THE SPEECH PATHOLOGIST AND ORAL MYOLOGY

Marvin L. Hanson
Speech and Hearing Department
University of Utah
Salt Lake City
Utah

ABSTRACT

This article will consist of five sections.

1. Responses to specific points contained in the Statement of the Joint Committee on Dentistry and Speech Pathology-Audiology on Tongue Thrust.
2. The Position Statement of the International Association of Oral Myology.
3. A summary of matters on which most proponents and critics of oral myofunctional therapy agree.
4. A discussion concerning the speech pathologist as a provider of therapy for tongue thrust.
5. Some principles and procedures for more effective therapy for tongue thrust.

Why was the "Statement" written? In this writer's opinion it was because the problem of tongue thrust, which really belonged to no one discipline, became the foster child of several disciplines, the members of none of which were adequately trained to treat the disorder. Consequently, speech pathologists, dental hygienists, dentists, dental assistants, dentists' wives, and anyone else who wished, took advantage of short courses purporting to prepare them to treat tongue thrust. Hundreds of hastily-trained clinicians, lacking the necessary background in anatomy, development, motivation, and therapy began treating tongue thrust, often at exorbitant rates. To attempt to modify a subconscious habit of several years' standing and achieve automatization of the modification in ten to twenty easy steps is no mean feat. Many therapists were unsuccessful. It is, in a sense, ironic, that the one profession whose members did have comparatively sound backgrounds in most of the elements necessary for successful treatment of the problem, and who were, as a group, better qualified to provide the therapy than any other group, should join with the very profession (dentistry) that had originally invited its help with a problem which had plagued orthodontists for years, to, in effect, discourage not only better training, but to discourage training at all in the treatment of the disorder. In my view, this was a classic example of throwing the baby out with the bath water.

I dislike having to be defensive about something I feel so strongly positive about, but the Joint Statement has been so pervasive in its effects, that it needs a response. (A more complete rebuttal can be found in the International Journal of Oral Myology, Hanson, 1976.)

Referring to specific points in the statement:

1. The validity of the diagnostic label of tongue thrust is questioned.

Early research identifying tongue thrust as a **syndrome** produced conflicting results. Many characteristics found in normal swallowers, such as lack of masseter contraction, hypercontraction of the circumoral musculature, a diminished gag reflex, and an over-developed mentalis muscle were named as elements of the syndrome. Research identifying tongue thrust as a behavior, rather than a syndrome, has been consistent in finding tongue thrust to be a reliably identifiable phenomenon. Several independent incidence studies

have been done. The close agreement among three of them, by Werlich (1962), Fletcher (1961), and Hanson (1973) as to the incidence of tongue thrust at various ages, and demonstrating a decline of incidence as age increases, is evidence that several researchers are identifying the same problem using generally the same criteria.

2. The contention that myofunctional therapy produces significant consistent changes in oral form or function has not been documented adequately.

Regarding changes in oral form: The purpose of such therapy is **not** to change oral form, but to (1) prevent malocclusions from becoming more severe; (2) keep the tongue out of the way during orthodontic treatment; (3) **assist** in the remediation of articulation problems; and (4) **help** to prevent orthodontic relapse. If improvements in occlusion occur during therapy, we are encouraged, but that is not the purpose of the therapy.

Several studies have shown tongue thrust therapy to be effective in changing function. These will be reviewed in response to another point.

3. There is insufficient scientific evidence to permit differentiation between normal and abnormal patterns of deglutition, particularly as such patterns might relate to occlusion and/or speech.

Several researchers (Hanson, 1973, 1975; Fletcher, 1961; Jann, 1964; Overstake, 1976; and Case, 1970) have found a greater than 90 per cent agreement, **or** a correlation coefficient of .82 or higher, among judges in differentiating normal from abnormal swallows. Barrett's classification system (Barrett and Hanson, 1974) relates type of swallow to type of malocclusion. Each type of swallow is clearly distinguishable from a normal swallow. Studies by Rix (1946), Werlich (1962), and Rogers (1961) all found strong relationships between type of occlusion and type of swallow.

A number of studies have found significant relationships between tongue thrust and speech defects, some regarding the co-existence of the two problems in given children, and others regarding improvements in one being accompanied by improvements in the other (Fletcher, 1961; Hanson, 1973; Jann, 1964; Ward, 1961; Subtelny, 1964; Overstake, 1976; and Ronson, 1965).

4. There is unsatisfactory evidence to support the belief that any patterns of movements defined as tongue thrust by any criteria suggested to date should be considered abnormal, detrimental, or representative of a syndrome.

According to several incidence studies, if normalcy is defined as that which is done by more than 50 per cent of the population, tongue thrust becomes abnormal after the age of five, and becomes progressively more abnormal through adolescence.

Whether there are harmful effects of tongue thrust needs to be determined by research. Research using animals has shown this to be the case (Harvold, 1973; and Negri, 1965), and a study by Mendel (1962) indicates a relationship between tongue thrust and relapse to open bite following orthodontic treatment. Clinical evidence indicates strongly that tongue thrust contributes to relapses in corrected occlusion.

Tongue thrust is **not** a syndrome. It is a behavior, involving the resting or pushing of the tongue against the anterior or lateral teeth.

5. The few suitably controlled studies that have incorporated valid and reliable diagnostic criteria and appropriate quantitative assessments of therapy have demonstrated no effects on patterns of deglutition or oral structure.

I am familiar with the studies cited by most opponents of tongue thrust therapy. There are

very few, and with the exception of a pilot project by Schreiber, Maxwell, and Guay (1975) reported on subsequent to the publication of the "Statement", they are **not** suitably controlled. These include research by Subtelny (1970) and Subtelny and Sakuda (1964). Both Subtelny articles draw cause and effect conclusions from research not designed to warrant such conclusions. The Schreiber project involved therapy administered by graduate students with limited experience in dealing with myofunctional disorders. Their therapy was not successful in any way, according to their report.

A number of studies, including those by Case (1970), Overstake (1976), Falk (1977), and Stansell (1969), have demonstrated definite changes in swallowing patterns as a result of treatment.

6. There is no acceptable evidence to support claims of significant, stable, long-term changes in the functional patterns of deglutition and/or significant consistent alterations in oral form.

Studies by Robson (1973), Barrett and Von Dedentroth (1967), Toronto (1974), and Christofferson (1970) have all shown stable long-term changes in swallowing patterns and in orthodontically corrected occlusion. In these studies, the subjects served as their own controls. This weakens the significance of the results, but does not negate them. All subjects were evaluated before therapy by at least two persons, the referring orthodontists and the speech pathologists, and after therapy by two trained observers, and the judge agreement was extremely high.

In three of the pre-post therapy studies, assessments of occlusion and swallowing were made five years after the completion of therapy. You do not find this kind of study in the literature on stuttering, voice problems, aphasia, or any other kind of speech or language disorders. In fact, very few studies are to be found on the effectiveness of therapy at all, and most of those that have been done compare one type of therapy with another, rather than therapy with no therapy. A search through all issues of JSHD and JSHR, from the first issue to November, 1975, resulted in the following table (Table I).

Notice the lack of long-term studies. I defined "long-term" as any study which re-examined the speech of the client **three months or more** following the completion of therapy. The studies on tongue thrust summarized on the bottom line do not come from the ASHA journals, of course, but from miscellaneous other journals.

Those readers who studied Hahn's book on stuttering (1956) remember that the contributors included about equal number of M.D.'s, psychologists and speech pathologists. In the 1940's and 1950's there were still a number of commercial treatments for stuttering. In spite of a lack of good, substantial, well-controlled studies demonstrating that stutterers who receive speech therapy overcome their problem more often or more quickly than do those who receive no therapy, significant advancements have come from clinical experimentation, not from controlled research. We ought to admit that most of our testing is done clinically and informally, for all the disorders we treat, and stop deprecating what we learn from clinical experience. At the same time, we need to do a better job of testing results experimentally, in tongue thrust, in stuttering, in articulation, and in all the other disorders we treat. And we need to do a better job of training clinicians.

Table 1: Research on the effectiveness for various disorders*

Disorder	No. With Normal Control	No. With Own Control	No. With Control with Same Problem	No. Short Term Studies		No. Long Term Studies (3 months or more)		
				Effective	Not Effective	Effective	Not Effective	Total
Articulation	3	15	6	22	2			24
Aphasia		5	3	5	3			8
Cerebral Palsy		1		1				1
Miscel-laneous	1	2	2	3	2			5
Stuttering	2	19	3	20	3	1		24
Voice		3		3				3
TONGUE THRUST	1	5	2	1	1	6		8

*These were collected from all issues of JSHD and JSHR from their first issues through November, 1975, and from issues of IJOM.

Statement of the International Association of Oral Myology

It is the documented position of the International Association of Oral Myology that measurable and persuasive scientific research and clinical studies are available which validate use of the term "Tongue Thrust." Accordingly, this Association recognizes tongue thrust to be abnormal utilization of the oral-facial musculature during the act of deglutition which directly relates to dental malocclusion and/or speech. Such abnormality may become definitely identifiable after the early stages of mixed dentition. Further, this abnormal pattern of deglutition can and has been permanently altered through oral myofunctional therapy by trained oral myologists.

The IAOM agrees that a speech pathologist per se should not perform tongue thrust therapy, and submits that such therapy should be performed only if the speech pathologist is also a certified oral myologist.

A certified oral myologist, as recognized by the IAOM, is one who has:

1. completed an undergraduate degree in an appropriate field of study,
2. completed an approved course of training in oral myology,
3. passed written and practical examinations prepared by the Committee on Certification of the IAOM, and
4. assumed the ethical responsibilities designated by the Code of Ethics of the Association.

In the developing field of oral myology, the purposes of the IAOM are: to foster scientific research at acceptable universities and research centers; to provide training in oral myology at the college/university level; to establish meaningful intercourse with related fields; and to continually upgrade the standards and qualifications of those engaged in remediation of oral myofunctional disorders.

Specific requirements regarding training and experience have been formulated and are awaiting the approval of the membership of the IAOM.

Agreements among proponents and critics of therapy for tongue thrust

Relationships between tongue thrust and malocclusion, and between speech and malocclusion, are discussed in Chapter 7 in Barrett and Hanson's **Oral Myofunctional Disorders**, (1974). A pair of articles by Hanson (1975) summarizes areas of agreement among proponents and critics of treatment for tongue thrust, and defends the validity of such treatment. Since the present article and the companion one by Starr presumably present opposing points of view, a review of some of the areas of agreement might be worthwhile:

1. Tongue thrust has no single title or definition.
2. Co-existence of malocclusion and tongue thrust does not automatically reveal cause and effect.
3. Genetic determinants of jaw relationship are a significant cause of tongue thrust.
4. Lingual pressures against the anterior teeth are usually greater than labial or buccal pressures, even in people with normal occlusion.
5. Children who have an inadequate oral airway find it necessary to carry the tongue low and forward and the mandible lower than usual.
6. Mouth-breathing is a serious deterrant to the establishment of proper lingual resting posture.

7. Many tongue thrusters evolve into normal adult swallow pattern between 8 and 12 years without therapy.
8. Modification of habitual tongue resting posture should be an important goal in therapy.
9. There is no reason to recommend any treatment for children who have a tongue-thrust swallow without evidence of accompanying problems.

The Speech Pathologist as an Oral Myologist

The treatment of oral myofunctional disorders is a legitimate realm for the speech pathologist. Some reasons:

1. We were invited to treat tongue thrust problems years ago, by our friends in the dental profession. They were faced with a problem their training did not prepare them to cope with. Orthodontically-treated patients were relapsing frequently, and the tongue seemed to be the most likely suspect. Over the past twenty years, the services of speech pathologists in many areas of the country have proven to be so valuable, that it is common practice for orthodontists to refuse to begin treatment on a patient with a tongue thrust until therapy for tongue thrust has been satisfactorily completed. Whenever speech pathologists have been adequately trained, to my knowledge, their therapy has gained acceptance by the profession which enlisted their help in the first place.

2. There is a legitimate problem, and it involves the replacement of a desirable habit for a detrimental one, both involving anatomy and physiology with which the speech pathologist is uniquely familiar. Relationships between muscle activities that are vegetative and the voluntary activities for speech production are basic areas of concern for the speech pathologist, who works with patients with cerebral palsy, cleft palate, and dysphasia. The modification of behavior is **the** responsibility of the speech pathologist. He is trained to motivate, to understand needs, to individualize treatment, to achieve generalization of stimuli and responses to everyday life activities.

3. Among the professions represented by therapists who have treated tongue thrust in the past, the speech pathologist is best equipped to plan and carry out the clinical research needed to justify the perpetuation of treatment for oral myofunctional disorders. To discourage the speech pathologist from becoming clinically involved with this problem is to severly inhibit the development of needed research projects.

Principles and procedures for more effective therapy for tongue thrust.

Most speech pathologists long ago discovered the values and the short-comings of commercially available programs for correcting speech defects. The same pro's and con's exist pertaining to programs for correcting tongue thrust. They will not be reviewed here. Instead, let me call your attention to three general types of approaches to the treatment of speech disorders that have real value in therapy for oral myofunctional disorders: (1) the organismic approach; (2) behavioral modification; and (3) distinctive features.

1. The organismic approach. This is best known for its usefulness in the treatment of stuttering. Three principles have special pertinence:
   a. We do not erase old neuro-muscular patterns in treatment. Psychomotor patterns produced year after year subconsciously may be replaced with new patterns, but the former are always subject to recall under certain physiological and/or emotional conditions. Hence, we don't "cure" tongue thrust, and we always train parents and patients to watch carefully for signs of relapse.

b. When a habit is an integration of several related habits, such as is the case in oral myofunctional problems, failure to deal with any of the component habits will encourage the return of the others after therapy is completed. Treatment must encompass the total problem and all its aspects.

c. Habits established early gain strength as time passes. This principle has two implications, one having to do with the eradication of the thrusting habit, which in most cases, has been present from birth; the other with the establishment of correct habits, which should be accomplished as soon as the patient is mature enough physically, mentally, and emotionally to carry out necessary assignments.

2. Behavioral modification. Behaviorists have provided us with some very useful principles. Behavioral modification consists of three steps.

1. Establish baseline. Determine, in the tongue thrusting patient, precisely what he is doing correctly and incorrectly. Assess strength of involved muscles and assess appropriateness of movements of the oral structures during function. Then determine **potential** strength and movement. For example, a patient may not habitually occlude the molars during swallowing, but the masseter and temporalis muscles may be normal in strength. Exercises should then be assigned to increase awareness of the contraction of those muscles, and to systematically establish the **habit** of their contraction during swallowing, rather than to strengthen them.

Another value of determining baseline is in finding out whether preliminary medical or dental procedures might facilitate effective myotherapy.

Unfortunately most clinicians are now following **programs** too rigidly, and failing to individualize their therapy. A complete description of baseline is the first step in freeing one's self from the restrictions of someone else's program.

2. Modify the behavior. Strengthen muscles that have been under-used in former patterns; develop a strong awareness of correct kinesthetic and tactile cues; teach new movements in a logical, sequential manner; then integrate the parts through carefully chosen, very specific assignments.

3. Extend the stimulus control. Provide a structured plan for carrying over learned responses outside your clinic or office. The patient must use the correct patterns day and night, in all environments and situations. This is the most difficult, and most important phase of treatment. Assignments must be specific, and the clinician must receive feedback on the patient's compliance with the instructions.

3. Distinctive features. I received a letter several weeks ago from a researcher who contended that it was impossible for proper lingual resting posture to facilitate proper articulatory movements. He wrote, "It is a well known fact that the neurological mechanisms underlying muscle rest and muscle action are not comparable." That is a difficult statement for me to reconcile with the law of physiological economy, which seems to govern all our automatic movements. The tongue during articulation moves away from its position of rest far enough to make a phonemic approximation which satisfies the speaker. My own research found a strong, statistically significant relationship between a dentalized tongue resting posture and the dentalization of all the tongue tip consonants.

Since a large number of tongue thrusters do have frontal lisps, the speech pathologist usually corrects the speech defect along with the swallowing and lingual postural deviations. Too often, though, the auditorily-oriented speech clinician treats only the lisp, and leaves the t, d, n, and l sounds as they are, since they **sound** normal. Referring back to the second organismic principle, to allow part (i.e., the dentalization of certain consonants) of a total problem (anteriorization of the tongue) to remain, is to risk relapse.

A total approach to the habit disorder would recognize the feature of dentalization during the production of whatever consonants were anteriorized, and would achieve generalization across all defective sounds by focusing on the feature of anterior tongue placement. The order I follow is to begin working on tongue resting posture during the initial consultation. Utilizing behavioral modification principles, I give assignments and reinforcements that achieve habituation of such postures within about six weeks. At this time, the patient is well acquainted with "the spot", and is instructed to practice reading (if old enough, or repeating phrases, if not) aloud, imagining that the "spot" is home for the tongue, and it returns there during speech whenever it gets a chance. The tongue tip is connected to the spot by an imaginary coil spring, which only allows the tip to leave the spot when necessary to produce a sound. This technique has proven very successful in correcting the feature of dentalization.

Miscellaneous therapy principles

A previous article (Hanson, 1967) listed 22 principles for achieving more success in therapy for tongue thrust. Most of those principles are still viable today. A shorter list of some of the most important suggestions follows:

1. See the patient enough times. Be wary about eliminating lessons or shortening a program.
2. Parental cooperation is essential, even with older teen-age parents. It is generally necessary to have a parent present as therapy is administered.
3. Responsibility for spotting relapse signs must be accepted by the patient and/or parents.
4. Make the patient aware of the purpose and importance of each exercise and assignment.
5. Be firm about practice requirements.
6. Use reminders, signs, and signals liberally.
7. Require specific feedback regarding compliance with assignments.
8. Vary motivational techniques according to the patient's age, needs, and interests.
9. Be suspicious during rechecks. Anything the patient does wrong should be suspected of occurring frequently when he is away from your office.
10. See the patient until all orthodontic treatment is completed, including the retention phase.

Summary

The efficacy of therapy for tongue thrust has been uncertain, in the minds of many professionals, due primarily to the inadequate training of many who have called themselves "oral myofunctional therapists". The most logical specialist to work with oral habit problems is the speech pathologist. With relatively little extra training, and by sound application of principles and procedures he is already using in treatment of speech disorders, he can become competent as an oral myologist. Speech pathologists should be trained to administer such treatment in college and university graduate programs. If programs are discouraged from training such specialists, there will be no one qualified to do the much-needed clinical research.

Reprint requests should be mailed to:

Marvin L. Hanson, 1201 Behavioural Sciences Building
University of Utah, Salt Lake City, Utah 84112, U.S.A.

BIBLIOGRAPHY

Barrett, R.H., and Hanson, M., **Oral Myofunctional Disorders**, CV Mosby, 125-133, 1974.

Barrett, R.H., and von Dedenroth, T.E.A., "Problems of deglutition," **AM. J. Clin. Hypno.** 9, 161, 1967.

Case, J.L., "Deglutition changes as a function of therapy as revealed by palatographic analysis," Thesis, University of Utah, 1970.

Christofferson, S., "The permanency of deglutition changes," Thesis, University of Utah, 1970.

Falk, M., "A comparison of the effectiveness of rood and traditional approaches to the treatment of tongue thrust," Unpub. research, 1977.

Fletcher, S.G., Casteel, R.L., and Bradley, D.P., "Tongue-thrust swallow, speech articulation and age," **JSHD 26**, 219, 1961.

Hahn, E.F., and Hahn, E.S., **Stuttering: Significant Theories and Therapies,** (Stanford University Press) 1956.

Hanson, M.L., "Some suggestions for more effective therapy for tongue thrust," **JSHD 52,** 75-79, 1967.

Hanson, M.L., "Tongue thrust: another look at the evidence, Part 1," **Int. J. of Oral Myology** Vol. 1, no. 31, 105-113, July, 1975.

Hanson, M.L. "Tongue thrust: another look at the evidence, Part 11," **Int. J. of Oral Myology**, 1, no. 4, 132-136, October, 1974.

Hanson, M.L., "The joint committee's statement on myofunctional therapy - pro's and con's," **Intern. J. of Oral Myology**, 2, no. 1, 13-19, Jan., 1976.

Hanson, M.L., and Cohen, M.S., "Effects of form and function on swallowing and the developing dentition," **Am. J. Orthod.**, 64:63, 1973.

Hanson, T., and Hanson, M.L., "A follow-up study of longitudinal research on malocclusions and tongue thrust," **Intern. J. of Oral Myology**, 1:1, 21-28, Jan., 1975.

Harvold, E.P., Vargervik, K., and Chierici, G., "Primate experiment on oral sensation and dental malocclusion," **Am. J. Orthod.** 63, 494, 1973.

Jann, G.R., Ward, M.M., Jann, H.W., "A longitudinal study of articulation, deglutition and malocclusion," **Journal Sp. and Hrg. Dis.**, vol. 29, no. 4, 424-435, Nov., 1964.

Joint Committee on Dentistry and Speech Pathology-Audiology, **ASHA**, Vol. 17, no. 5, 331, May, 1975.

Mendel, R.A., "Tongue and lip forces exerted on the maxillary central incisors during swallowing," Thesis, University of Washington, 1962.

Negri, P.L., and Croce, G., "Influence of the tongue on development of the dental arches," **Dental Abst.**, 453, July, 1965.

Overstake, C.P., "Investigation of the efficacy of a treatment program for deviant swallowing and allied problems," Part 11, **Intern. J. of Oral Myology**, vol. 2, no. 1, 1-6, Jan., 1976.

Rix, R.E., "Deglutition and the teeth," **Dent. rec.**, 66:103, May 1946.

Robson, J.E., "Analytical survey of the deviate swallow therapy program in Tucson, Arizona," Thesis, University of San Francisco, 1963.

Rogers, J.H., "Swallowing patterns of a normal population sample compared to those patients from a orthodontic practice," **Am. J. Orthod.**, 47:674, 1961.

Ronson, I., "Incidence of visceral swallow among lispers," **JSHD**, vol. 30, no. 4, 318-324, 1965.

Schreiber, E.S., Maxwell, D.L., and Guay, A.H., "An investigation of myofunctional therapy in speakers with tongue thrust, /s/ phoneme distortion, and class I and II malocclusion," Paper presented at ASHA convention, 1975.

Stansell, B., "Effects of deglutition training and speech training," Unpub. dissertation, University of Southern California, 1969.

Subtelny, 'J.D., "Malocclusions, orthodontic corrections, and orofacial muscle adaptation," **Angle Orthod.**, 40:170, 1970.

Subtelny J., Mestre, J., and Subtelny, J.D., "Comparative study of normal and defective articulation of /s/ as related to malocclusion and deglutition," **JSHD** 29, 269-285, 1964.

Subtelny, J.D., and Sakuda, M., "Open bite: diagnosis and treatment," **Am. J. of Orthod.**, 50-337, May, 1964.

Toronto, Allen, S., "Long-term effectiveness of oral myology," **Intern. J. of Oral Myology** 1, no. 4, 132-136, Oct., 1974.

Ward, M.M., Malone, Sister H.D., Jann, G.R., and Jann, H.W., "Articulation variations associated with visceral swallowing and malocclusion," **JSHD**, vol. 26, no. 4, 334-34 Nov., 1961.

Werlich, E.P., "The prevalence of variant swallowing patterns in a group of Seattle schoo children," Thesis, University of Washington, 1962.