

Clinical Perspective

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Speech Facilitation and Oral Myology:

TECHNIQUE - RESEARCH - APPLICATION

Ruth M. Clark

Man's ability to communicate is his most distinctive attribute. It is this capacity which has raised him above all other mammals. From this is derived his capacity to remember the past, to understand the present, and to anticipate the future. It is the core of man's learning and his creative thought.

*From: Preface "A Decade of Progress"
NINDB - 1961*

Our society is continually becoming more complex. This increases the importance of oral communication. Because this skill is many times less than acceptable numerous scientists have been searching for causes for this condition and developing clinical tools to help alleviate it.

TECHNIQUE

Speech Facilitation is such a clinical tool. It is designed as a part of a reinforcement therapy system for use by the speech clinician. It utilizes heightened levels of oral sensation and perception, tactile, kinesthetic and proprioceptive responses along with conditioning, feedback and reinforcement. This technique combines the principles of physiological and psychological facilitation in the habilitation, rehabilitation, remediation and maintenance of articulation functions.

Since Speech Facilitation is concerned with the movement of the muscles used in the production of speech, the technique surely is closely related to the study and science of the oral musculature.

Speech Facilitation is based on the Moto-kinesthetic Method developed over 40 years ago by Edna Hill Young and Sara Stinchfield Hawk. The profession of Speech Pathology was in its infancy at that time. There was a lack of controlled research in all areas of speech and especially on the importance of the afferent nerve input on speech production. It seems logical therefore that the professional community did not enthusiastically or totally embrace the Moto-kinesthetic Method. However, the recent interest and research in oral sensation and perception has pointed up the importance of the sense organs and the afferent nerve input in speech production. Today many authors are stressing that the improper functioning of the input channels may result in disordered output. Many articles in the four books edited by Bosma, "Symposium on Oral Sensation and Perception:" 1967, 1970, 1972, 1974; attests to this.

Perhaps its appropriate to discuss a little about Edna Hill Young and Sara Stinchfield Hawk and the development of the Moto-kinesthetic Method.

Mrs. Young became interested in speech correction when, at the age of 15, she began analyzing her own speech. She had already overcome a speech defect, but she found that her mouth tired easily when she spoke. She observed the speech movements of others, retrained her own speech muscles and began to help others acquire more comfortable speech patterns. She wrote books as well as articles which were published in professional journals. She always stressed the importance of establishing rapport and understanding each individual. She felt the psychological aspects were as important as the manipulations

At ninety years of age, Edna Hill Young, originator of the Moto-kinesthetic Method, was still helping individuals overcome their speech problems. She was especially dedicated to young children who needed to learn muscular control essential to clear speech. She died March 15, 1968. Her necrology is reported in the July, 1968, ASHA.

Did you know that the first person to get a Ph.D. degree in the entire field of speech was a woman and was a co-worker of Mrs. Young? The degree was granted in 1922 from the University of Wisconsin to Sara Stinchfield, who later married Mr. Hawk. It broke through the old concept of 'Speech as an elective art course' and placed the discipline on firm academic ground. She studied under Smiley Blanton, M.D. who was head of the Speech Clinic at the University of Wisconsin. Dr. Blanton was probably the reason that the term "clinic" was used until fairly recently.

At the meeting of the National Association of Teachers of Speech (NATS) in New York City she joined Robert West and nine other individuals to form the *American Academy of Speech Correction*. West was elected President and Dr. Hawk Secretary. This organization was to become the *American Speech and Hearing Association (ASHA)*. This was in 1925. Dr. Hawk was President 1939-40 after serving as secretary for six years. She was a prolific writer and co-authored several books with Mrs. Young. Dr. Hawk contributed a great deal to the refinement of the Moto-kinesthetic technique. Her Necrology was in the January 1978 ASHA. She died August 11, 1977, and was 92 years old.

So much for background material. What is Speech Facilitation? It is a clinical tool or technique using manual manipulation of the peripheral speech mechanism, and the direction of the air current of the subject, by a qualified person. Besides this extra-oral stimulation intra-oral cues may be provided by guides placed within the oral cavity to give guidance and increase tactile sensation and feedback to the tongue. An example of intra-oral cues may be placing knotted dental tape between the upper incisors for tongue tip placement or using a tongue blade to depress the midline of the tongue. The technique of Speech Facilitation is concerned with the sensory input as well as the motor output.

Speech Facilitation is a reinforcement system utilizing heightened levels of touch-pressure, kinesthesia, and proprioception. When auditory and visual inputs are ineffective, the touch-pressure-movement of the Speech Facilitation extra-oral manipulations and intra-oral guides transmit information that enhances the acquisition, improvement, and maintenance of articulation skills. The stimulations are prescriptive and may be used in unisensory or in multisensory stimulations.

RESEARCH

The last two decades have witnessed the beginning of extensive research regarding the mouth as an organ of sensation and perception and the relationship of these activities to speech production. Besides the diagnostic implications this great surge of interest in oral sensation and perception has important significance in the development of techniques to improve oral speech production.

Interest in this area has spread to many fields such as anatomy, dentistry, education, speech pathology, physiology and psychology. From investigations throughout the United States four symposiums have been held which resulted in the publication of four books: Symposium on Oral Sensation and Perception, edited by James F. Bosma, M.D. (1967, 1970, 1972, 1973). There is now sufficient scientific information to say that oral/sensory channels should not be overlooked nor neglected in speech habilitation and rehabilitation.

A review of the research on oral sensation and perception provides increased support for the roles played by tactile, kinesthetic and proprioceptive senses in speech production. This research suggests the importance that disturbances of these functions play in apraxia and defective articulation (Rosenbek, Wertz and Darley, 1973).

In an early study in 1954 Grant Fairbanks postulated the importance of kinesthetic, auditory and tactile feedback in a speech servo-mechanism. He hypothesized that proper speech production requires information from the kinesthetic sensory system. Van Riper and Irwin (1958) and Mysak (1959) concurred with Fairbanks. These authors pointed out that improper functioning of the input channels may result in disordered speech output. Trost concurs and says we have to distinguish between damage "to the motor speech programmer and damage to the necessary input to the programmer" (p. 64, 1970).

Preliminary research findings and clinical observations according to McDonald and Aungst, "encourage the speculation that there may well be a sub-group of persons with defective oral motor function such as poor articulation or poorly developed chewing, sucking, and swallowing, whose motor dysfunction is associated with defective sensory abilities (1967, p. 219)."

The second Symposium on Oral Sensation and Perception, edited by Bosma (1970), reflected the increasing interest in the mouth as a sensory resource and examined the accumulated data referring to its afferent mechanism. As indicated by the research presented in this volume the mouth as an organ of sensation and perception, and the relationship of these activities to speech production is very important and is being studied in several research laboratories.

Some researchers believe touch develops earlier and comes into its own long before the ears, eyes, and higher brain centers are mature. Prenatally as well as postnatally, the mouth tends to open when the lips are touched. Touch is important for the young in feeding, investigating, and reacting to his environment (Humphrey, 1970).

Bosma (1967) stressed that sensitivity of the tongue tip to tactile and two point discrimination is greater than in any other body area, even that of the finger tips. Thus, the oral area may provide an excellent sensory matrix inherently sensitive to the manipulations used in the Speech Facilitation technique. In terms of gestalt psychology we might well postulate that other sensory avenues besides vision and hearing might well be utilized in the speech rehabilitation procedure.

The *Haptic System* is composed of different subsystems which include touch and movement. This system is activated when muscular or skeletal movement occurs and when external stimuli come in contact with the skin.

According to Perkins (1971) "the haptic system includes more than the sensation of touch and kinesthesia, it includes the neural processes by which one perceives his body in relation to objects and space" (p. 155). The haptic system keeps one in touch with his environment. The sense organs of the haptic system are abundant and very active, this is in contrast to the specialized sense organs, such as the eyes and ears, that passively receive stimulation. The haptic sense organs are "everywhere in the body, in most of its parts and all of its surfaces." What's more, they are embedded in the motor organs. Equipment for "feeling" includes equipment for "doing" (Perkins, p. 155, 1971).

It is recognized that the ideational and emotional aspects of language complicate speech; however, speech is basically

a motor activity in which proprioception, the sense of position and movement of a body part, in conjunction with the auditory, tactile, and visual senses is fundamental.

For years neurological research has pointed up the effects on speech of damaged motor areas of the central nervous system. Much of the work on cerebral palsy, disarthric speech, and dysphasia are examples of interest in the primary motor aspects of speech. Some research findings indicate that defective articulation in many cases may be associated with, or the result of, defective oralsensory abilities. Tests to measure kinesthetic, proprioceptive, and tactile senses, assumed to be essential to the development and preservation of speech skills have been developed. Work along this line is presently receiving a great deal of attention.

Stereognosis is the identification of forms by touch. Different researchers have developed oral stereognostic tests to measure the ability of subjects to discriminate forms in the mouth. Some of the research has tested the ability of the mouth to discriminate between forms, weight, and thickness (Williams and La Point, 1972). Reduced oral sensitivity has been shown by some research teams to have a significant bearing on speech production (Gammon et. al., 1971; McCrosky et. al., 1959; Ringel and Steer, 1963).

In three oral sensory-perceptual tests in a recent study by Rosenbek et. al. (1973) the group having apraxia of speech was found to be significantly inferior to the normal or aphasic groups on all three tests. The researchers also found that the more profound the oral sensory-perceptual deficit the more severe was the apraxia of speech and that the two conditions coexist. They said, "Our results suggest that moderate to severe apraxia of speech is both a motor and a sensory disorder. Therefore, any model of the communication process should show the relationship and influence of sensory integrity on motor output" (Rosenbek, et al., p. 34).

Trost (1970) in a study of verbal apraxia in patients with Broca's Aphasia concluded that much remains to be learned about the specific neural mechanisms concerning this subject. It appears that there needs to be more investigations concerning the sensory input mechanism and its effect on the output or motor pattern.

In reviewing Lauria's work Trost says that Lauria believes that there are two subtypes of apraxia. He calls these Kinesthetic (afferent) apraxia and kinetic (efferent) apraxia. Trost says some writers have to distinguish between damage "to the motor speech programmer and damage to the necessary inputs to the programmer" (p. 64).

Ringel (1970) gave a selective review of the research on oral sensation and perception. He summarized his report by saying, "Any theorizing about the process of speech and language development and their maintenance must take into account the sensory mechanism underlying articulatory activity" (p. 203).

Oral stereognostic testing has received a good deal of attention and it is postulated that a battery of tests will soon be designed to measure the kinesthetic (movement), proprioceptive (sense of position) and tactile/senses (touch and pressure detection) assumed to be essential to the development and preservation of speech skills.

APPLICATION

As mentioned earlier Speech Facilitation is not designed for refinement of speech. It is a technique that is useful in creating an awareness of articulatory positions and movements. One of the greatest values of Speech Facilitation lies in the help it provides the client and clinician when the communicative disorder is severe and does not respond easily to auditory or visual input. It is hoped that in the future the evaluation battery of tests, to use with individuals having communicative disorders, will include tasks related to mandibular kinesthesia as well as lingual discrimination.

Individuals with orofacial abnormalities and neurological disorders often have complex speech problems. Speech Facilitation seems to be very appropriate for these problems since many of them are both a motor and a sensory disorder. This technique has been successfully used with cleft palate, deaf, hard of hearing, dyspraxic, dysarthric and dysphasic individuals, as well as with the less obvious but often resistant articulatory problems of children with developmental lag and intellectual deficits.

Speech Facilitation Utilizes sensory, motor, and integrated input, output, and feedback systems. A review of current research supports the empirical evidence of good clinical results obtained through the use of these manipulations.

Speech Facilitation is not a panacea for all speech problems. The human organism and speech production are surely too intricate and complex to assume that one method could take care of all speech problems. However, this technique added to the speech pathologist's other skills should provide additional help for many speech handicapped individuals.

The principles underlying the application of the extra-oral manipulations and cues and intra-oral guides of Speech Facilitation include:

1. establishment of stimulator-respondent rapport,
2. teaching of position and movement of each phoneme,

3. utilization of timing, rate, pressure, duration, and stress, and
4. addition or exclusion of sensory stimuli, i.e. auditory and vision.

Rapport

Clinicians who incorporate the extra-oral manipulations and cues and intra-oral guides of Speech Facilitation need to explain the rationale to the respondents so they will be prepared for the various forms of stimulation.

Some persons enjoy being "touched." It is thought that the psychology of touching persons in treatment often offers comfort and promotes understanding between stimulators and respondents.

Timing

The stimulator should not try to hurry the manipulation. A rhythm must be established so the respondent will know when to expect the stimulation. The stimulator should not apply the stimulation until the respondent is prepared to receive it.

Rate

A slower rate in the stimulation permits a lengthening of the target phoneme. The stimulator may need to utilize *holding time* during the manipulation in order for the respondent to *register* the feel of the articulatory position and movement.

Sensory Stimuli

The extra-oral and/or intra-oral stimulations are usually combined with auditory and visual stimuli. The latter are generally presented prior to the extra-oral or intra-oral stimuli. They are often accompanied by an explanation of the desired articulatory placement and movements. All of the selected stimuli are then presented simultaneously.

Additional Application Suggestions

If a respondent has difficulty in initiating sound, it may be the result of faulty coordination of respiration, phonation, or articulation. Pressing the hand just below the rib cage at the midline usually overcomes the air flow difficulty. The /h/ (*hoe*) may be used to initiate the response.

The syllable is the speech unit of choice. If a person is unable to move easily from one sound to another, a single vowel or a single consonant, often accompanied by an unstimulated schwa (*sofa*), may be taught. As soon as the ability to produce one-syllable responses is stabilized, repetitive di-syllable words such as *mama*, *papa*, and *bye-bye* may be initiated.

The stimulator does not provide any manipulations for the sounds in the syllable or word that the respondent can produce correctly. For example, if the respondent can produce the first two phonemes of the word *dog*, but omits or distorts the *g* phoneme, the stimulation is given/only for the *g* phoneme. The *g* stimulation is given with proper rhythm after the person has produced the first two phonemes.

The manipulations of most paired phonemes are similar except when (1) greater pressure and longer duration indicates phonation for the voiced consonant, and (2) lesser pressure and shorter duration signals the voiceless counterpart. A quick release of the manipulation signals plosiveness in the voiceless plosive phonemes.

Target Phoneme Order

The order in which the defective speech phonemes are taught is usually established on one of the following bases:

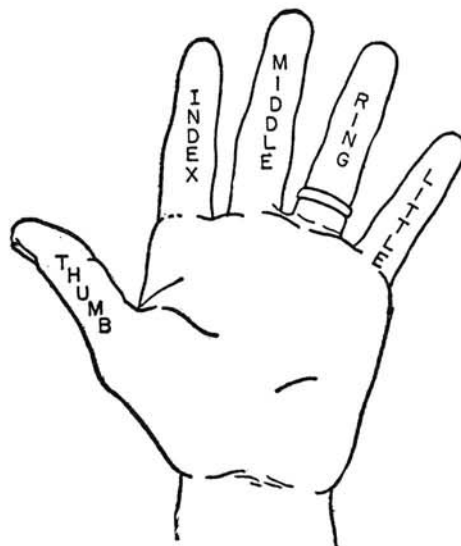
1. the one most easily stimulated by the Speech Facilitation technique,
2. the one articulated correctly in one-or-more words that can be modified,
3. the most visible and/or audible, or most easily imitated,
4. the most easily articulated,
5. the earliest in developmental order,
6. the most commonly occurring in the language, or
7. the most disturbing to the intelligibility of the respondent's speech.

The *thumb* and *middle* finger are utilized in the starting position. This selection leaves the index finger available for cueing or manipulating and the *little* finger for signaling phonation.

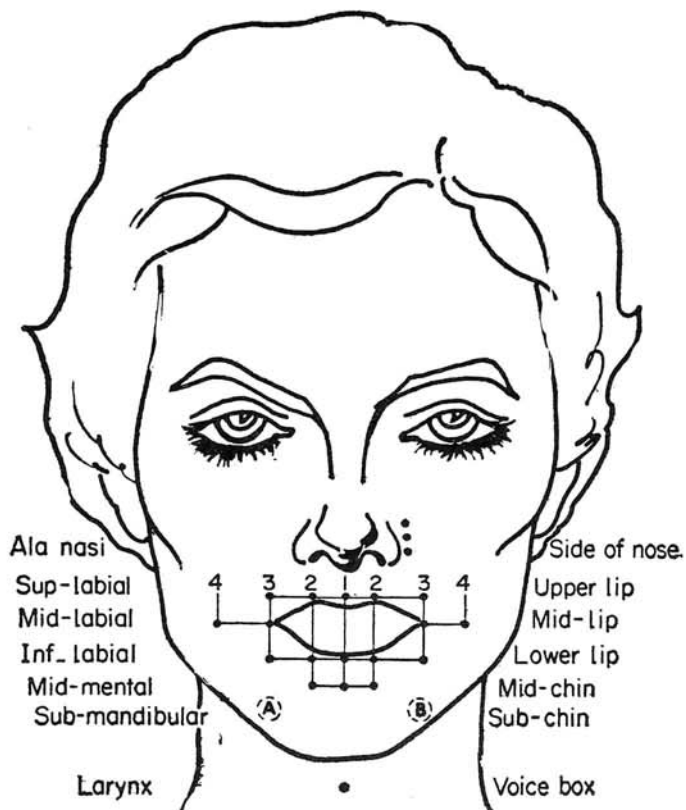
Finger and Hand Cues

Finger and hand cues consist of (1) placing a finger on the side of the nose to signal nasalization, (2) touching the larynx with a finger to signal phonation, or (3) pressing the palm of one hand just below the respondent's rib cage at the midline to signal breath expiration (see figure 1).

Figure I



Manipulation model: finger and hand format.



Speech Facilitation is for use by professional personnel. Supplementary sessions provided by supportive personnel working under close professional supervision may serve as effective reinforcement.

It is recommended that anyone wishing to apply the Speech Facilitation stimulations receive guidance from a clinician experienced in the technique. Before utilizing the stimulations, the stimulator should learn the degree of the pressure, placement, and the movement appropriate to extra-oral manipulations and should become skillful in the placement of phonodental guides. The effectiveness of the stimulations is usually proportional to the skill of the clinician.

Speech Facilitation Utilization

Educational Settings

Speech Facilitation is generally found to be an effective approach to the correction of articulatory defects common to pupils in the public school therapy program. It is also effective with the mentally retarded, the hard of hearing and the deaf.

Hospital and Clinical Settings

Speech pathologists familiar with Speech Facilitation find the stimulations helpful in the treatment of persons with severe articulatory disorders related to neurological problems.

With the advancement of medical knowledge and the resultant lengthening of the life span of the population an increase of acquired aphasia is anticipated. Speech Facilitation is especially suitable for use with these patients. When apraxia is present, which is frequently the case, helping the patient put his articulators in the appropriate position is of great help.

Speech Facilitation employs the senses of Kinesthesia (movement), Proprioception (position), and Tactile (touch/pressure). Within these terms, the authors of Speech Facilitation have ascribed the articulatory attributes of timing, rate, and direction of movement, as well as steady position and the awareness of contrasting light touch and pressure.

REFERENCES

- ASHA, J American Speech & Hearing Assoc. *Necrology*, Edna Hill Young. 10:299, 1968.
- ASHA, J American Speech & Hearing Assoc. *Necrology*, Sara Stinchfield Hawk. 20:23, 1978.
- Bosma, J.F. (Ed.) *Symposium on Oral Sensation and Perception*. Springfield, Thomas, 1967.
- Bosma, J.F. (Ed.) *Second Symposium on Oral Sensation and Perception*. Springfield, Thomas, 1970.
- Bosma, J.F. (Ed.) *Third Symposium on Oral Sensation and Perception*, Springfield, Thomas, 1972.
- Fairbanks, G.: *Systematic Research in Experimental Phonetics: 1. A Theory of the Speech Mechanism as a Servosystem*. *J Speech & Hearing Disorders*, 19: 133-140, 1954.
- Gammon, S.A., Smith, P.J., Daniloff, R.G., and Kim, Chin W.: *Articulation and Stress/Juncture Production under Oral Anesthetization and Masking*. *J Speech and Hearing Res.* 14:271-282, 1971.
- Humphrey, Tryphena: *Reflex Activity in the Oral and Facial Area of the Human Fetus*. In Bosma, J.F. (Ed.): *Symposium on Oral Sensation and Perception*. Springfield, Thomas, pp. 195-233, 1970.
- McCroskey, R.L., Corley, N.W., and Jackson, G.: *Some Effects of Disrupted Tactile Cues upon the Production of Consonants*. *South Speech J.* 25: 55-60, 1959.
- McDonald, E.T., and Aungst, L.F.: *Studies in Oral Sensorimotor Function*. In Bosma, J.F. (Ed.): *Symposium on Oral Sensation and Perception*. Springfield, Thomas, pp. 202-220, 1967.
- Mysak, E.A.: *A Servo Model for Speech Therapy*. *J Speech Hear Disord*, 24: 144-149, 1959.
- National Institute of Neurological Diseases and Blindness: *A Decade of Progress*: Washington, D.C. 1961.
- Perkins, W.H.: *Speech Pathology—An Applied Behavioral Science*. St. Louis: C.V. Mosby, 1971.
- Ringel, R.I. and Steer, M.D.: *Some Effects of Tactile and Auditory Alterations on Speech Output*. *J Speech Hearing Res.* 6: 369-378, 1963.
- Ringel, R.I. *Oral Sensation and Perception: A Selective Review*. In *Speech and the Dentofacial Complex: The State of the Art*. ASHA Reports Number 5. Washington, D.C. American Speech and Hearing Assoc. 1970.
- Rosenbek, J.C., Wertz, R.T., and Darley, F.L.: *Oral Sensation and Perception in Apraxia of Speech and Aphasia*. *J. Speech Hearing Res.* 16: 22-36, 1973.

- Trost, J.E., A Descriptive Study of Verbal Apraxia in Patients With Broca's Aphasia. Ph.D. Dissertation, Northwestern Univ., 1970. University Microfilms, Ann Arbor, Michigan.
- Van Riper, C., and Irwin, J.V.: Voice and Articulation, Englewood Cliffs, P-H, 1958.
- Williams, W.N. and LaPoints, L.L.: Relationships Among Intra Oral Form Discrimination, Interdental Weight Discrimination and Interdental Thickness Discrimination. *Perceptual and Motor Skills*, 35: 191-194, 1972.