One of the most important occupations of traditional American speech pathologists has been the provision of remediation services to misarticulating children. Out of this setting has come such classic work as Templin's *Certain language skills in children*, which has provided us with developmental norms for the various speech sounds of English, and a great deal of information on vocabulary development. While Templin's approach was essentially atheoretical, there is some underlying view that the speech sounds are learned one at a time, in an order that reflects articulatory ease. An entirely different tradition is represented by Jakobson's *Child language, aphasia and phonological universals*, which is, in some sense, an attempt to account for the acquisition of speech sounds against a background of taxonomic phonemics. Jakobson claimed that children learn contrasts, rather than individual sounds, and that the order of acquisition is set up so that maximal contrasts, presumably the easiest contrasts, are learned first. The specification for sounds in terms of features provides a matrix for degree of contrast between sound pair members. Another linguist with important insight into speech development has been Stampe, the originator of "natural phonology." Stampe's emphasis is on the dependence of the child's form on the adult's. The child is said to have innate processes that simplify his/her output production of a received adult model. Thus, the child begins with the easiest forms, those in which maximum simplification has been achieved, and gradually inhibits simplifying processes.

In the 1970's, linguistically based approaches of various kinds began to have a vogue in the traditional speech pathology setting. The book reviewed here represents this trend away from a focus on "articulation disorders" towards a focus on "phonological disorders." Each of the five chapter authors describes his/her interpretation of "phonological intervention" and goes on to discuss the nuts and bolts of diagnosis and remediation within that framework.

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Ingram, whose 1976 book *Phonological disability in children* provided the inspiration for the conference on which this volume is based, rediscusses and amplifies some of the practical problems in collecting data samples and inferring from them the natural simplification processes that form the basis of his approach to classification. Shriberg, whose theoretical stance is quite similar to Ingram's, presents a detailed scheme for diagnostic classification. He makes the interesting suggestion that, while some errors in the productions of a given child may arise from Stampe's "natural processes," operating on a developmentally delayed system, others may arise as a consequence of structural abnormalities, such as middle ear involvement. Fokes rediscusses some practical problems in making such an inventory, noting especially the difficulties posed for sampling by inherent variability, such as inconsistent productions or progressive idioms. Blache introduces an elaborate description of speech sounds in terms of what purports to be a distinctive feature analysis, uses this to hang a developmental analysis on, and uses this, in turn, as the basis of a diagnostic workup. Hodson simply describes the patterns of error in children of varying degrees of unintelligibility.

In spite of a difference in emphasis, there is a common theme. All the authors focus on the need to examine a sample of speech behavior that is sufficiently complete that each sound is assessed in a variety of contexts, along with the pattern of substitutions and the resulting neutralization of contrasts relative to the adult system. This emphasis, of course, results from an exposure to the phonologist's practice of writing rules to make conversion between one system and another or one level of representation and another. In the case of the misarticulating child, one might compare the child's system to that of the ambient community, or examine the operation of processes in remediation. However, both Shriberg and Ingram are quite cautious about the reality status of their inferred underlying phonological units, or the relationship of their analysis schemes to Stampe's natural phonology (Stampe, 1973). Shriberg also notes the possibility, raised by Dinnsen, Elbert, and Weismer (1980) and rediscussed in detail by Maxwell and Weismer (1982) that misarticulating children may differ among themselves in the relationship of their underlying phonological schemata to the adult model.

The authors do differ on substantive issues. Both Fokes and Blache advocate forms of discrimination training in remediation. Shriberg is very specific about his reasons for doubting its efficacy, and Ingram has been similarly skeptical in other writings. It should be noted that some disenchantment with discrimination training as a remediation technique has been voiced, as well, by speech pathologists who have not joined the "phonological intervention" camp (Shelton & McReynolds, 1979).

Another difference is that only one author, Blache, makes extensive use of feature notation. It should be said that, while his feature notation is rather vaguely attributed to Jakobson, the particular version used in this volume would not be recognized by its presumed originator, and the mode of presentation may confuse readers. However, trying to guess the possible reasons for the abandonment of feature notation by the other authors is a more interesting mission for a reviewer than disagreeing with the use of any particular form.
One can think of both structural and substantive reasons. As feature notation is commonly used in speech pathology, it does not represent any observation not present in the segmental notation; that is, the clinician, having written [b], for example, looks up the features of [b]:

\[
\begin{array}{c}
-\text{vocalic} \\
-\text{consonantal} \\
-\text{high} \\
-\text{back} \\
+\text{anterior} \\
-\text{coronal} \\
+\text{voice} \\
-\text{continuant} \\
-\text{nasal} \\
-\text{strident}
\end{array}
\]

in Chomsky and Halle's (1968) notation, and inserts them in place of [b]. The fact that [b] is produced normally, at a phonetic level, without vocal fold vibration during closure in some environments is not relevant to the substitution, and no independent observation is made of voicing per se. Thus, the clinician has no greater contact with misarticulations in need of correction in the one notation than in the other. It should be pointed out that both Ingram and Shriberg have suggested use of narrow transcription, while they do not discuss a systematic use for it.

Another reason for the abandonment of feature notation is that, as Ingram has pointed out, the carefully collected data of the last decade (Yeni-Komshian, Kavanagh, & Ferguson, 1980) reveal the primacy of segment over feature in learning. Jakobson's predictions for a universal order of feature acquisition is not supported in detail. Furthermore, while an important early writer in the field, Compton (1970), has suggested that the correction of misarticulation of a feature in one segment may generalize to another segment, the empirical justification for such a view is not strong. Given these problems, a strong motivation for persuading speech pathologists to make the intellectual effort to translate from segments to features seems lacking, whatever the gain in elegance and simplicity this translation gives linguistic analysis.

Finally, it is impossible to leave this volume without remarking on one of its undisguised premises, that the clinician's notational scheme, whether featural or segmental, adequately captures all the information needed in remediation. This may not be so. By its nature, transcription reduces the dynamic articulation process to a series of static symbols, thus minimizing the role of timing as a component of effective production. It has been shown (by Smith [1978], Kent & Forner [1980] and Bond & Wilson [1980], among others) that children develop adult temporal patterns only very slowly. It is not clear what effect various forms of timing pattern irregularity have on the transcription operation; neither is it clear what clinical significance temporal deviance might have. Hence, some of the information the clinician needs may be left outside transcriptional evaluation.

Furthermore, the assumption made throughout most of the book is that the child's errors are appropriately described as substitutions, that is, that
they are produced as consistently as "correct" sounds. The assumption may be as much a reflection of the characteristics of the therapist's perception as of the child's productions. If the child produces a sound lying outside the clinician's native repertoire, the clinician may record it as a simple substitution of an item within his repertoire. It might be noted here that one old transcription category, the distortion, is missing. It seems at least plausible that some misarticulating children may produce sounds that no normal produces, with the consequence that the clinician has no appropriate model. Beyond that, the transcriptional scheme itself is not set up to capture differences in the variability of sounds produced, and variability information may be important in remediation.

Of course, one important reason for the use of transcription as the clinician's primary tool is that in most clinics, no other is available. Surely, then, it must be a goal of research effort to show the relationship of acoustic and transcriptional techniques in systematizing what competent clinicians know about the misarticulating child, and to investigate the relative utility of instrumental and non-instrumental approaches to speech production.

REFERENCES


