

number of phonemes added to the repertoire at about the fifth year, ages approximating four-and-a-half to six years (Figure 2).

PHONEMIC ANALYSIS OF SPEECH DEVELOPMENT: THE CRUCIAL FIFTH YEAR

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A child learns to talk in a predictable sequence.

The equipment he brings to the learning is both inherited and nurtured: he has intellectual capacity to use the symbols of language; he can hear the audible sounds of spoken language patterns; he is able to control his physical self, especially those parts concerned with breathing and eating; and he lives in a culture in which spoken language is stimulated and rewarded.

With this equipment, he perceives and discriminates sound, associates it with other experiences, and promotes meanings that are to be expressed.

The infant's first expression of meaning is physical, action, primitive gesture language, as when he turns away from unpalatable food. Soon his voice tells meaning in stresses and rhythms and melody. Then, almost to the top of his pyramid of speech development, he begins to 'talk'. He breaks up the crooning flow of his voice and breath, shaping it with his 'speech organs' that have had a lot of practice while sucking his food. This shaping of voice and breath produces the phonemic substance of articulate communication.

Consonant phonemes (or 'allophone sets', as Dr. Truby calls them) become established in words in a predictable sequence, sometimes quickly, sometimes slowly, in every language for which there is report of longitudinal studies, even for Cantonese.

This (Poole 1934) sequence (Figure 1) is the prediction for all children, 100% of them. English phonemes should certainly be firmly established in any child's language by these ages. You will note that there is marked deceleration in speed and

CA	s	z	r	ʃ	θ	ð
7½						
6½						
5½						
4½	t	d	n	k	g	ŋ j
3½	p	b	m	w	ʌ	h

Fig. 1. Sequence of Consonant Development (Poole).

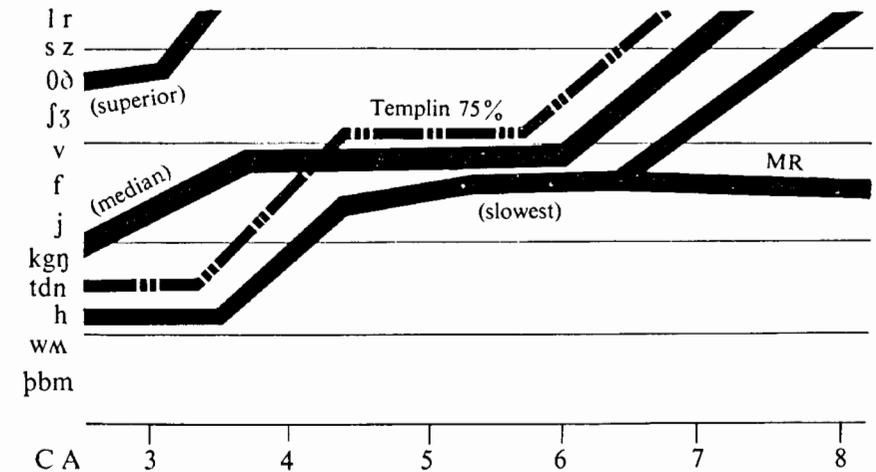


Fig. 2. Development of Consonants (Poole Study).

Why this hiatus, this stalling point at this stage in a child's linguistic development? For an answer, we can look at the expansion of interest in social autonomy at this age, to the completion of a full complement of teeth, and to general physical maturation. For example, there is a definite change of pace in maturation of glands, central nervous system, and soma at about the fifth year.

At this time, is established the adult relationship of length of trunk to length of limbs. By six years CA they are of equal length and remain so to adulthood.

More important for intellectual functioning is the full growth of the central nervous system, exhibited by the full size of the cortical brain at the close of the crucial fifth year. Only the mandible grows thereafter.

The student of phonemic development notes that the consonant phonemes that are earliest established in words, before the crucial fifth year, are those whose structural parameters closely approximate those of sucking. Occlusions of lips and tongue with fixed oral structures that shape the outgoing breath for these early developing consonants are those employed for ingesting food, hence have been practiced throughout a child's early life. Thus, we may designate these phonemes 'vegetative consonants'.

The overriding factor in establishment of phonemes following this crucial fifth year is INTELLECT. (We have seen that the brain has achieved adult proportions by this time.) Conscious, cortical intentional direction over the eating-speech structures controls these structures to shape these late-developing 'cortical' phonemic elements of speech. Occlusions that shape the breath for the cortical consonants are far removed from the occlusions for sucking. Mentally retarded children, lacking intellectual direction, fail to establish these cortical consonants.

It is demonstrated that in yearly evaluation of educable mentally retarded children, only one in four passes the level of development that is appropriate to the normal fifth year, and less than one in ten achieves the expected adult pattern of phonemic articulation. The language of some mentally retarded children is so deviant that it lacks even the vegetative consonants and therefore cannot be measured. We must emphasize that even this vegetative pattern, appropriate to children below the fifth year of age, is contaminated with undistinguishable phonemic aberration.

Indeed, some of the retarded children regress rather than progress in development of phonemes. Of those children whose pattern is deviant, although some vegetative phonemes are present in the articulate pattern, NONE progressed from year to year. They are likely either to regress or to maintain their deviant pattern of utterance.

ONLY THOSE WHO HAVE PASSED THE HURDLE OF THE CRUCIAL FIFTH YEAR show any progress.

We may say with assurance that if a child of six to eight years of age (and older) has not surpassed the problems anent to the establishment of consonant phonemes appropriate to the crucial fifth year of normal development, he is likely not to progress further.

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REFERENCE

1934 *The Poole Dissertation* (La Verna, Calif., Preston Printing Company).