye of the pussy cat, eye,

S: [ada] points at the eye, then looks at the light, pointing [dah] as if asking,

M: light.

S: [da] points.

M: see the eye of the cat, nose, ear, tail ....

S: looks [dada].

M: can you say hallo to pussy,

S: [ha aja] tries to imitate,

M: hallo, how do you do,

S: holds the cat [aja] as if saying as mother.

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	VC, CV, C_1VC_2
Di -Syllabic	$C_1V_1C_1V_1$, V_1CV_1

IMPLICATION: Apart from getting to know her toys correctly, her

knowledge of other things is spreading, e.g. parts of the body, or things around her in the room as the light, chair, window ...etc. That is evident in her pointing at the eye when asked about it.

From the context, her [dah] and [da], concerning the light, look to me as mere strings of sounds, that could indicate knowledge of the object used, rather than the attempts at imitation. Also, strings as [a: jaja aj], [dada], and [aja] give me the impression of babblings rather than attempts at words, as no clear approximation is included. Apart from being repeated syllables, [d] and [j] are still her favourites. But her attempt at 'hallo' is fairly good, as she gets the first two sounds correct [ha].

SESSION (13)

CHILD'S AGE: 63 weeks (14 months, 21 days)

SOUNDS UTTERED:

M: Say hi Sarah, hi to camera-man (who says hi to her),

S: [ha:], then [æ:h] when she noticed a high chair in the room.

M: you want to go up there,

S: [ʔa] agrees and raises hands.

M: do you remember [ḥædi bædi] Sarah, come on play it,

S: points at mam's fingers [dada]

M: [ḥædi bædi],

S: [no:] pushes mother's hand, she doesn't want to play.

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, VC
Di -Syllabic	$C_1V_1C_1V_1$

<u>IMPLICATION:</u> She knows the word 'hi' as she normally hears it from the camera-man every session. Her imitation of it is very approximate. She also does a good effort at the word 'up'. As I said before, audio session No.26, I do not claim that she knows the word 'up' as a word, but she does appear to know the concept of the word as evident in her raising of the hands. [dada] is another attempt at [hædi bædi], the first is in session No.11. Her pointing at my fingers while saying [dada] indicates her attempt at the words.

<u>SESSION (14)</u>

<u>CHILD'S AGE:</u> 64 weeks (14 months, 28 days)

<u>SOUNDS UTTERED:</u>

The child was not very productive in this session. She only uttered [hɔhɔhɔ] which is her normal approximation of hot, but with a different usage; as she used it when pointing at the dustbin. She extended the use of this word for a while, especially to anything dirty, but knew the difference later.

<u>SESSION (15)</u>

<u>CHILD'S AGE:</u> 65 weeks (15 months, 5 days)

<u>SOUNDS UTTERED:</u>

M: look Sarah, see that baby (pictures in a book).

S: [baba],

M: baby, not baba.

S: [baba], tries to imitate

M: see the spoon. Sarah eats with the spoon.

S: [no], wants another picture,

M: baby cries, says mama, where is the baby Sarah,

S: points at it [bababa].

M: see the cat, ball, say ball,

S: [da:] same pitch as ball.

M: see the duck,

S: looks at it [aja],

M: see the dolly,

S: [de de:] looks.

M: see the bath, Sarah takes bath, soap, water,

S: [a:no] wants another picture.

M: see the apple, you like apple,

S: [ja e:]

M: watch, cat, ball, duck, see the tissue, you want to clean your nose,

S: takes tissue, wipes her nose [ta:]

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_1
Di -Syllabic	$C_1V_1C_1V_1$, V_1CV_2,
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: The same procedure of the word baby as in the audio sessions, Nos. (27) to (30). She approximates it at first as [baba] and we will see how it develops in the following sessions. As to the word [no], she, by this age and onwards, knows, uses and utters it perfectly well. As to 'dolly', she gets the first consonant correct, but the approximation is unrecognized. [da] could possibly be an attempt at 'ball', replacing the plosive with another. This sort of replacement is not very likely among children. [b] and [d] are normally well distinguished by them. Sarah also appears to be able to sort them out. But her mixing of the same two consonants when attempting to approximate the word 'light', session (21),

inclines me to think that she is doing the same with the word 'ball'.

SESSION (16)

CHILD'S AGE: 66 weeks (15 months, 12 days)

SOUNDS UTTERED:

M: see the hat.

S: [a haha] laughs, then looks to the camera and talks [tututu tete wowowo a:h].

M: look Sarah, I'm wearing your hat and gloves.

S: looks [jaja].

M: let's see what we got here, oh chocolate,

S: [da] points at it, wants to eat.

M: orange, chocolate and banana,

S: drops the chocolate [a:], looks and points at it.

M: say chocolate Sarah,

S: [ta ta:].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	VC, CV
Di -Syllabic	$C_1V_1V_1$
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$

IMPLICATION: Not much is noticed in this session. Apart from her own word [da] which is normally used in asking about, or pointing at something; [ta] could be an attempt at chocolate, where [t] could be an approximation to [tʃ] in the initial position in the stressed syllable.

SESSION (17)

CHILD'S AGE: 67 weeks (15 months, 19 days)

SOUNDS UTTERED:

This session was filmed in the nursery. Sarah was more interested in playing than in talking. The only utterance was [ta, ta: or tah] when receiving or giving anything. As I said before, this string could reveal meanings such as 'thanks', 'here you are', etc.

SESSION (18)

CHILD'S AGE: 68 weeks (15 months, 26 days)

SOUNDS UTTERED:

M: (gives her the teddy) come on Sarah, take the teddy for a walk around.

S: [tede:] takes it for a walk.

M: (opens the book) see the baby

S: [baba]

M: not baba, baby,

S: [no en:no], looks in the book.

M: where is the cat, see the brush.

S: [ʃɚ ʃɚ ʃɚ].

M: where is the tissue.

S: [tʃɚ tʃɚ tʃɚ].

M: see the camera,

S: stretches her hand to touch it,

M: say hallo,

S: [awo:]

M: how are you,

S: [ho:h].

M: where is my nose Sarah,

S: points at hers.

M: say kiss,

S: kisses mother,

M: Say bye,

S: [a:j], and later [jaj], with waving.

M: say baby,

S: [baba], later [babi]

M: orange

S: [a aȝ ȝe].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_1
Di -Syllabic	$V_1C_2V_1$, $C_1V_1C_1V_1$, $V_1C_1C_1V_2$
	V_1CV_2, $C_1V_1C_1V_2$

IMPLICATION: It is clear that her vocalizations are starting to sound more like words. [tede:] is a very good approximation to the word. $C_1V_1C_1V_1$ and $C_1V_1C_1V_2$ are two structures for the word baby. She gets only the last sound in the word 'brush' [ʃ] and combines the first with the third in 'tissue'. She also gives a good effort at the word 'hallo', replacing the lateral approximant with a labial. Also, [a:j] and [jaj] are two good attempts at 'bye' as she gets the last two sounds fairly well. There is an effort at the word 'orange' as well, reduced as [aȝ] or [ȝe].

SESSION (19)

CHILD'S AGE: 69 weeks (16 months, 3 days)

SOUNDS UTTERED:

This is a very short session, but it includes her attempts at

'duck' as [dada], and baby as [babi]. Also, her usage of [da]
when pointing at some pictures to be named by mother.

SESSION (20)

CHILD'S AGE: 70 weeks (16 months, 10 days)

SOUNDS UTTERED:

M: Sarah, come on, read in the book,

S: opens and pages it.

M: socks.

S: [so], then points at the baby [babi].

M: brush.

S: [ba].

M: toothbrush, you clean your teeth.

S: [to:].

M: shoes.

S: [tu:] tries to imitate.

M: boot.

S: [babi].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV
Di -Syllabic	$C_1V_1C_1V_2$

IMPLICATION: From around this age on, I can assume the decline
of the preceding babbling stage, as the child's vocabulary is
becoming more like words, in other words, babblings are
disappearing. The first two phonetic elements of 'socks' are
approximated fairly well. There is also an effort at the word
'shoes', replacing the fricative with a plosive.

CHILD'S AGE: 72 weeks (16 months, 24 days)

SOUNDS UTTERED:

(This session was filmed after returning from a holiday in Egypt. The child was a little frightened in the morning session after being away for quite a while. So, we did another session in the same day in the afternoon. The utterances of the two sessions are included in one in this analysis).

M: (hides the ball), where is it Sarah, it is gone, [baḥ]*

S: looks for it, can't find it, [baḥ].

M: where is the dog Sarah,

S: [dodo].

M: (opens the book), where is the teddy,

S: sees the baby, very happily repeats [babi], sometimes [babaj], points at the light [bait].

M: light.

S: [dait] and [bait], then points at the pictures.

M: teddy

S: [tede:], then points at the cat [næw næw] which is the mew of the cat, also points at the apple [ʔæw].

M: see the sock, is your sock dirty.

S: [diti]

M: shoe

S: [du:] then [ʃu:].

M: brush

S: [bʌt].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2

* An Egyptian word than means "gone".

Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_1V_2$, $C_1V_1C_1V_1C_2$
	$C_1V_1V_2C_2$, $C_1V_1C_2V_1$

IMPLICATION: Her stay in Egypt seems not to have affected her at all. It is normal that everyone around her talked Arabic, except for her mam and dad. Even her uttering of the word [baḥ] does not indicate anything as the word is often used by her mother. On the contrary her English was improving, and her repertoire growing. Her approximations at the word 'light' are interesting as she replaces the lateral firstly with a labial, then with an alveolar. This kind of mixing between [b] and [d] is unlikely among children. This is the second time for Sarah to do such a replacement (first time was in session 15).

SESSION (22)

CHILD'S AGE: 73 weeks (17 months, 1 day)

SOUNDS UTTERED:

(Mother asks Sarah to get the toys out of the bag)

M: get the dolly Sarah,

S: gets it [de].

M: see the dolly's eye.

S: [ʔa:j], then gets another toy.

M: what is that.

S: [dat] for that.

M: where is the nose of the doll.

S: points at it.

M: can you get the teddy.

S: [tede:] gets it and her boot.

M: you got your boot

S: [but].

M: let's see your shoe.

S: [ʃu:].

M: pink shoe.

S: [pæt pæt] tries to say pink. Then she holds the doll, points
   at its eyes saying [ʔa:j].

M: see the duck.

S: [dʌt], then tries to open the door.

M: open

S: [pepe do:], then points at the wall.

M: what else we got here, wall.

S: [le:h].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Di -Syllabic	$C_1V_1C_2V$, $C_1V_1C_1V_1$

IMPLICATION: Some of her words are now uttered very close to
adult words, e.g. [bah̬], [tede:], [ʔa:j], [but], and [ʃu:].
[dat] is a good attempt at 'that', replacing the fricaive with
a plosive. The string [dʌt] is used for 'duck', which is a fair
attempt as well, replacing the second plosive with another
different plosive. In 'pink' and 'dolly', she gets the first
phonetic element correct.

SESSION (23)

CHILD'S AGE: 75 weeks (17 months, 15 days)

SOUNDS UTTERED:

S: goes beside the window and points [des deh] for this.

M: you want to sit up there (near the window), window,

S: [du:],

M: (gets the baby), where is his shoe,

S: points at it [tu:] then [∫u:], then points at his eye [?a:j].

M: where is his nose,

S: points at it [nos], then points at his face [se babi]

M: see his ear.

S: points at it [?eh].

M: (shows herself in a mirror) see Sarah, say hallo to Sarah,

S: [a:ou].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Di -Syllabic	$C_1V_1C_1V_2$

IMPLICATION: New words are added to her repertoire; although not yet perfectly uttered, she uses them correctly. She also started to name things without mother's help. They are considered as spontaneously uttered more than imitated. Considering the structure C_1VC_2, a new word is added, which is [des] or [deh] for 'this'. The two strings are good attempts at the word as she replaces the first fricative with a plosive, in the first, and the second fricative with another fricative, in the second. [nos] for 'nose', is another C_1VC_2 structure as well as [?eh] for 'ear'. In 'window', she gets the last syllable fairly good [du:].

SESSION (24)

CHILD'S AGE: 76 weeks (17 months, 22 days)

SOUNDS UTTERED:

S: opens the book, looks at the car and the bus.

M: car,

S: looks at the brush [bʌʃ].

M: good girl, see the shoes.

S: [ʃuːs].

M: see the duck.

S: [de, da, dada, daːdah] attempts at duck.

M: can you say kaka (duck's voice).

S: [baba], tries to imitate mother.

M: duck, bike (bicycle).

S: [bajek]

M: that is my tissue

S: [tutu]

M: Is that your tight, say mine.

S: [mæjɔn]; later when mother takes her toy, she cries saying [mæjɔn] or [mæːjɔn].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_1V_1C_2$, $C_1V_1C_2V_2C_3$

IMPLICATION: Although 'bike' and 'mine' are two new words added to her repertoire, she approximates them very well, with no replacement at all. As the attempts at the word duck show, she is having troubles with the last sound; that continued until she was about 30 months old. The trouble is presumably with some words more than the sound itself, as she does utter it very well in [bajek], but replaces it with a different plosive in [baba] for 'kaka'.

SESSION (25)

CHILD'S AGE: 77 weeks (17 months, 29 days)

SOUNDS UTTERED:

S: goes to mother's bag.

M: don't take my bag

S: [ba]

M: It is my bag

S: [na? mæjɤn], points at herself.

M: yours, it is my bag

S: [bæg].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Di -Syllabic	$C_1V_1C_2V_2C_3$

IMPLICATION: It is clear that the conversation is two sided now, as the child effectively contributes spontaneously to it, not only imitates. Her ability to talk is growing. She is even approximating the new words very quickly. In the same session, she could make many attempts at the same word until it is said correctly, e.g. her attempts at the word 'bag'.

SESSION (26)

CHILD'S AGE: 79 weeks (18 months, 13 days)

SOUNDS UTTERED:

S: holds her sun glasses

M: see the dog (little dog on the frame)

S: [do:].

M: dog

S: [dodo]

M: (pretends to talk in a telephone toy) hi dad, you coming.

S: does like mother [dada]

M: (opens the book), see the dolly's nose, teddy,

S: [no:s, tede].

M: see the boy

S: [baj], then looks at the shoes [ʃu:s].

M: hat,

S: [a:t], then [dat].

M: coat,

S: [tɔ:t], then she sees the brush [baʃ].

M: see the duck,

S: [dʌt], then points at the banana [nana]

M: see the bus, bus coming

S: [ba:s]

M: apple

S: [ape:]

M: cat

S: [kæ:t], then [tæ:t],

M: can you say fish,

S: [beʃ], then wants to take my watch,

M: can you say watch,

S: [ɔ:tʃ].

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_2, C_1VC_1 VC_1C_2
Di -Syllabic	$C_1V_1C_1V_1$, $C_1V_1C_2V_1$, V_1CV_2

IMPLICATION: Acquiring new words does not indicate that the old

ones are perfectly uttered, as she's still having difficulty with words as dog, boy, duck. 'Hat' is approximated fairly well,replacing the fricative with a plosive. The lateral in 'apple' is replaced by [e], and the plosive in 'banana' is dropped. The fricative in 'fish' is replaced with a plosive. This word was not uttered correctly until her third birthday. She also dropped the labial in 'watch'.

SESSION (27)

CHILD'S AGE: 80 weeks (18 months, 20 days)

SOUNDS UTTERED:

M: Say hi (to camera-man)

S: [ʔaːj], then [haːj].

M: hi there

S: [deː] for there, She holds a paper,

M: Is that a paper,

s: [pape]

M: can you say this.

S: [des].

M: see that boy,

S: [dat] for that.

M: see the trolly, you put toys in it and push.

S: [beʃ]

M: This picture is nice

S: [næːjəs]

M: say babye to the dolly,

S: [babaːj]

M: see you,

S: [eːju]

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	CV, C_1VC_2
Di -Syllabic	$C_1V_1C_1V_2$, V_1CV_2
	$C_1V_1C_2V_2C_3$, $C_1V_1C_1V_1C_2$

IMPLICATION: 'Hi', 'nice', and 'babye' are uttered very clearly. In words starting with a fricative, she either replaces it with a plosive, e.g. 'there', 'this', 'that', or drops it, e.g. 'see you'.

SESSION (28)

CHILD'S AGE: 82 weeks (19 months, 4 days)

SOUNDS UTTERED:

M: are you playing now

S: [na:w]

M: you playing some more.

S: [estope]

M: who is sitting on the chair

S: [atʃe:]

M: the cat,

S: [tæt]

M: where is mam's eye

S: points at it [a:j],

M: and nose,

S: [nos] points,

M: mouth,

S: [emas],

M: and ear,

S: [ʔe:],

ANALYSIS:

Length of utterance	Phonotactic Structure
Mono-Syllabic	VC, CV, C_1VC_2, C_1VC_1
Di -Syllabic	$V_1C_1C_2V_2$, $V_1C_1V_2C_2$
Tri -Syllabic	$V_1C_1C_2V_2C_3V_1$

IMPLICATION: Although 'cat' was uttered correctly in session (26), she is back again to the replacement of the plosive with another. [atʃe:] and [emas] are two good attempts at 'chair' and 'mouth', respectively.

MAIN OBSERVATIONS

What's observed before in the audio tapes is more or less consistent with what is observed in the video's:

1- The child does not suddenly begin using words, leaving the babbling behind. They both overlap.

2- The child does not utter words correctly from the first time, she attempts them so many times until they are well approximated. See for example the process of the word 'shoes':

[tu:]	CV	16m. 10d.
[du:]	CV	16m. 24d.
[ʃu:]	CV	16m. 24d.
[ʃu:s]	C_1VC_2	17m.22d.

And the word 'bye':

[ah]	VC	13m. 16d.
[eh]	VC	13m. 16d.
[dah]	C_1VC_2	13m. 16d.
[tah]	C_1VC_2	13m. 16d.
[jaja]	$C_1V_1C_1V_1$	14m.
[da]	CV	14m.
[dada]	$C_1V_1C_1V_1$	14m.

	[a:j]	VC	15m. 26d.
	[jaj]	C_1VC_1	15m. 26d.
	[baba:j]	$C_1V_1C_1V_1C_2$	18m. 20d.

Apart from that, some of the words are approximated very well from the very first time, for example:

'dirty'	[diti]	$C_1V_1C_2V_1$	16m. 24d.
'now'	[naw]	C_1VC_2	19m. 4d.
'bike'	[bajek]	$C_1V_1C_2V_2C_3$	17m. 22d.

Others are being attempted so many times and yet not uttered correctly up to the last session, even up to 3 years old, e.g.:

'fish'	[beʃ]	C_1VC_2	18m. 13d.
'this'	[deh] and [des]	C_1VC_2	17m. 15d.
'ɦadi badi'	[a:ja:]	V_1CV_1	14m.
	[ja:ja:]	$C_1V_1C_1V_1$	14m.
	[dada]	$C_1V_1C_1V_1$	14m. 21d.

3- As time passes, her repertoire grows, and she develops from just imitating to talking spontaneously.

4- As to length of utterances, her structures are either one syllable or more, up to three syllables. As she approximates the adult-word, her words become of the same syllabic number as the adult's, for example:

'eye'	[ʔa:j]	CVC	17m. 1d.
'hi'	[haj]	C_1VC_2	18m. 20d.
'mine'	[mæjən]	$C_1V_1C_2V_2C_3$	17m. 22d.

5- Phonotactic structures are shown in table (8-3), and syllabic structures are shown in table (8-4):

Table (8-3)

Number of Syllables	Phonotactic Structure
Mono-Syllabic	CV, VC, C_1VC_1, C_1VC_2, VC_1C_2,
Di -Syllabic	$C_1V_1C_1V_2$, $C_1V_1C_1V_1$, $V_1C_1V_1C_2$,
	$V_1C_1V_1$, V_1CV_2, $C_1V_1C_2V_1$,
	$V_1C_1C_1V_2$, $C_1V_1C_1V_1C_2$, $C_1V_1V_2C_2$,
	$C_1V_1C_2V_2C_3$, $V_1C_1C_2V_2$, $V_1C_1V_2C_2$,
Tri -Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1C_2V_2C_3V_1$.

As to the structure C_1VC_2, we got the following utterances:

[tah]	[pæt]
[jah]	[leh]
[dah]	[des]
[bah]	[nos]
[hæw]	[ʔeh]
[ʔæw]	[bʌʃ]
[bʌt]	[ʃus]
[ʔaj]	[naʔ]
[dat]	[bæg]
[baj]	[bas]
[tɔt]	[kæt]
[haj]	

From the table we notice that stops still occupy initial positions, and fricatives have the lead in final positions. Stops also appear more occasionally in final positions as well as few palatals and labio-velars.

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Table (8-4)

	58w. (10)	6cw. (11)	61w. (12)	63w. (13)	65w. (15)	66w. (16)	68w. (18)	70w. (20)	72w. (21)	73w. (22)	75w. (23)	76w. (24)	77w. (25)	79w. (26)	80w. (27)	82w. (28)
Trisyllabic utterances	hð³						ba³	wo³ tu³								estope
Disyllabic utterances	ajah ge² deda eda aja	da² ja²	ada		anc bↄ²	tɛ² ha²	babi awo enno tede		diti dait bait babaj dↄ²		mæjↄn tu² bajek dadah			ape na²	eju næjↄs	enas atʃe
Monosyllabic utterances	dah eh ah ja jæh kah da dↄ	ta	ha	nc aj	?a de		ʒɛ aʒ jaj hoh tʃↄ ʃð	tu tↄ ba sc	bʌt ʃu du ?æw næw bah	leh do dʌt pæt but dat ?aj	?eh se nos deh des	bʌʃ	bæg na?	ↄtʃ beʃ tæt kæt bas baʃ tↄt at ʃus baj	haj	?e

Conclusion

     From the analysis demonstrated in Chapter (8), we conclude the following:

1- The two stages of babbling and first words are clearly connected with each other. The claimed period of silence between them was not observed in this study.

2- Our claim of continuity is also strengthened by the connection between the child's babbling's and first-word's articulations. First words are actually developed from babblings. Table (8-5) gives phonotactic structures of babblings and first words, and table (8-6) gives the syllabic structure.

As to the structure C_1VC_2, we noticed that, in both babbling and first words, preference is mainly given to stops in initial positions, and to fricatives in final positions.

3- Also, length of utterances, in babbling and first words, is more or less the same, starting from the one syllable up to four syllables. As the child progresses from babbling to speech her utterances become of the same syllabic number as the adult's.

4- In relation to the issues 'holophrase' and 'overextension', we still believe that children's first words are better semantically than syntactically treated. We can clearly get meanings from their words, but yet it could be misleading to propose any syntactic relations.

As to the other issue, it was observed that the child did

Table (8-5)

Phonotactic Structures of Babbling and First Words

Number of Syllables	Phononetic Structures of Babbling	Phonotectic Structures of First Words
Mono-Syllabic	CV, VC, C_1VC_1, CVC_2.	CV, VC, C_1VC_1, C_1VC_2, VC_1C_2, $C_1VC_1C_2$.
Di-Syllabic	$C_1V_1C_1V_1$, $V_1C_1V_1C_2$, $C_1V_1C_2V_2$, $C_1V_1C_2V_1$, $C_1V_1C_1V_1C_2$, V_1CV_1, $V_1C_1V_2C_2$, $C_1V_1C_1V_2$, $V_1C_1V_2C_1$, V_1CV_2, $C_1V_1C_1V_2C_2$, $C_1V_1C_2V_2C_3$, $C_1V_1V_2C_2$.	$C_1V_1C_1V_2$, $C_1V_1C_1V_1$, $V_1C_1V_1C_2$, V_1CV_1, V_1CV_2, $C_1V_1C_2V_1$, $V_1C_1C_1V_2$, $C_1V_1C_1V_1C_2$, $C_1V_1V_2C_2$, $C_1V_1C_2V_2C_3$, $V_1C_1C_2V_2$, $V_1C_1V_2C_2$, $C_1V_1C_2V_2$, $C_1V_1C_1V_2C_2$, $C_1V_1C_2V_1C_3$, CV_1V_2, $C_1V_1C_2C_3V_1$.
Tri-Syllabic	$C_1V_1C_1V_1C_1V_1$, $V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_2$, $V_1C_1V_1C_1V_1C_1$, $C_1V_1C_1V_1C_1V_1C_2$, $C_1V_1C_1V_1C_1V_2$, $V_1C_1V_2C_1V_2C_1$, $V_1C_1V_1C_2V_2$,	$C_1V_1C_1V_1C_1V_1$, $V_1C_1C_2V_2C_3V_1$, $C_1V_1C_1V_2C_2C_3V_1$, $V_1C_1V_1C_1V_1$, $V_1C_1V_2C_1V_2$ $C_1V_1V_2C_1V_2$, $C_1V_1C_2V_2C_3V_1$.
Quadri-Syllabic	$C_1V_1C_1V_1C_1V_1C_1V_1$, $V_1C_1V_1C_1V_1C_1V_1C_1$, $C_1V_1C_1V_1C_1V_1C_1V_2$, $C_1V_1C_1V_1C_1V_1C_1V_1C_2$	$C_1V_1C_1V_1C_1V_1C_1V_1$.

Table (8-6)

	Mono-syllabics	Di-syllabics	Tri-syll.
Babbling Period	...	...	...
First-word Period	...	...	...

(Handwritten phonetic transcription table; individual syllable entries are handwritten IPA-like forms.)

overextend the use of some of her words. But this did not continue for a long time. Soon she recognised the differences, and identified everything properly.

5- Finally, and looking at her Arabic repertoire, it appears that she vocalized more English than Arabic. This could be due to her regular and long stay in the nursery, mixing with English children more than Arabic. In other words, the general atmosphere was more English than Arabic. Or it could be due to the difficulty of Arabic as a language in itself. Arabic words are rather difficult in structure and content as seen in Chapter (2).

CHAPTER NINE

CONCLUSION

A study has been made on the infant, Sarah, from age 1 month up to 18 months. The main interest of the study was concerned with her phonetic and phonological development in the stages of: Crying, Babbling, and First Words. The study has been inspired by a belief in the importance of the early stages of children's language development, and as an additional attempt to test the main hypotheses concerning each stage.

As to the first stage, Crying, many studies have been carried out on children's crying, but they have been only partially comprehensive. As far as I am concerned, there is not a study that stands or represents a full coverage of the crying of infants, its causes, whether or not it is differentiated.

Chapters 3 and 4 of my work are intended to give as much coverage as possible to my subject's crying in the first six months of her life, attempting to analyze and explain it, making clear any differences in structure and content.

Following the methods of analysis used by Truby and Lind (1965), and Franco et al. (1984,1985), the child's cries, according to the contextual situations in which they were produced, were categorized as:

    1) Call Cries,

    2) Protest Cries, and

    3) Other Cries.

Vocalizations included in the above three categories, 270 vocalizations in all, were tested according to their manner of phonation, temporal patterning and melodic patterning.

Applying χ^2- test on the parameters of voicing, melodic patterning and manner of phonation, the first and second parameters were shown to be not significant p>.100, p>.200, and the third parameter shown to be significant, p<.001. Results

show that, as Truby and Lind (1965) claimed before, kinds of cries could be differentiated on the basis of their manner of phonation.

The data shows that in Call Cries, simple phonations are very much in the majority (79%), and hyperphonations and dysphonations are rather minor (5%, 16%, respectively). In Protest Cries, no kind of phonation shows up as outstanding (47%, 31%, 22%, respectively). In Other Cries, hyperhonations are clearly outstanding (63%), and the other two kinds are rather less frequent (13%, 24%, respectively).

Testing the parameter of voicing, half-voiced vocalizations prevailed, as they occupied the highest percentages in the three categories (59%, 67%, 76%, respectively), voiced ones came second in importance (35%, 25%, 21%) and unvoiced of minor importance (6%, 8%, 3%). Melodic patterning shows no differentiation at all in the three categories, as the three levels tested are more or less around the same range in all categories.

As far as duration of each manner of phonation is concerned, t tests were carried on average duration and standard deviation. In Call cries, duration between simple phonations and hyperphonations was found to be not largely significant (p <.05), and no tests were run on simple phonations and dysphonations as they have the same average of duration.

In Protest cries, duration between simple phonations and hyperphonations was found to be not significant (p <.10). But duration between simple phonations and dysphonations was found to be significantly large (p <.01).

In Other cries, duration between simple phonations and

hyperphonations was found to be not largely significant (p <.05), and between simple phonations and dysphonations is not significant (p >.10).

Other t tests were carried on duration of pauses and a avocalisation duration. It was found that duration of pauses in Protest cries is not significantly larger than duration of pauses in Call cries (p <.10). But, in Call cries, a vocalisation duration is significantly larger than that in Protest cries (p <.01), and not very significant between Other cries and Call cries.

As to the Babbling stage, Sarah's babblings were tested against the following issues:

- Variety of sounds produced,

- Relation between babbling and speech,

- Are babblings meaningless and playful?, and

- Function.

Data were analyzed in regard of the following measures:

- Vocalization length in syllables,

- Phonotactic structure, and

- Consonant manner and place.

Analysis of data showed that:

1) Babblings are meaningful in that, though each consonant does not separately indicate a meaning, the babblings as a whole indicate the general condition of the child.

2) Babblings are not entirely playful, as they are also uttered in discomfort conditions.

3) Babblings vary widely, but not as widely as has been claimed by Jakobson and others.

4) Babblings are either single or repetitive from the start, they do not develop from one to the other.

5) Babbling works very actively in the child's language development; late babblings develop into first, meaningless, imitated words, then the latter acquire meaning and develop into first words.

Arriving at first words, the child's productions were tested against the following issues:

- Appearance of the first word,

- Holophrases, and

- Overextension.

Using the same measures of analysis as we did in the babbling stage, we concluded the following:

1) The child does not suddenly begin using words, leaving the babbling behind; they both overlap.

2) The child does not utter words correctly from the first time. she attempts them so many times until they are well approximated.

3) As time passes, her repertoire grows, and she develops from just imitating to talking spontaneously.

4) Phonotactic Structures are either one syllable or more from the beginning. As she approximates the adult-word, her words become of the same syllabic number as the adult's.

APPENDIX

SONA-GRAM SAMPLES

The following spectrograms are added to give more examples of the kinds of vocalizations uttered by the child. Simple phonated vocalizations appear on the spectrogram as a smooth, symmetric pattern labelled as (A-B). Dysphonations appear as random distribution and vagueness of pattern labelled as (D-E). Hyperphonations are exceptionally of high pitch (1000-2000 cps). They sometimes appear as a shift from simple phonations, and they could have concurrent dysphonations, labelled as (C-D).
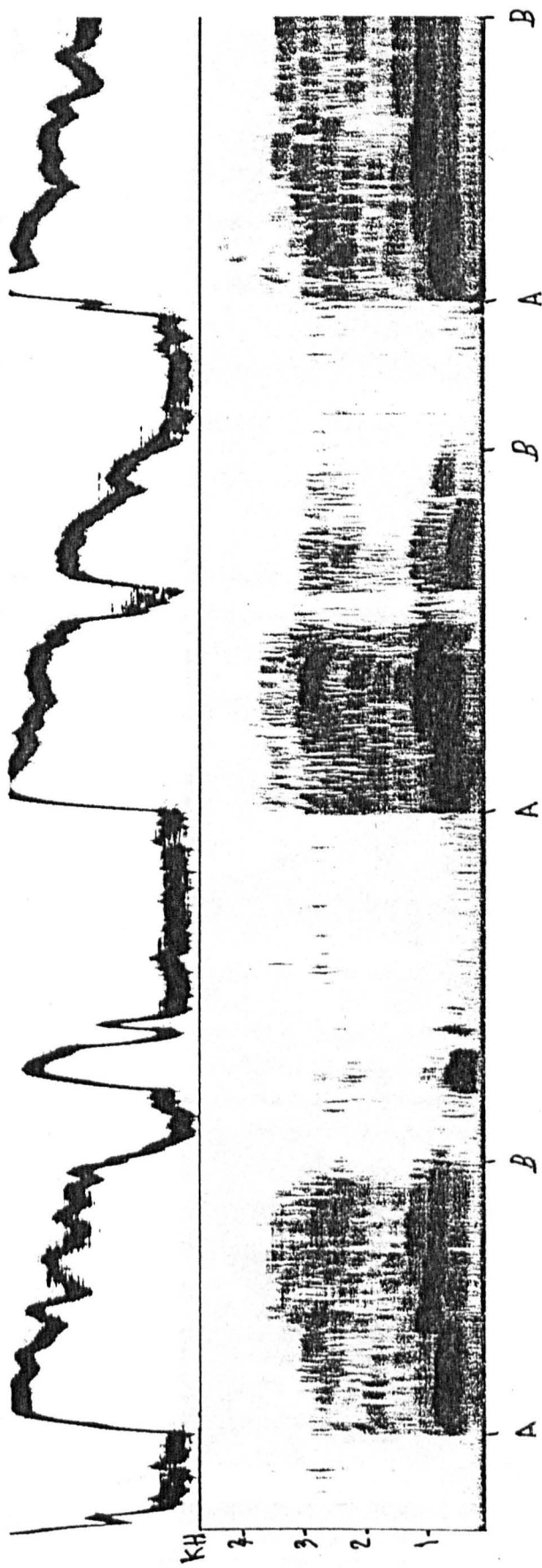
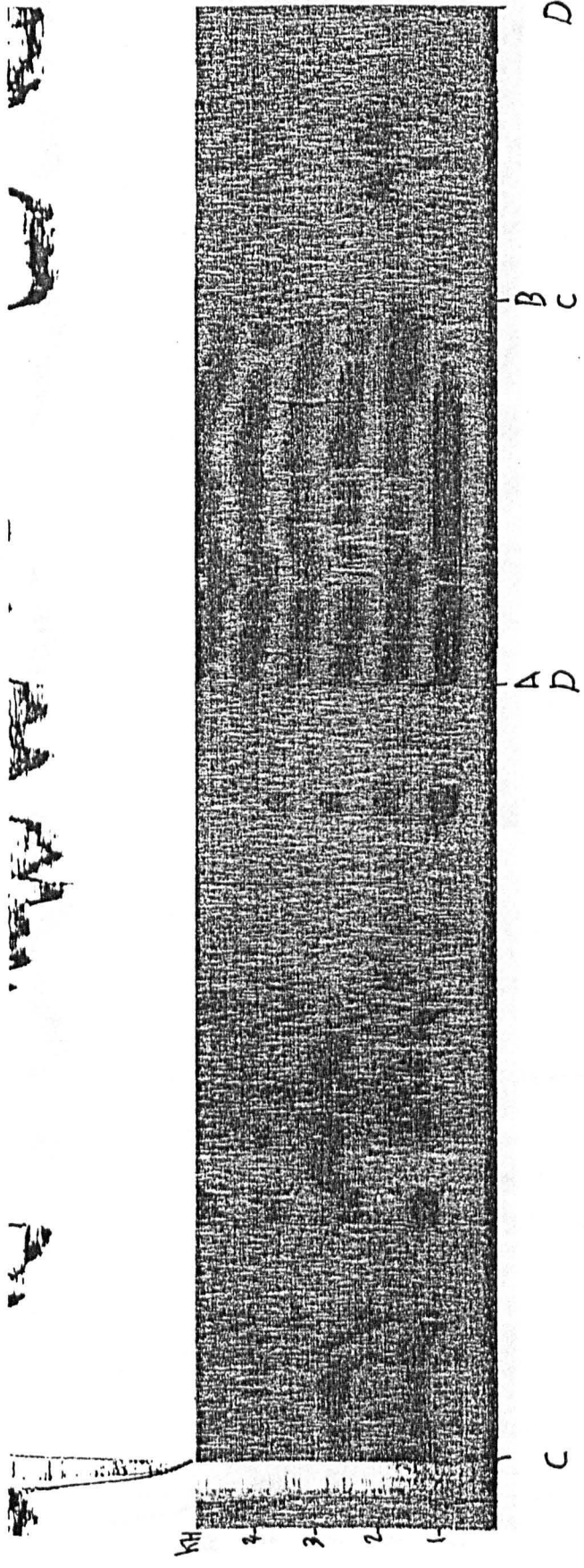(A-B) Simple phonation
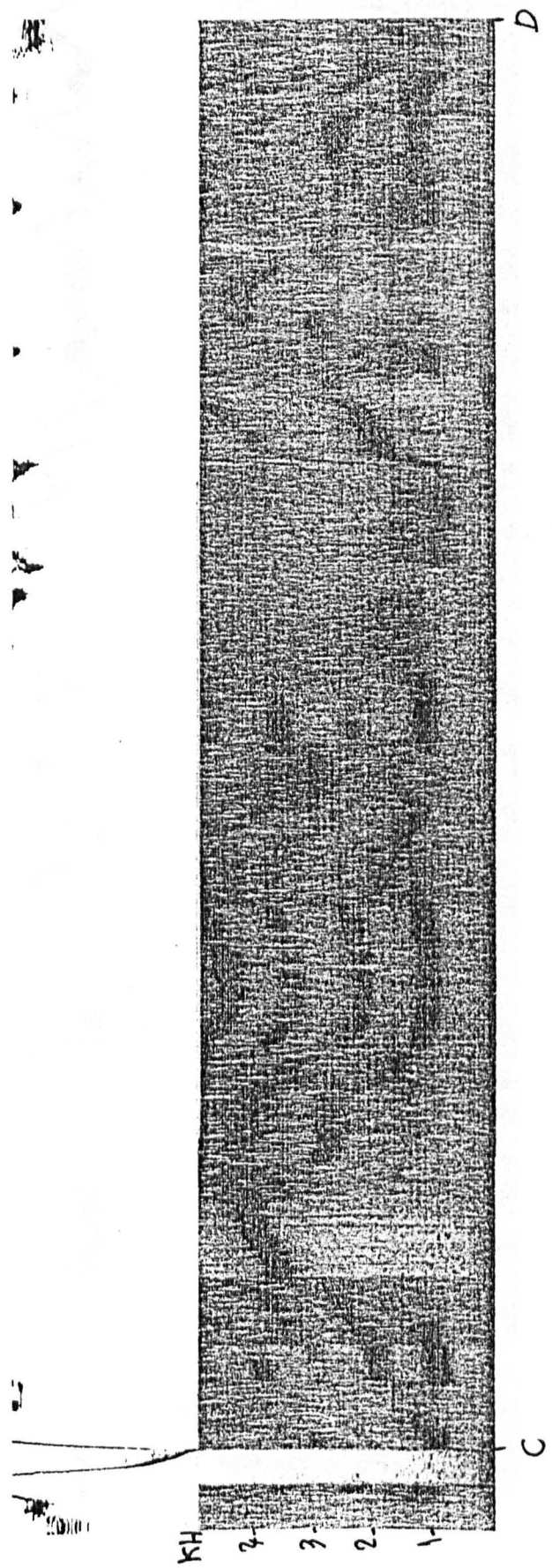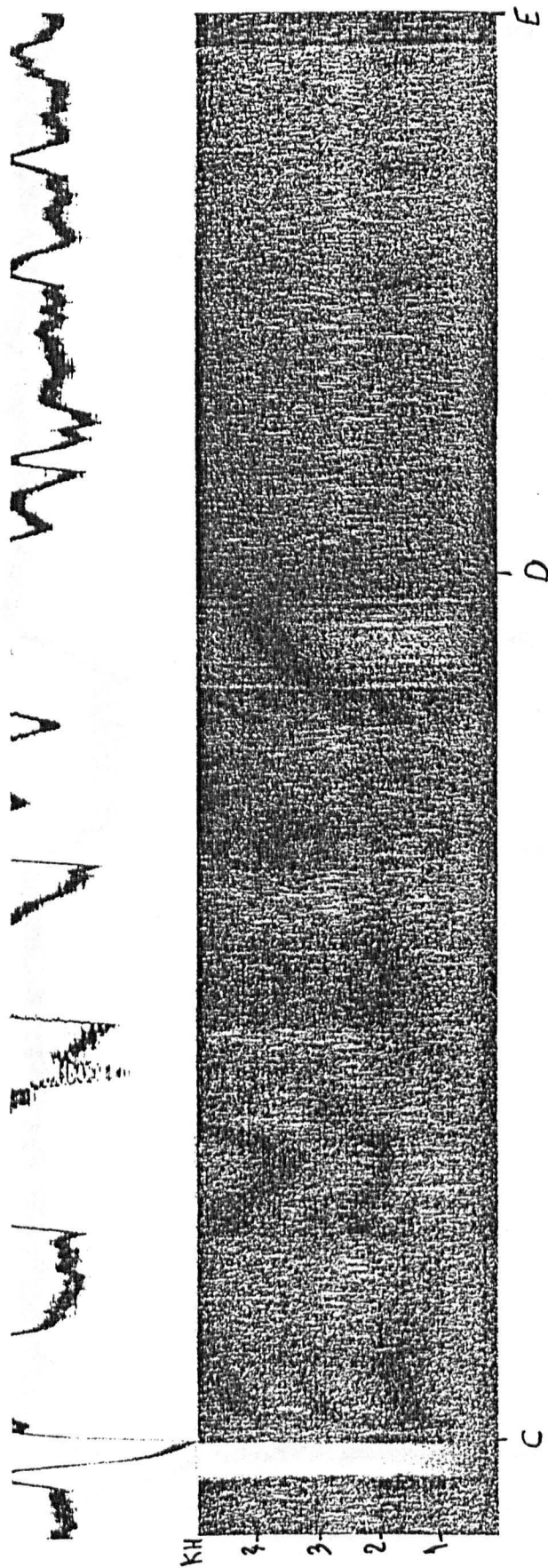
(c-D) Hyperphonation

(C-D) Hyperphonation
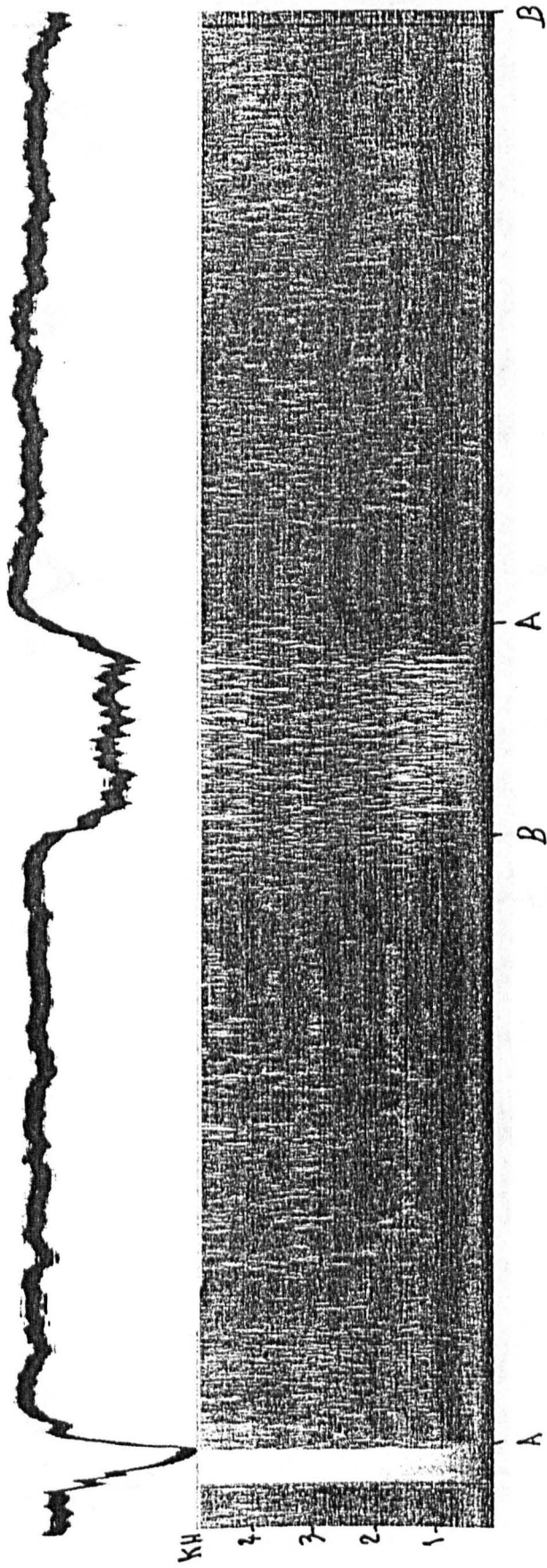
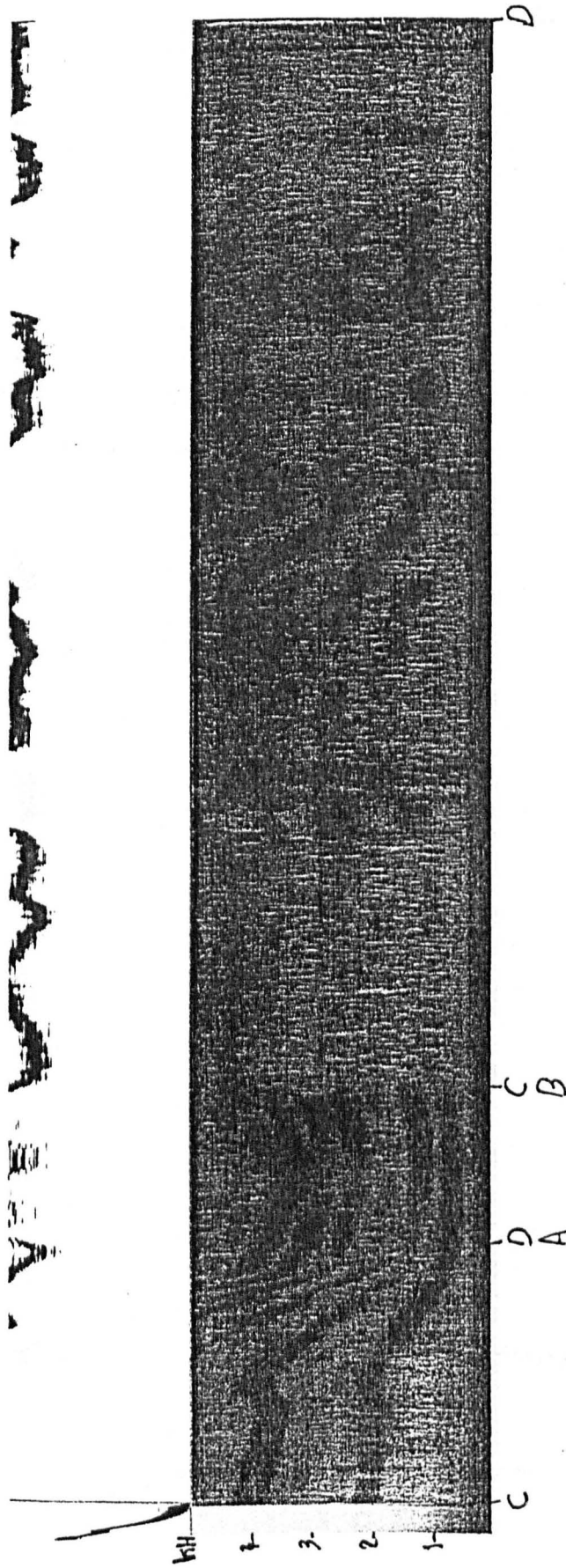(D-E) Dysphonation
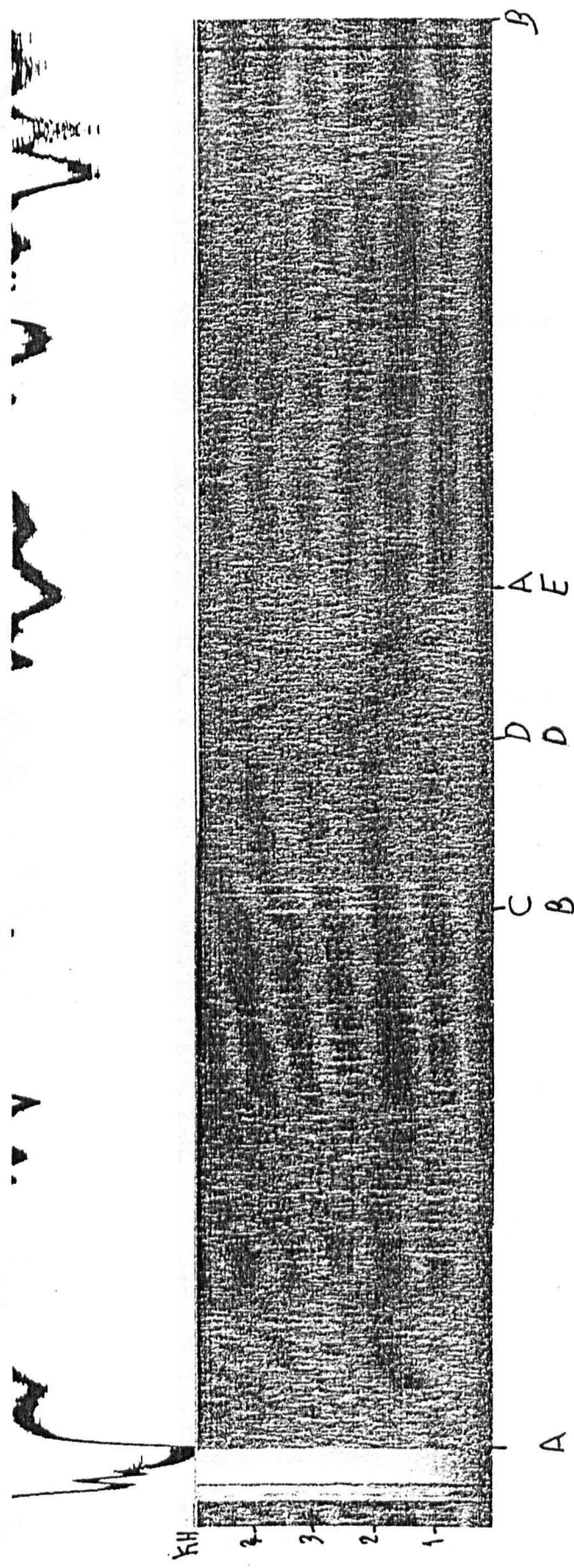
(A-B) Simple phonation

(A-B) Simple phonation
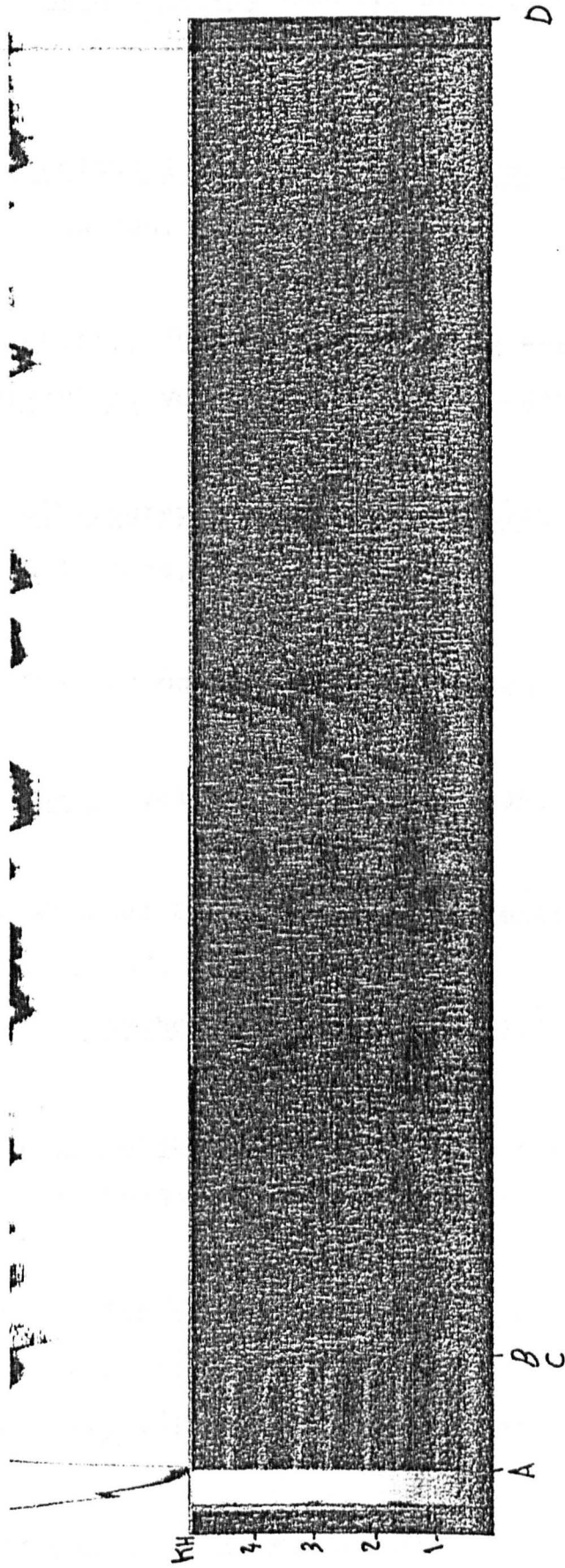
(C-D) Hyperphonation

(D-E) Dysphonation

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(A-B) Simple phonation

(c-D) Hyperphonation

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(A-B) Simple phonation

(C-D) Hyperphonation

(A-B) Simple phonation

(C-D) Hyperphonation

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BIBLIOGRAPHY

-Aitchison,J., <u>The Articulate Mammal.</u> Hutchinson, London, 1983, 2nd Edition.

-Al-Ani,S.H., <u>Readings in Arabic Linguistics.</u> Indiana University, Bloomington, Indiana, 1978.

-Aldrich,C.A., et.al., "The Crying of Newly Born Babies". In: <u>Journal of Pediatrics,</u> Vol.28. 1946, pp.665-670.

-Bakalla,M.H., <u>Bibliography of Arabic Linguistics.</u> Verlag Dokumentation Publishers, Munchen,1976.

-Bateman,W.G., "Papers on Language Development. The First Word". In: <u>Pedagogical Seminary,</u> Vol.24,1917, pp.391-398.

-Bean,C.H., "An Unusual Opportunity to Investigate the Psychology of Language". In: <u>Journal of Genetic Psychology,</u> Vols.40-41,1932, pp.181-201.

-Beeston,A.F.L., <u>The Arabic Language Today.</u> Hutchinson University Library, London,1970.

-Blenton,M.G. "Behavior of the Human Infant During the First Thirty Days of Life". In: <u>Psychological Review,</u> Vol.24,1917, pp.456-483.

-Bloom,L.M., <u>One Word at a Time.</u> The Hague: Mouton,1973.

-Blount,B.G., Acquisition of language by Luo Children. Unpublished doctoral dissertation, University of California, Berkley, 1969.

-Bowerman, M., "The Acquisition of Word Meaning: An Investigation into some current Conflicts", In: Waterson, N., and Snow, F.(eds.), The Development of Communication. John Wiley and Sons Ltd., Chichester, 1978.

Braine, M.D.S., "The Acquisition of Language in Infant and Child", In: Carroll Reed (Ed.), The Learning of Language, New York: Appleton, 1971.

-Bridges,K.M.B., "A Genetic Theory of The Emotions". In: Journal of Genetic Psychology, Vol.37,1930, pp.514-527.

-Buhler,Ch., The First Year of Life, New Nork: Day,1930.

-Carroll,J.B., "Language Development in Children". In: Saporta,S.(ed.), Psycholinguistics, A Book of Readings. Holt, Rinehart and Winston, New York, 1961.

-Champneys,F.H., "Notes on an Infant". In: Mind,Vol.6,1881, pp.104-107.

-Clark,E., "Strategies and The Mapping Problem in First Language Acquisition". In: Macnamara,J.(ed.), Language, Learning and Thought. Academic Press, London, 1977.

-Clark,E., <u>The Ontogenesis of Meaning.</u> Akademisch, Verlagsgesellschaft Athenaion, Wiesbaden,1979.

-Cruttenden,A., <u>Language in Infancy and Childhood.</u> Manchester University Press, Manchester 1979.

-Cruttenden,A., "A Phonetic Study of Babbling". In: <u>British Journal of Disorders of Communication,</u> Vol.5, No.2,1970, pp.110-117.

-Crystal,D., "Non-Segmental Phonology in Language Acquisition". In: <u>Lingua,</u> Vol.32,1973, pp.1-45.

-Crystal, D., <u>Child Language, Learning and Linguistics.</u> Edward Arnold Publishers Ltd.,1976.

-Darwin,Ch., "A Biographical Sketch of an Infant". In: Mind, Vol.2, No.7, 1877, pp.285-294.

-Dearborn,G.V.N., <u>Motor-Sensory Development: Observations on the First Three Years of Childhood.</u> Warwick and York, Baltimore,1910.

-Delack,J.B., "Aspects of Infant Speech Development in the First Year of Life". In: <u>The Canadian Journal of Linguistics,</u> Vol.21,No.1, Spring 1976, pp.17-37.

-De Villiers,J.G.,and De Villiers, P.A., <u>Language Acquisition.</u>
Harvard University Press, Cambridge, 1978.

-D'Odorico,L. et.al, "Temporal Characteristics in Infant Cry
and Non-Cry Vocalizations". In:
<u>Language and Speech,</u> Vol.28, Part I,1985, pp.29-46.

-Dore,J., "Holophrases, Speech Acts and Language Universals".
In:
<u>Journal of Child Language,</u> Vol.2, 1974, pp.21-40.

-Elbers,L., <u>Cognitive Principles of Babbling: A Case Study.</u>
Psychological Laboratory Report, No.21, University of
Utrecht, The Netherlands, 1980.

-Elbers,L., "Operating Principles in Repetitive Babbling: A
Cognitive Continuity Approach", In:
<u>Cognition,</u> Vol.12,1982, pp.45-63.

-Elbers,L., et.al, "Play Pen Monologues: The Interplay of
Words and Babbles in the First Words Period". In:
<u>Journal of Child Language,</u> Vol.12,1985, pp.551-585.

-Engel,W.V.R., "The Development from Sound to Phoneme in Child
Language". In:
Ferguson,Ch.A., and Slobin, D.I.(eds.), <u>Studies of Child</u>
<u>Language Development.</u> Holt, Rinehart and Winston, Inc., London,
1973.

-Fenton,J.C. _A Practical Psychology of Babyhood._
Houghton Mifflin, Boston, New York, 1925.

-Ferguson, Ch.,A., "Fricatives in Child Language Acquisition".
In: Papers and Reports on Child Language Development, Vol.6,
1973,pp.61-86.

-Ferguson,Ch.A., and Macken, M.A., "The Role of Play in
Phonological Development". In:
Nelson,K.E.(ed.), _Children's Language,_ Vol,4, Lawrence Erlbaum
Associates, Publishers, London, 1983.

-Ferguson,Ch.A.,(ed.), _Contributions to Arabic Linguistics._
Harvard University Press, Cambridge, 1964.

-Ferguson,Ch.A., and Farwell,C., "Words and Sounds in Early
Language Acquisition". In:
Language, Vol.51,1975, pp.419-439.

-Foulke,K., and Stinchfield,S.M., "The Speech Development of
Four Infants under Two Years of Age". In:
Journal of Genetic Psychology, Vol.36,1929, pp.140-171.

-Franco,F., "Differences in Manner of Phonation of Infant
Cries: Relationship to Communicative Context". In:
Language and Speech, Vol.27,Part I,1984, pp.59-78.

-Fry,D.B., "The Development of the Phonological system in the
Normal and the Deaf Child". In:
Smith,F., And Miller,G.A.(eds.),The Genesis of Language.
M.I.T.Press, London,1966.

-Grant,J.R., "A Child's Vocabulary and Its Growth". In:
Pedagogical Seminary, Vol.22,1915, pp.183-203.

-Greenfield,P.,and Smith,J.,The Structure of Communication in
Early Language Development. Academic Press, London,1976.

-Haywood,J.A.,and Nahmad,H.M., A New Arabic Grammar of the
Written Language. Lund Humphries, London,1984.

-Kaczmarek,L., "A General View of the Formation of Child
Language". In:
Bar-Adon,A.,and Leopold,W.F.(Eds.), Child Language, A Book of
Readings. Prentice-Hall, Inc., London,1971.

-Jakobson,R., Child Language, Aphasia and Phonological
Universals. Mouton, The Hague, Paris,1968.

-Jakobson,R., Studies on Child Language and Aphasia, Mouton,
The Hague, Paris,1971.

-Jespersen,O., Language, Its Nature, Development, and Origin.
George Allen and Unwin Ltd., London, 1928.

-Labov,W., and Labov,T., "The Phonetics of Cat and Mama". In:
Language, Vol.54,1978, pp.816-852.

-Lenneberg,E., <u>Biological Foundations of Language.</u> John Wiley, London,1967.

-Leopold,W.F., <u>Speech Development of a Bilingual Child,</u> Vol.2, "Sound-Learning in the First Two Years". A M S Press,1947.

-Lewis,M.M., <u>Language, Thought and Personality in Infancy and Childhood.</u> George G.Harrap and Co.Ltd., London,1963.

-Lewis,M.M., <u>Infant Speech.</u> Kegan Paul, Trench, Trubner and Co.Ltd., London,1936.

-Lewis,M.M., <u>How Children Learn to Talk.</u> George G.Harrap and Co.Ltd., London,1957.

-Lindfors,J.W., <u>Children's Language and Learning.</u> Prentice Hall,Inc., New Jersey,1980.

-Locke,J.L. <u>Phonological Acquisition and Change.</u> Academic Press, London.1983.

-Lynip,A.W., "The Use of Magnetic Devices in the Collection and Analyses of the Pre-verbal Utterances of an Infant". In: <u>Genetic Psychology Monographs,</u> Vol.44, 1951, pp.221-262.

-Major,D.R., <u>First Steps in Mental Growth.</u> The Macmillan Co., New York, 1906.

-Menyuk,P., <u>The Acquisition and Development of Language.</u> Prentice Hall, Inc., Englewood Cliffs, New Jersey,1971.

-Menyuk,P., "Early Development of Receptive Language: From Babblings to Words". In:
Smith,F., and Miller,G.(eds.), <u>The Genesis</u>... op.cit.

-McCarthy,D., "Language Development in Children". In:
Leonard Carmichael (ed.), <u>Manual of Child Psychology.</u> Chapman and Hall Limited, London,1954, 2nd edition.

-McCarthy,D., "The Vocalizations of Infants". In:
<u>Psychological Bulletin,</u> Vol.26, No.11,November,1929 pp.625-651.

-McCarthy,D., <u>The Language Development of the Pre-school Child.</u> University of Minnesota Press., Minneapolis,1930.

-McNeill,D., <u>The Acquisition of Language, The Study of Developmental Psycholinguistics.</u> Harper and Row, Publishers, London,1970.

-Mowrer,O.H., <u>Learning Theory and Symbolic Processes.</u> John Wiley, London,1960.

-Murai,J., "The Sounds of Infants, Their Phonemicization and Symbolization". In:
<u>Studia Phonologica,</u> Vol.3, 1963, pp.17-32.

-Murai,J., "Speech Development of Infants, Analysis of Speech Sounds by Sona-Graph". In:
<u>Psychologica,</u> Vol.3, 1960, pp.27-35.

-Nakazima,S., "Phonemicization and Symbolization in Language Development". In:
Lenneberg,E.H., and Lenneberg,E.(eds.), <u>Foundations of Language Development.</u> Unesco Press, Paris,Vol.1, 1975, pp.181-187.

-Nakazima,S., "A Comparative Study of the Speech Developments of Japanese and American English in Childhood (1), A Comparison of the Developments of Voices at the Prelinguistic Period". In:
<u>Studia Phonologica,</u> Vol.2, 1962, pp.27-46.

-Nakazima,S., "A Comparative Study of the Speech Developments of Japanese and American English in Childhood (2), The Acquisition of Speech". In:
<u>Studia Phonologica,</u> Vol.4, 1966, pp.38-55.

-Nakazima,S., "A Comparative Study of the Speech Developments of Japanese and American English in Childhood (3) -The Re-organization Process of Babbling Articulation Mechanisms-". In:
<u>Studia Phonologica,</u> Vol.5, 1970, pp.20-35.

-Nelson, K., "Concept, Word, and Sentence Interrelations in Acquisition and Development". In: <u>Psychological Review,</u> Vol.81, No.4, 1974, pp.267-285.

-Oller,D.K., et.al, "Infant Babbling and Speech".
In:
<u>Journal of Child Language,</u> Vol.3, 1976, pp.1-11.

-Oller,D.K., "The Emergence of Sounds of Speech in Infancy".
In:
Ferguson,Ch.A.,et.al, (eds.), <u>Child Phonology,</u> Vol. I,
"Production", Academic Press, London,1980.

-Oller,D.K., et.al, "Similarity of Babbling in Spanish-and
English-learning Babies". In:
<u>Journal of Child Language,</u> Vol.9, 1982, pp.565-577.

-Olmsted, D.L., <u>Out of the Mouth of Babes:</u> Earliest Stages in
Language Learning. The Hague, Mouton, 1971.

-Omar,M., <u>The Acquisition of Egyptian Arabic as A Native</u>
<u>Language.</u> Mouton, The Hague, Paris,1973.

-Osgood,Ch.E., <u>Method and Theory in Experimental Psychology.</u>
Oxford University Press, New York,1953.

-Rees,N.S., "The Role of Babbling in the Child's Acquisition of
Language". In:
<u>British Journal of Disorders of Communication,</u> Vol.7,No.1,
1972, pp.17-23.

-Ringel,R.L.,and Kluppel,D.D., "Neonatal Crying: A Normative
Study". In:
<u>Folio Phoniatrica,</u> Vol.16, 1964. pp.1-9.

-Riper,C.V., <u>Teaching Your Child to Talk.</u> Harper and Brothers
Publishers, New York,1950.

-Ruke-Dravina, V., "The Process of Acquisition of apical /r/ and uvular /R/ in the Speech of Children". In Linguistics, Vol.17. 1965, pp.58-68.

-Stark,R., "Features of Infants' Sounds: the Emergence of Cooing". In:
Journal of Child Language, Vol.5, 1978, pp.379-390.

-Stark,R., Rose,S.N., and Mclagen,M., "Features of Infant Sounds: The First Eight Weeks of Life". In:
Journal of Child Language,Vol.2, 1975, pp.205-221.

-Stark,R., "Stages of Speech Development in the First Year of Life". In:
Ferguson,Ch.A.,et.al, Child Phonology... op.cit.

-Stern,W., "The Chief Periods of Further Speech Development". In:
Bar-Adon,A.,and Leopold,W.F. (eds.) Child Language... op.cit.

-Stern,W., Psychology of Early Childhood. George Allen and Unwin Ltd., London,1926.

-Tracy,F., "First Six Months". In:
Bar-Adon,A.,and Leopold,W.F.(eds.), Child Language... op.cit.

-Tracy,F., The Psychology of Childhood. D.C.Heath and Co., Publishers, Boston,U.S.A.,1903.

-Tracy,F., "The Language of Childhood". In:
American Journal of Psychology, Vol.6,1893, pp.107-138.

-Truby,H.,and Lind,J., "Cry Sounds of the New-born Infant". In:
Acta Paediatrica Scandinava, Vol.Suppl.163,1965, pp.9-59.

-Tuaycharoen, P., "An Account of Speech Development of a Thai
Child: From Babbling to Speech". In: Thonghum, T., et al.
(Eds.), Studies in Thai and Mon-Khmer Phonetics and Phonology,
Chulalonghorn University Press, Bangkok, 1979.

-Velten,H.V., "The Growth of Phonemic and Lexical Patterns in
Infant Language". In:
Language, Vol.19, 1943, pp.281-292.

-Vihman,M.M., et.al, "From Babbling to Speech: A
Re-assessment of the Continuity". In:
Language, Vol.61,No.2, 1985, pp.397-445.

-Wickens,G.M., Arabic Grammar, A First Workbook. Cambridge
University Press, Cambridge, 1980.

-Winitz,H., "The Development of Speech and Language in the
Normal Child". In:
Rieber,R., and Brubaker,R.(eds.), Speech Pathology, Amsterdam,
North-Holand,1966.

-Winitz,H., and Irwin,O., "Syllabic and Phonetic Structure of Infants' Early Words". In:
Journal of Speech and Hearing Research, Vol.1, No.3, 1953, pp.250-255.

-Wolff,P.H., "The Natural History of Crying and Other Vocalizations in Early Infancy". In:
Foss,B.A.(ed.), Determinants of Infant Behaviour, Vol.4,Methuen, London, 1969.