

THE PHONOLOGICAL COMPONENT OF LANGUAGE COMPETENCE:
SPEECH PRODUCTION AND PERCEPTION IN ONTOGENESIS

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The phonological component of linguistic competence is considered. Experimental results concerning the comprehension of sound text are shown.

Speech in children comprises specific system of elements accompanied by particular rules of using these elements. Mere phenotypical resemblance of speech elements in children and in adults will be insufficient for claiming the respective genotypical similarity or relationship.

In the peculiar system which is the starting point for the formation and development of man's linguistic capacity, much importance is given to the phonetic component. This is natural, for the system mentioned seems to comprise, at the primary stages, phonetic and semantic components only. As for the expressions resembling the grammatically marked elements, these are actually grammatical from the formal viewpoint, for they are related to the denotational reality and are characterized by a specific combination of meanings. Speech ontogeny starts with the child's primary orientation in the external speech, and therefore, first developmental stages are bound, psycholinguistically, to the phonetic word perception (subtle morphological distinctions being initially ignored). The constancy of phonetic word perception is ensured by the formation of certain standards, these making up the basis for the phonetic component system. The standards get enriched through the child's work at the phonemes in word, for, as D.B.El'konin put in, he manipulates the phonemic just as he acts upon material objects. Initially, distinct pronunciation can be reduced in the distinct articulation of inflexions only, which testifies to the child's orientation to the sound word. Alongside with the orientation in speech perception medium, the system of standards is enriched due to the development of child's cognitive activity. Thus, filled with new cognitive content, perception standards emerge as part of the system designed to qualify the child's environment. Meanwhile, in the speech production domain, the relation of the sound word with the real world semantics is tested and refined.

The major route that speech activity develops by in the formation of gener-

In psycholinguistic research of speech ontogenesis, quite a few aspects of language competence have been studied so far. The competence in question is understood as the hierarchically ordered system (construction) which represents, in generalized, reduced and specific way, the overall language system. Since in the language competence components and rules are distinguished, the former correspond to the linguistic levels, while the latter constitute a system of "commands". The "commands" prescribe that the speaker should use the given, functionally significant element, for meeting the communicative requirement in the respective communication environment. So far the linguists' attention has been focussed mainly at the lexical and grammatical components, the semantic component being insufficiently studied. The latter is, however, the basic, hierarchically predominant part of the structure. Finally, the phonological (phonetic) component has been almost ignored.

alized ideas of the language reality facts. Phonetic generalizations being the goal, the first stage in distinguishing the sound form of the inflexion (and later of morpheme) and relating its meaning to some aspect of material world. The relation established, both perception and cognitive standards are enriched; therefore, the orientation is stepwise transferred to other parts of the word.

Hence, the second stage in the phonetic component formation is initiated, that is the formation of generalized conceptions correlated to the sounding morphemes which are viewed as derivative word components. This stage proceeds mainly in the speech production domain. Here the acquisition of grammatical meaning starts, accompanied by the semantic development of the derived component and of the overall lexical item.

However, speech ontogeny researchers note that certain words acquire quite early the utterance status and, therefore, obtain specific intonation marking. Intonation parameters are "tested" rather early and are also due to perception and then to production. Generalized intonation regularities are included further in the phonetic component of language competence.

Prosodic development is most evident in two-word utterances; the transition to these characterizes a specific stage in the overall process of speech development. Early intonation standards are rather sophisticated and advanced; sometimes it is the intonation contour that outranks the semantics of the components. The transition to bi- and multicomponent utterances is followed by the acquisition of logical stress. This phenomenon seems to be beyond the phonetic component limits, for, included in the general set of communicative rules it should belong to the semantic component.

The development of speech perception and production is directly related to the formation, advancement and enrichment of the phonetic component of language competence. This component is realized through a set (system) of specific phonetic perception standards and rules selecting the appropriate elements for meeting the communicative requirement. The development and enrichment of the lexical meaning is ensured both by the child's practical/communicative activity and by the acquisition of phonological generalizations to the delimitation, recognition and distinction of the word. This process is essentially bound to the development and enrichment of the morphological meaning, too. The sound shape of the morpheme is related, directly or indirectly, to the respective aspect of the real world. Thus the basis for prescriptive formational and derivational rules is laid, these rules belong-

ing to the grammatical component (or, to be more precise, to morphological subcomponent) of language competence.

At the later stages of the child's development, speech perception is determined by a richer and more complex system of standards; the standards are further formed and enriched in practical and communicative activities. The phonetic component can be said to acquire its relatively full shape at the stage of adequate discourse perception.

The problem of discourse (cohesive text) perception is related to the issue of acoustic signal determination principle. Some scholars view perception as the stepwise successive process. Another view, which we adhere to, is that man memorizes relatively much information at once, processing it parallelly, quite in accordance with the text/discourse hierarchical structure. Psycholinguistic experiments show that, in speech understanding, the delayed decision strategy is commonly used. At the lower level which is that of phonology, zero decision is made and means for making the final decision are reserved. The final decision is thus postponed to the end of the sounding reflexion /1/.

Establishing meaningful elements in the speech flow segmentation, and minimal meaningful elements in particular, is a most challenging task. Let us assume that speech information is processed by the "dissecting" and intergrating techniques, with "key meaningful points" playing crucial role here. Then the main problem is eliciting major sense fragments and/or blocks functioning in the perception of oral text/discourse.

At the perception level, the major units of meaningful segmentation are taken to be syllable and phonetic word (rhythmic structure). The syllable is defined as the structural sequence of sound-types formed by the vowel sound-types /2/. "The data available show that the phoneme, being the necessary element in word recognition and construction, is "deduced", in some cases, due to the processing of more or less extensive context" /3/. In our opinion, such context can be rendered by the syllable and by the phonetic word, the latter defined as a group of syllables united by one word-stress. In the phonetic word the kernel and the periphery are distinguished. The kernel is related to the stressed syllable, including sometimes pretonic syllables too (especially the first prestressed). In the rhythmic structure strong and weak positions are often recognized; the stressed syllable can be considered the nucleus of the strong position /1/, which is highly relevant for the points made in this study.

Thus, the hypothesis was advanced that the perception of sounding text/dis-

course should presuppose discrete segmentation in meaningful units. The hypothesis predetermined both the technique and planning of the experiment in which text perception and understanding in children were studied.

A number of experimental series were undertaken, the subjects being preschoolers in a Moscow kinder-garten. The study of speech in children allowed us to follow speech processes in their evolution.

Numerous works show that the acquisition of Russian morphology in children is based on the development of orientation in the sound shape of words. Primarily the child is guided by the general sound properties of the morpheme, and it is only later that he begins distinguishing separate phonemes in it. Thus the child's original vocabulary comprises root words rather than items consisting of separate sounds. This implies that the child segments out syllables both in hearing and in speaking. Therefore, in experiments with children we take syllables and rhythmic structures as perception pivots. In an experiment made by our colleagues /3/, intuitive syllabation was employed. This technique seems most promising since it allows the research to take into account the specific speaker's properties, say his age, etc. In our experiment intuitive segmentation of the ongoing speech by meaningful units is employed.

Other experiments have shown that syllabation in 4,5- and 6-year-old children differs from the respective process in adults. A suggestion has been made that it could be explained by some ontogenetic interference of property phonological and morphological factors. It can be also proposed that syllabation skills are unstable, changing with the child's acquisition of his first language.

Our experiments also test the child's ability of intuitive segmentation of the sound text by phonetic words (rhythmic structures), and the rules of this segmentation. The above mentioned facts taken into account, the hypothesis is formed, according to which the rules of text segmentation by rhythmic structures in children differ from the respective rules in adults. Children's perception and understanding is tested on texts differing in the functional style and structure; besides, the dependency of the understanding on structure; perception and understanding developmental skills are investigated.

The experimental data have been processed and analyzed by comparing the actual content and intonation structure of the sample text on the one hand and the subjective content and intonation structure modelled by the subject in the reproduction, on the other. Content segmentation as made by a professional announcer has

been compared to that in children, who acted intuitively. The degree of similarity between the respective structures testifies to the acquired level of the text understanding. Besides, it helps us reveal some intuitive rules of text segmentation by meaningful components.

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