

## BASIC CONCEPTS OF THE VERBOTONAL SYSTEM

### Stimulus-Response Technique

A main principle of the Verbotonal method involves the use of a stimulus-response procedure in the basic learning situation. The stimulus (speech) is produced with natural rhythm and intonation. The elicited response is viewed as an indication of the patient's perception of the stimulus. Correct perception is facilitated by analyzing the response and modifying the stimulus as necessary. The process of analysis and modification is done in terms of the following *parameters of speech*:

- frequency (pitch)
- intensity (loudness)
- time (duration or timing)
- tension
- pause
- intonation
- rhythm

The stimulus-response technique allows evaluation of the effectiveness of the presentation, and thus, the best condition for perception. This technique will help the clinician/teacher/therapist provide the optimum structure of the presentation for the best condition for the reception of the stimulus. The optimum structure and condition for perception of a particular stimulus will change as a result of the refining of auditory perception through continued training. The ultimate goal of the stimulus-response therapy technique is to make the optimum listening condition similar to the optimum for a normal hearing person.

### I. BASIC CONCEPTS

Several concepts which are basic to the Verbotonal system are discussed below:

- A. Perception – The perceptual process is a function of the central nervous system at the level of the cortex. It is assumed that a normal cortex can be trained to compensate for an impairment of the peripheral auditory system.
- B. Optimal Octaves – Through the experiments of Petar Guberina and several others, it has been found that an optimal octave exists for the perception of each vowel. The optimal octaves are arranged in a specific order along a frequency continuum from low to high. Based on the theory of optimal octaves, the perception of vowels and consonants can be developed by using filters to modify the frequencies presented to the listener.
- C. Tonality – The frequency region of the optimal octave is responsible for the perceived pitch or tonality of the phoneme. A phoneme with an optimal octave at the lower end of the frequency continuum will have a low tonality. Tonality is classified into five categories:
  1. Low
  2. Low-middle
  3. Middle
  4. Middle-high
  5. High

- Typically, a normal hearing infant acquires phonemes developmentally from low to high tonality. The Verbotonal system advocates the teaching of phonemes to hearing impaired children according to this same phonetic progression.
- D. Discontinuous Perception – A discontinuous condition is one in which two or more bands of acoustic energy are separated by frequency regions of reduced acoustic energy. Discontinuous presentation of acoustic energy can be used to change and control perception. Professor Guberina’s theory of discontinuous perception suggests that low frequency speech energy enhances the perception of high tonality phonemes and reduces listening fatigue when compared to broadband listening conditions.
  - E. Optimal Field of Hearing – The optimal field of hearing is the frequency response which produces the best perception of speech stimuli for the hearing impaired person. The optimal field of hearing is usually found to emphasize the frequency region in which the patient is most sensitive.
  - F. Integration – Described as “transfer” by Professor Guberina, this refers to the ability of the brain to perceive speech sounds through the optimal field of hearing even though a peripheral impairment may be eliminating some acoustic energy. Training is used to facilitate complete transfer which is the perception of all phonemes through the optimal field of hearing.
  - G. Phonetic Progression - The order of teaching phonemes from low to high tonality.
  - H. Body as a Transmitter and a Receiver – The body acts as a transmitter for low frequency biological and physiological rhythms and as a resonator of speech energy. The amount of tension of the body affects speech perception and production. A high level of body tension will result in perception and production of more tense phonemes. Oscillators are used in training to take advantage of the body’s conduction capacity to facilitate perception, especially of suprasegmental patterns. In general, the more profound the hearing impairment, the more peripheral is the placement of the oscillator. Vibratory input is also used for normal hearing individuals with auditory processing disorders to expedite the perception of rhythm, intonation, duration and intensity.

## II. SITUATIONAL LANGUAGE TEACHING

Speech and language develop simultaneously and interdependently as a result of the need for expression and communication. The development of speech and language, therefore, can be enhanced through a planned situational play technique which can be used by teachers, therapists, and parents. This situational play technique builds on the natural need and desire for self-expression.

In order for the situation to effectively stimulate expression, it must be meaningful to the child. For this reason, it is necessary to structure the situation according to the needs and abilities of the child. On any language level, the child must become an active part of the situation; the number of props should be minimized and age appropriate.

The following is a progression of the steps for structuring a situation as the child’s language develops:

1. The teacher uses an object or objects to create an active situation and tries to draw the child into the situation.
2. The child participates in the situation at his/her own level of speech (babbling, jargon, words, sentences).
3. The child and teacher dramatize the situation through role-playing. In this stage, the child is using what he/she has learned from steps one and two.

4. The child and teacher describe and analyze the situation using the real objects or pictures. At this stage the child should begin to contribute to the situation spontaneously.
5. The child describes concrete or abstract ideas on her/his own. She/he creates the situation, dialogues and sequence of events.

The situation is used mainly for the stimulation of spontaneous speech and also for the evaluation of that speech. Correction of speech is a part of this work, but should not disrupt the spontaneity and continuity of the situation. Concentrated correction of production should be done after the production becomes better established.

### III. MOVEMENT

Body movements are used to develop perception of the parameters of speech as well as to correct phonetic speech production errors. These movements reflect the parameters of the speech stimulus, especially tension. The rationale for the use of body movement is the concept of muscular generalization. The clinician uses macro movements to indirectly train the micro movements of the articulators.

Body movements are always accompanied by speech production. The following progression is used when working with body movements:

1. Initially a body movement is chosen strictly for the stimulation of speech sounds.
2. The stimulus-response technique is used, and the movement may change with the progression of the training for the purpose of correction.
3. The movement will become more natural and the child will repeat the same stimulated sound or sound sequence while doing another movement.
4. Finally, the movement is discontinued and only natural speech remains.

Body movements must be appropriate for the child's motor abilities. The parameters of body movement which can be manipulated for speech correction are:

- tension
- intensity
- time
- space and direction

### IV. RHYTHM AND MUSICAL STIMULATION

Nursery rhymes are used to stimulate the speech of hearing impaired children because the rhythm of a nursery rhyme, perceived through low frequency integration, provides a robust learning experience for natural speech development. The use of nursery rhymes facilitates both speech perception and production, and can be used to correct rhythm, intonation, pitch and articulation. Nursery rhymes will also serve to increase auditory memory.

The appropriate nursery rhyme is determined based on the child's speech perception abilities (phonetic, rhythmical, auditory memory span) and by the purpose for its use. There are three different kinds of nursery rhymes:

- Nursery rhymes with syllables only. These are used to stimulate and correct a certain sound. The rhyme should follow the characteristics of that sound; tension of the phoneme is modified by the strategic use of timing, pauses, stress pattern and intonation within the rhyme.. Speech is completely transformed into musical measures.
- Nursery rhymes that contain syllables, words and phrases. The musical qualities of the syllables (time, rhythm, and intonation) are gradually transformed into words or phrases.
- Nursery rhymes which have definite content. Pure speech in the form of a poem or nursery rhyme is used to train rhythm and intonation patterns.

The work of musical stimulation follows the phonetic developmental progression and adheres to the tonality concept, especially in the early stages of use. The musical stimulations also follow a certain rhythmical progression, beginning with very simple patterns and progressing to more complex ones.