

PhD Thesis Summary: Developmental Studies of Dysphonology in Children

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INTRODUCTION

The current investigation focused on dysphonology (delayed or deviant phonological development) in children with language disorders, i.e. children who do not develop language normally. In this thesis, only children with specific language disorders, were considered, i.e. children with no other gross handicaps. The thesis had two main objectives. The first was to describe subgroups of dysphonology in children with language disorders. The description was based primarily on different phonological characteristics of the children's productions. The second purpose, related to the first, was to study the development of children with different types of dysphonology and to find out whether the children follow similar lines of development. One normal subject was included in the study, as a preliminary basis of comparison for phonological patterns in language disordered children and in a young child with normal language development. To achieve these goals, it was necessary to develop a method for describing severe dysphonology.

SUMMARY

The thesis includes two different studies, focusing on

production. The first, the exploratory study, was a survey of dysphonology. Thirty-one subjects were included, from four different regions in Sweden: 17 boys and 14 girls, ranging in age from 4;0 to 7;11. The second, or the main study, was a longitudinal study of 10 subjects (5 girls and 5 boys) selected from the exploratory study. These children were chosen from a single dialect region: South West Skåne (Scania). The 10 subjects were studied over a period of from 1 to 4 1/2 years. Longitudinal data from one young normal subject (age 1;8 to 2;5) was included in the main study for reference purposes. The material for the language disordered children in both studies was elicited by means of a picture naming test, balanced with respect to Swedish phonemic, phonotactic and prosodic characteristics. It also included a number of children's tongue-twisters. In the main study, some supplementary testing was carried out, including a sentence-eliciting test, auditory phoneme and accent discrimination and, finally a test of articulatory praxis. All testing sessions were tape recorded, transcribed during the sessions and later retranscribed. The taped material from the normal subject consisted of conversational speech.

The material of the exploratory study was subjected to a broad phonological analysis, mainly in terms of simplification processes, concerning syllables, vowels and consonants. Dysprosody, homonymy, segment variability, relative degree of unintelligibility and resistance to therapy, were also noted.

The major result of the exploratory study was the identification of two main types of dysphonology. The first and most severe group is referred to as the syntagmatic group. It is characterized by strong syntagmatic restrictions in combination with paradigmatic restrictions. Syllable, vowel and consonant processes are all found in this group, but in particular the syllable processes, such as deletions of final consonants and unstressed syllables, conspire to restrict the phonotactic structure and thus the phonological diversity of

possible words. The second group, regarded as moderate, is referred to as the paradigmatic group. Here paradigmatic restrictions predominate, i.e. on the consonant phonemic system.

In order to describe the changing phonologies of the children with severe dysphonology in particular, it was necessary to revise the descriptive framework. The new framework was divided into two parts, an autonomous and a process description.

In the autonomous description, the child's words are analyzed independently of the adult target, and it is thus possible to include unintelligible utterances (frequent in severely dysphonological children) in this part of the description. It is divided into three levels: word, syllable and segmental. At the word level, different kinds of syntagmatic restrictions are stated, and stress and accent patterns are described. Phonotactic and prosodic characteristics of words are summarized in a number of typical word patterns. At the syllable level, syllable types and restrictions within them are noted. At the segment level, vowel and consonant phonemes are identified but the appropriateness of defining phonemic contrasts in the earliest stages of development and in severely dysphonological children is questioned. Vowel length contrast and occurrence of diphthongs are noted.

In the process description, the child's productions are related to the adult target words in terms of (simplification) processes of two main types: syntagmatic and paradigmatic. Syntagmatic processes change the phonotactic structure of the target words. Child productions in which syntagmatic processes have applied are usually shorter and less complex than their target equivalents. Extraction processes are introduced as a complement to deletions, to describe child productions where only a small fraction of the target word is left. Other typical syntagmatic processes are, for example, reduplication, additions of different kinds and assimilation. Paradigmatic

processes are context-free processes and apply to classes of segments. Two main kinds of paradigmatic processes are considered: Vowel and consonant substitutions.

The phonological development of the language disordered children in the main study and the normal subject were analyzed according to the descriptive framework briefly outlined above. Only selected recordings were used, chosen because noticeable changes occur in comparison to earlier recordings. The analyses are presented as individual case studies: these are relatively detailed for two of the children with the most severe dysphonology and for the normal child. Complete word lists are given for these three children. For the remaining children a selected, illustrative sample is included. Brief case histories are given for the language disordered children, as well as an informal follow-up of their school performance after the study was completed.

The results indicate that it is indeed possible to unravel systematic phonological patterns, even in severe cases of dysphonology, despite the fact that they often have idiosyncratic solutions for their phonological problems. Similar but more varied kinds of patterns were also found in the young normal child. Thus, there appears to be a basic similarity between the primitive phonology of the young normally developing child and the phonology of the children with severe language disorders.

Organizing the data into autonomous descriptions made it possible to develop a preliminary stage model for the earliest stages of phonological development, based primarily on phonotactic and prosodic characteristics. The model is divided into four subsequent stages. The first two stages are characterized by strong phonotactic constraints on words (syllable or segment harmony) and on syllables (predominance of simple open and closed syllables) and absence of prosodic contrasts. The model specifies how children gradually loosen

the constraints which their developing language and speech processing systems impose on them. Within the model, a number of implicational relationships appear, e.g. between the relaxation of phonotactic constraints and the development of prosodic contrasts.

There is a sharp break between the second and the third stages of the model. A number of achievements take place between these two stages, and it is suggested that this is the point at which a syntagmatic-paradigmatic shift in phonological development occurs. It is suggested that the child's phonology is reorganized: i.e. there is a shift in attention from word patterns to syllable shapes and later to segment contrasts. From the process point of view, extraction processes, reduplication and assimilation gradually give way to consonant substitutions. More speculatively, it is further suggested that the ability to handle increased phonotactic complexity, as described in the model, may have a parallel in the development of syntax, which appears to start at the time of the syntagmatic-paradigmatic shift. Whether these different achievements are based on a more general ability to handle complex, hierarchically organized language material is considered.

The model has important clinical implications. It is suggested that language disordered children can be classified according to types of dysphonology in terms of severity and how well they fit to the stages of the model. Severe cases of dysphonology exhibit characteristics of the first two stages. Symptoms typical of these stages may thus be considered as risk symptoms of a more severe type of language disorder.

Children in the syntagmatic group, i.e. with characteristics of stages I and II, are much more rigid in their use of word patterns and syllable shapes and also in their use of processes: Syntagmatic processes predominate in this group, and the children tend to stick to a few primitive processes, such

as reduplication or assimilation. In this respect, they deviate from the normal subject at a comparable stage of development. These children also tend to relapse easily into earlier types of simplification, and some of them exhibit residual syntagmatic restrictions. On the basis of these considerations, specific suggestions for therapy are also given.

Finally, the present investigation stresses the importance of a differentiated linguistic analysis (in this thesis restricted to phonological aspects). This analysis should be regarded as a vital complement to a thorough neurological and neuropsychological examination of children with language disorders.