Ain shams University
Faculty of Medicine
E.N.T Department
Unit of Phoniatrics

Phonological Development in Normal Egyptian Children

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By

Marwa Mohammed Mohammed Elmahallawi

Resident of Phoniatrics- Manshyet El Bakry General Hospital

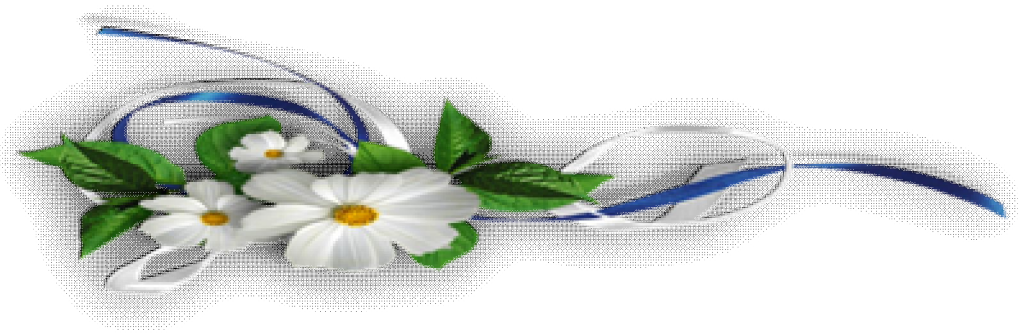Under supervision of

Prof. Dr. Mona Hegazi

Professor of Phoniatrics
Faculty of Medicine,
Ain Shams University

Dr.Dina Ahmed Elsayed Elrefaie

Lecturer of Phoniatrics
Faculty of Medicine,
Ain Shams University

Faculty of Medicine,
Ain Shams University
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Lists of Abbreviations

Abbreviation	Meaning
Acq	Acquired.
C	Consonant.
CEA	Colloquial Egyptian Arabic.
CV	Consonant-vowel.
EA	Egyptian Arabic.
ESA	Educated Spoken Arabic
FA	Fully acquired.
JA	Jordanian Arabic.
KA	Kuwaiti Arabic.
MSA	Modern standard Arabic.
V	Vowel.

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Introduction

The study of phonological development significantly helps phoniatricians and speech and language therapists to detect and treat children with communicative disorders. Normative data is required to make relevant assessment tools for speech and language and to help clinicians tailor intervention plans for the child's needs. The process of early identification and intervention of children with phonological disorders is informed by the findings of developmental studies.

The development of meaningful speech is a complex process. In terms of phonological development, children must learn the movements needed to produce words to match the adult targets **(Garnham et al., 1981).** They must also be aware of the phonological forms of words in their native language. This complex process has two fundamental components:

First:

A biologically based component associated with the development of the speech–motor skills required for the production of adult-like words.

Second:

A cognitive-linguistic component associated with learning the phonological system of the language.

These two components are interactive and are believed to co-occur simultaneously to shape the child's phonological

system. Long before the field of child language acquisition began to bloom, there was considerable interest in determining the age at which most children are able to accurately produce the sounds of their language. There was a need to establish developmental norms, which in turn resulted in establishing research interest in the field of phonological development. Such a venture has inherent countless methodological and theoretical debates **(Vihman, 1993, 2014).** The concerns are mainly related to methodological issues, especially with regards to the criteria used to identify ages of acquisition. Cross-linguistic studies contribute to our understanding of language universals by comparing developmental patterns across different languages, in order to identify typical developmental patterns of children.

To date phonetic development of Egyptian language has only been reported by descriptive data obtained during development of Standard Arabic Language Test **(El-Rifaie, 1994).** However, no previous efforts have targeted phonetic development on a large scale of children, covering a large number of different age groups, and hence the need of this study.

Aim of the work

The aim of this work is to estimate the ages of phonological acquisition during phonological development in normal Arabic speaking Cairene Egyptian children in order to be used as a guide for the correct timing of intervention for phonological therapy.

Theories of phonological development

Ingram (1989) acknowledged various attempts in the field of linguistics to construct a phonological theory that covers both normal and disordered phonological acquisition. He assumed that the most likely sources of elucidation of normal acquisition might be Universalist theory **(Jacobson, 1968)**, natural phonology theory **(Stampe, 1969)** or the Stanford University cognitive theory **(Macken & Ferguson, 1983)**. Of the three, Stampe's is the only one directly tied to a phonological theory.

1. The Behavioral Theory:

The behavioural theory applied a psychological theory of learning to explain how children came to distinguish and produce the sound system of the ambient language. Adherents to the behaviourist model, among them is **Mowrer (1952) and Olmstead (1972)** identified the role of reinforcement as gradually "shaping" the child's babbling to meaningful adult forms through classical conditioning. An important aspect of the model was the emphasis placed upon the continuity between babbling and early speech. The behaviourists assumed that the baby came to associate the vocalizations of the mother usually with primary reinforcements such as food and nurture, with the adult's vocalizations assuming secondary reinforcement status. Finally, the infant's vocalizations would become secondary reinforcers (providing self-reinforcement) due to their similarity to the adult model. From this point, the caregiver could refine the sound repertoire of the infant through

selective reinforcement. The behaviourist framework, then, did not presuppose, or indeed show any interest in, an innate order of speech sound acquisition. The sounds acquired depended on the reinforcement obtained from the linguistic environment.

2. The Structural Theory:

The structural theory **(Jakobson, 1941 and 1968)**, which stemmed from structural linguistic theory proposed discontinuity between babbling and speech. In addition, the structural postulated an innate, universal order of acquisition, with distinctive features emerging hierarchically and predictably. Jakobson regarded babbling as a random activity virtually unrelated to the development of the sound system. Research evidence of regularities in pre linguistic vocal patterns **(Macken & Ferguson, 1983; Oiler et al., 1976)** has weakened this position, however. Many researches has also refused Jakobson's hypothesis of a sequence of phonemic oppositions as the basis for the very earliest stages of phonological development.

Kiparsky and Menn (1977) demonstrated that the child's word-count is too small to provide objective evidence of the distinctive features "unfolding'' in the way proposed by Jakobson. Indeed, the developmental order of phonemic oppositions has proved very difficult to ascertain, since analysis has to take into account the adult targets attempted as well as the child's phonetic repertoire. To complicate matters, children seem to selectively avoid saying words containing certain consonants that are difficult for them to

produce **(Ferguson & Farwell, 1975; Schwartz & Leonard, 1982).** Studies of evidence of lexical avoidance lent weight to the theory that early on, in the first-50-words stage, children target whole words **(Ingram, 1989).** The phonetic variability readily observed in children in the 9 to 18 months age range may also provide evidence against a universal order of phoneme acquisition. Irrespective of such shortcomings, Jakobson's views exerted a tremendous and lasting influence upon linguist thought. **Ingram (1989)** for one, counted the structural theory as one of the most accepted for a theory of normal phonological acquisition.

3. The Biological Theory:

Like **Locke & Jakobson (1983)** emphasized biological constraints rather than linguistic ones. Rejecting Jacobson's idea of discontinuity between babbling and speech, Locke postulated relatively rigid maturational control over the capabilities of the speech production mechanism. For Locke, phonology began before 12 months of age with the pragmatic stage when certain babbled utterances gained communicative intent.

At the same time, the phonetic repertoire was essentially universal, constrained by the anatomical characteristics of the vocal tract. During the cognitive stage that followed, the biological constraints persisted while the child learned to store and retrieve relatively stable forms of phonemes learned from adult language models. At 18 months, in the "systemic stage", biologically determined babbling production patterns gave way to more adult-like

speech. These speech attempts reflected phonologically the target language. Learning accounted for the acquisition of patterns found only in adult speech and loss of patterns not contained in it.

4. The Natural Phonology Model:

Meanwhile **(Stampe, 1969)** had proposed his natural phonology model of phonological acquisition. **Stampe (1969, 1973 and 1979)**, expounding Natural Phonology, posited that children come innately equipped with a universal repertoire of phonological processes. These processes were "mental operations" that change or delete phonological units, reflecting the natural limitations and capacities of speech production and perception. In Stampe's view, natural processes amounted to articulatory restrictions, which came into play like reflexes. The effect of these "reflexes' was one of preventing accurate production of sound differences. This occurred despite the sounds' being perceived correctly auditorily, and stored as "correct" adult phonemic contrasts in the linguistic mechanism in the brain. The processes operated to constrain and restrict the speech mechanism per se. Stampe thought that these universal, innate simplifications of speech output involved children's cognitive, perceptual and production domains. In essence, he believed that the processes simplified speaking in three possible ways:

1. Given a potential phonological contrast, a process favoured the member of the opposition that was the least complex to produce.

2. It might favour the member of the opposition that was least complex to perceive.

3. It might favour the member of the opposition that was the least complex to produce and perceive. For instance, given the choice of saying /d/ or /a/, the assumption was that /d/ was easier, because, in normal development, it was acquired earlier. Hence we find [dis] for (this). Stampe postulated that, for normal speech acquisition, children had to suppress these natural phonological processes to achieve full productive control of the phonemes of the ambient language. He also believed that from the time they began using speech meaningfully, children possessed a fully developed, adult-like, phonological perceptual system. Thus, while they exhibited natural processes, they already had an underlying representation (mental image or internal knowledge of the lexical items) of the appropriate adult target form. In his theoretical model of phonological development, Stampe relied heavily upon a deterministic explanation of phonological change. He maintained that children used processes for the phonological act of simplifying pronunciation. The progression to adult-like productions (for instance, the use of consonant clusters), represented mastery of increased constraints (upon output phonology). This development occurred through the suppression of natural processes and consequent revision of the universal system.