FILOLOGIJA, KNJIGA 17, ZAGREB 1989 *YU ISSN 0449—363 X*

UDK: 001.891:801.4—056.263
Izvorni znanstveni članak
Primljeno 10/1989

GIOVANNI MOTTA — MAURIZIO IENGO, NAPLES

REHABILITATIVE TREATMENT OF CHILDREN WITH SEVERE AND PROFOUND HEARING IMPAIRMENTS AS TREATED BY MEANS OF THE VERBO-TONAL METHOD: INTERPRETATION AND FINDINGS OF THE NAPLES SCHOOL

Dedicated to Professor Petar Guberina on the occasion of his seventy-fifth birthday.

The authors analyse the application of verbo-tonal method at their ORL Clinic, which is a new practice in rehabilitative treatment of hearing and speech. Treatment at the ORL Clinic is mostly individual, strictly obeying age groups. Particular innovations of the Naples school are the following:

1) Musicotherapy
2) Introduction of an analyzer, for better control of prosodic elements of speech.

INTRODUCTION

A child with a serious hearing impairement cannot learn to speak: he has therefore evident limitations in verbal communication which are reflected on his psycho-intellectual development and his social behaviour. The recovery of this patient is of an utmost significance, not form the medical point of view alone, but also from that of humanity in general. The methods that use »the language of signs« or that of gestures are doubtlessly most easy to learn and can be taught actively: nevertheless a patient thus treated, having acquired a capacity for communication, has relevant difficulties in the social context since the technique which he has been taught can be put into practice only with people with the same impairment who have been educated according to the same method. Much more efficient are speech therapy techniques through which patients acquire a succession of articulatory movements, such as those that teach children to produce phonemes, words and sentences aided by lip-reading, through use of acoustic hearing aids (oral method). This method is generally based on exercises mainly of individual type through which patients are taught to accomplish movements with articulatory and vocal organs which lead to a sufficient verbal expression, although this expression is often barely expressive and is not acceptable from the prosodical point of view. The verbo-tonal method, created by prof. Guberina, is based on the fact that teaching a language to a hearing impaired

child cannot be fully accomplished by simply teaching him how to speak in a grammatical and syntactic sense, but it has to enable him to express himself, to talk, to communicate an emotional tone which would be similar to that of a child of normal hearing. This objective can be reached by supplying the patient, through all possible forms of communication — through acoustic, visual, tactile and sensory stimulations — with a series of information on the sonorous aspects of speech which regard not only the physical characteristics of various notions, but which principally deal with the emotional aspects of the verbal message as a whole, namely intonation, rhythm, timbre and register.[1]

HISTORICAL BACKGROUND

The verbo-tonal method has been conceived by prof. Guberina[2] in 1953. The principal merit of the author is that he has coordinated a series of interventional rehabilitation, partly original and partly based on experience of earlier studies, thus creating a method which thoroughly encompasses the problems of the patients in question.[3]

The ideas, the instructions, as well as the technique proposed by prof. Guberina have been put into practice at the Centre SUVAG (Systeme Universel Verbo-tonal Audition Guberina) in Zagreb, where treatment of patients with serious hearing impairments is systematically and organically being put into effect. Since the Centre is located in a structure which forms a part of a regular school, apart from undergoing rehabilitational treatment, the children take part in various educational and recreational activities together with children of normal hearing who attend the school.

At the Centre SUVAG in Zagreb the ideas of prof. Guberina are not only being widely realized, but have also in the course of years undergone a progressive evolution and have been rationally profounded: from 1962 to 1985, 850 patients have been treated in such a way as to demonstrate the validity of the conditions of the method and of the techniques thereby employed. Although there exists a wide variety of literature on the verbo-tonal method,[4,5,6,7,8] it nevertheless gives only limited and incomplete information

[1] Guberina P.: Asp. C. W.: The Verbo-Tonal method for rehabilitating people communication problems. Acts of the Informational exchange of information in rehabilitation. World Rehabilitation Fund, Inc., New York (USA), 1981.

[2] Guberina P.: L'audiometrie Verbo-Tonale. Revue Laryngol., 1—2, 20—58, 1956.

[3] Guberina P.: La methode audio-visuelle structuro-globale. Revue Phonet. Appl., 1, 35—64, 1965.

[4] Craig W. N.: Craig H. B.: Burke R.: Components of Verbo-Tonal Instruction for Deaf Students. Lang. Speech Hear. Serv., 5, 38—43, 1974.

[5] Gutie B.: Application dc l'audiometrie verbo-tonale aux enfants, J. ORL Lyon, 3, 63—70, 1958.

[6] Gladic A.: Ilief-Coblaine J.: Application de la methode verbotonale pour la reeducation des handicapes de l'oute de la vue. Revue Phonet. Appl. 18, 23—28. 1971.

[7] Tulasiewicz J. F.: Some experiments with the Verbo-Tonal. Revue Phonet. Appl. 3, 69—87, 1966.

[8] Vuletic B.: La corection phonetique par le systeme verbotonal. Revue Phonet. Appl., 1, 65—76, 1965.

on its theoretical principles and its techniques; moreover, it creates numerous problems regarding the interpretative suppositions and remote theories and gives inacurate instructions, with reference to infinite psychological and social problems which have very little to do with the everyday reality of the method. On the other hand, the method has, several times and for various reasons, not been completely followed through (insufficient preparations on the part of the therapists, lack of adequate equipment, particular social conditions of the patient, etc.); this has forced some experts to direct harsh criticism at scientific reunions or congresses, some of which have been published.

Such criticism generally derives either from an insufficient knowledge of the method or through its misinterpretation or misapplication: this is largely due to the fact that numerous experts, when visiting the Centre in Zagreb where they have discussions with prof. Guberina and his assistants, come to recognize the methods adopted by them or the relative sources of information, and thus acknowledging them, they later propose them in their own studies without quoting their origin; this is also due to the previously mentioned fact that the information from the literature is either partial or incomplete.

Our task is to give an illustration of the verbo-tonal method, to explain its presuppositions, to document its techniques, to interpret its function and its reasons, to support its validity based on the experience that we have had in the past 5 years of its application at the Centre of Phoniatrics at the II Faculty of Science — Medicine and Surgery — at the University of Naples.

Naturally this experience has helped us acquire information and ascertain the conviction on which we shall base our report; theoretical presuppositions of the method and its criteria of application can therefore, in our treatment, be influenced by the picture that we have formed, which in our opinion does not seem to lead to a deformed vision of the verbo-tonal method, but it brings out one of its more interesting particulars: the special flexibility for which it can be successfully adapted into various ambiental and social conditions, bearing in mind the cultural and psychological preparation of both the patient and the therapist.

Our experience which has matured over the past five years of using this method, has encouraged us not only to confirm its advantages, but also to modify its application through original techniques, which have been studied in order to potentiate the feed-back of the patient and thus improve his verbal communication.

I) CONDITIONS

The verbo-tonal method is based on a series of conditions which are extremely important for conceiving its objectives and its possibilities: the method is especially recommended if a series of objectives is to be attained, by means of adequately coordinated individual and group exercises.
Some of the principal objectives are:

1) to potentiate the impaired acoustic canal and residual hearing by means of a special amplification for particular sounds so that a patient may, in case of amplification itself, hear them with no distortion, no previous adaptation or without masking it, which could otherwise have a negative effect on his perception; the sound stimulations are always emitted in the fastest possible way.

a) through adequate equipment (the apparatus SUVAG) in order to amplify only particular frequencies; the acoustic stimulations are sent to the patient through head-phones: the apparatus SUVAG is connected to the head-phones by means of a cable and the use of infra-red rays. Above all other sounds, the patient gets used to percieving those which his hearing impairement allows him to hear: the hearing field of a patient who is undergoing treatment is therefore gradually enlarged, taking into consideration the results obtained from the rehabilitation and primarily those to which he gradually gets accustomed to through training, as compared to the frequencies of higher intensity which he percieved at the beginning, or which have been accompanied by effects of substantial distortions or painful sensations.

b) by means of hearing aids which take into consideration not only the audiometric data, but also the important factors that occur in the course of treatment with the apparatus SUVAG and results thus obtained; it is immediately specified that in the course of both group and individual exercises, it is preferable to use the apparatus SUVAG together with head-phones in the initial stage, if the following is possible:

— selective amplification of the frequencies which have been better preserved in accordance with the illustrated instructions

— obtaining a more accurate reproduction of sounds by reducing the effects of distortion — avoiding inconveniences related to either a shift in the distance of the found source or the direction of the sound stimulations: successively the same exercises are repeated with hearing aids, so as to accustom the patient gradually to their use for a better acquisition of working habits formed in the course of the treatment.

2) to teach the patient to fully employ all useful canals, both somatosensory and sensory, in the course of the treatment; the patient should be particularly encouraged to use tactile as well as visual perceptions and also proprioceptive stimulations in order to perform the above exercises; or to state precisely:

a) visual stimulations are essentially used with patients but without necessarily underlining their technical potential or through particular guided exercises: their application is instinctive; the patient imitates the posture of the mouth or that of the more conspicuous articulatory organs (lip reading), also the reactions of the various group members, and the movements of others under the influence of sound or vibrations; the speech therapist should only emphasize the importance of these stimulations by drawing the patient's attention to them and in so doing, directing them towards rehabilitational objectives;

b) transformation of the sound stimulus into a tactile sensation is effected by means of special equipment connected to adequate vibrators;

c) evaluation of proprioperceptive stimulations is accomplished when the patient has performed various physical exercises (games, dance, movements, etc.), reproducing rhythm to the tempo of the sentence of particular sounds which have not been completely perceived, and when he feels that he has obtained relevant information about the various characteristics of a sound which he learns to value and to reproduce.

3) acquisition, not of simple words or sentences, but that of a harmonious voice with regard to timbre and register and of a structural language which, from the viewpoint of prosody, has such characteristics and qualities that render it expressive and emotionaly valid.

4) socialization through which an impaired child is integrated into his surroundings: it is immediately established that socialization, and therefore the individual relationship that a heavy hearing-impaired child establishes with other patients in his group and his speech therapists, constitutes one of the basic elements when determining the type of treatment the method is to pursue.

PATIENTS

The verbo-tonal method is applied in treatment of patients with a serious hearing impairment (average hearing loss above 65/70 dB) and also with profoundly deaf patients (average hearing loss above 95 dB). The treament of such patients is performed in successive phases which correspond approximately to various age groups. The following age scheme in 4 sequences is suggested:

1) Ist age group ranging from 12 to 24 months
(preparatory phase or that of vocalization)

2) 2nd age group ranging from 2 to 4 years
(pre-school phase or that of spelling)

3) 3rd age group ranging from 5 to 8 years
(intermediate phase or that of speech)

4) 4th age group from 9 years and above
(school phase or that of structurization)

Such age groups are extremely important and they undoubtedly allow for a schematization of the treatment period; these groups cannot have rigid age or time limits, but otherwise, beside being practical for the organic treatment of the matter, they respect the evolution of the rehabilitation and the adaptability which the techniques have to undergo with regard to the development which the patient has achieved.

TECHNIQUES

The rehabilitation encompasses the following:

— group exercise
— individual exercise

a) Group exercise

The patient is put into a group together with other patients having the same impairment and being of approximately the same age. In the course of the rehabilitation, the patient is given various sound stimulations which he perceives in various ways, after which he reproduces them with his phonatory organs, and he is finally placed in a situation where he has to coordinate and to confront sounds and vocal messages with functionally studied rhythmic activities. This can further be specified as follows:

1) each patient is exposed to vocal sound and/or music stimulations which are always associated with a motoric activity (music therapy) produced as a result of a game or some other phonatory exercise which has been created by the patient himself or by the other members of the group; he perceives these stimulations
as follows:

a) as sounds, adequately amplified, which are transmitted either through head-phones connected to the apparatus SUVAG — which in general, as previously mentioned, tends to emphasize low frequencies by means of lowpass filters — or through hearing aids;

b) as tactile sensations transmitted to the patient through vibrators which are placed against various parts of the body and/or against a wooden board;

2) patients who are being treated have to perform rhythmic activities accompanied by body movement; that is, they have to perform rhythmic movements (body rhythm) which in a microscopic way represent the essential characteristics of phones: tension, intensity, duration, tempo, space. As a result of body movement, the first phonemes are emitted (lallation) at the same time as the physiological development of the speech of a normal hearing person. Body rhythm is substituted by »phonetic rhythm«, which essentially tends to stimulate the emission of phonemes, and which accompanies the emission of brief sentences.

3) Finally, the patients are given the possibility to coordinate the acquired sounds (including phonemes and sentences) by actively participating in various forms of group activities in the form of a game, performance, dance, etc. (dramatization); this contributes towards the »inteririorization« of the logical structure of the expressed concept of scene construction, it constitutes a stimulus for verbal creativity and improves the eloquence in all its complexity. The objectives of the rehabilitation pursued through groupwork techniques illustrated also through imitative performances, competitions, mutual relationships, the importance of which lies not entirely in

Fig. 1: I soggetti percepiscono i suoni come stimoli vibrotattili che vengono trasmessi loro dai vibratori applicati ai polsi e da quelli che poggiano sulla pedana.

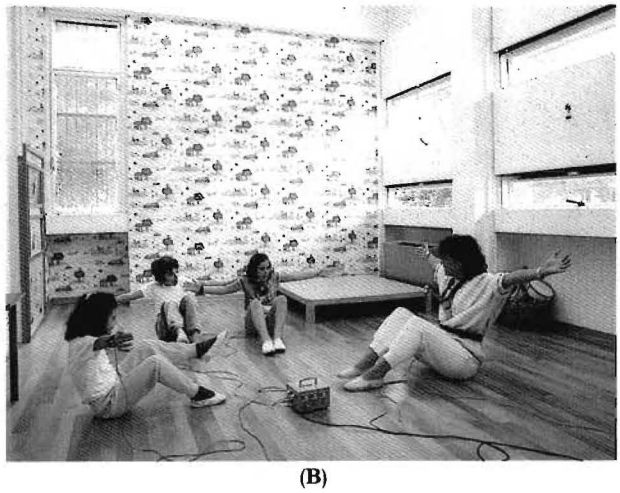
Fig. 2: La logopedista tenta di provocare una lallazione spontanea servendosi delle stimolazioni acustiche e vibrotattili trasmesse al bambino rispettivamente attraverso le cuffie ed i vibratori collegati all'apparecchio SUVAG.

Fig. 3: La percussione della mano sul tamburo viene accompagnata dalla pronunzia di monosillabi (bum-bum-bum).

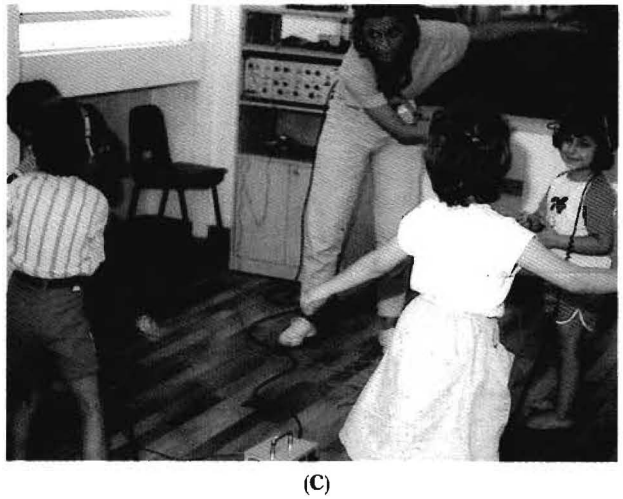
Fig. 4: I bambini seduti intorno alla pedana di legno percepiscono gli stimoli sonori, adeguatamente amplificati, attraverso le cuffie collegate all'apparecchio SUVAG.

Fig. 5: I bambini anche in questa fase utilizzano le informazioni vibrotattili appoggiandosi alla pedana di legno su cui è posto un vibratore.

(A)



(B)



(C)

Fig. 6: RITMI FONETICI

(A) Ripetizione del fonema «PA»: la logopedista ed i bambini accompagnano la emissione vocale del fonema con un colpo netto del pugno sul pavimento.

(B) Ripetizione del fonema «TA»: la logopedista ed i bambini accompagnano la emissione vocale del fonema con una secca percussione del piede sul pavimento («T») e con l'apertura delle braccia («A»).

(C) Ripetizione del fonema «LA»: la logopedista ed i bambini accompagnano la emissione vocale del fonema con un ondeggiamento delle braccia aperte.

(A) (B)

Fig. 7: Grafismo fonetico: una serie di punti eseguita in successione (A) esprime graficamente la pronunzia ripetuta del fonema «PA» (pa-pa-pa) mentre una linea retta (B) raffigura l'emissione prolungata dello stesso fonema (PAAAAAAA).

Fig. 8: Drammatizzazione: la logopedista mima le api che pizzicano il naso e la bocca del bambino. Il messaggio sonoro è percepito dai pazienti attraverso le cuffie collegate all'apparecchio SUVAG per mezzo di un sistema a raggi infrarossi.

(A)

(B)

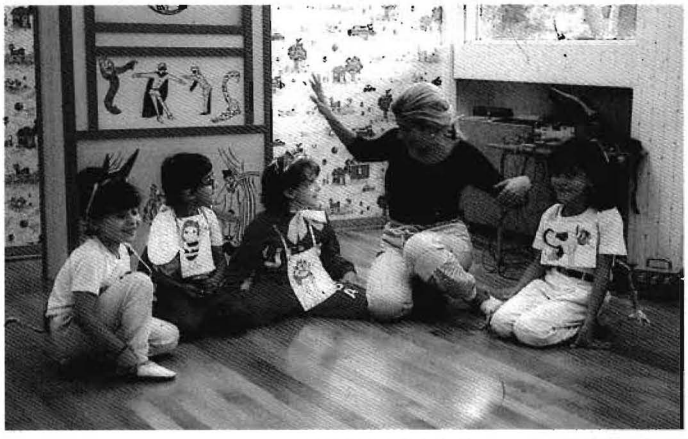
Fig. 9: Terapia individuale: correzione delle dislalie utilizzando il canale acustico e visivo (A) e successivamente il solo canale acustico (esercizi a bocca schermata) (B).

(A) «*la farfalla lieta...*»

(B) «*vola...*»

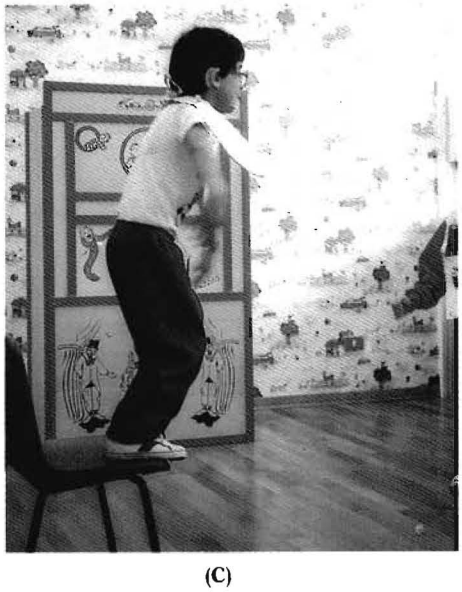
(C) «*è tutto uno splendore...*»

Fig. 10 (A) (B) (C): le filastrocche, grazie al loro contenuto musicale, favoriscono l'esecuzione di movimenti lenti ed ampi, consentendo così di migliorare l'acquisizione del ritmo e dell'intonazione del linguaggio.



(A)

(B)



(C)

Fig. 11: Drammatizzazione - rappresentazione dello zoo; in questa fase i bambini utilizzano le loro protesi acustiche.

(A) La logopedista assegna ad ogni bambino il compito di impersonare un animale e spiega le modalità del gioco.

(B) Un bambino si nasconde e gli altri lo cercano e lo chiamano mimando l'animale che essi rappresentano.

(C) Il bimbo vive intensamente il suo personaggio: l'ape.

Fig. 12: Musico-terapia di gruppo: il gruppo di bambini canta una filastrocca musicale seguendo la melodia del flauto ed aiutandosi attraverso l'osservazione della scheda musicale.

Fig. 13: Terapia individuale: correzione delle dislalie utilizzando suoni selezionati opportunamente amplificati (campo ottimale) e facendo compiere movimenti ritmici adeguati (ritmi fonetici).

Fig. 14: Musico-terapia individuale: il bambino corregge l'emissione della sua voce durante il canto di una filastrocca musicale prendendo come riferimento i tracciati prosodici che compaiono sul monitor di un visualizzatore della voce. Tale apparecchio gli dà la possibilità di confrontare il tracciato relativo alla voce della logopedista (in alto) con quello della sua voce: il feed-back visivo gli consente di attuare più facilmente una correzione adeguata dei suoi errori ed in particolare di quelli riguardanti la prosodia.

PREPARATORY STAGE OR THE STAGE OF VOICING

FIG 1:
The children perceive the sounds as vibrotactile stimuli which are transmitted tro ugh the SUVAG vibars fastened on the children's wrists and under the vibratory board.

FIG 2:
The speech therapist tries to provoke spontaneóus voicing using acoustic and vibrotactile stimuli transmitted both through the headsets and trough the bone vibrators, all hooked on to the SUVAG unit.

FIG 3:
Monosyllables (bum-bum-bum) accompany the sounds of the drum.
PRESCHOLAR STAGE OR THE STAGE OF BABBLING

FIG 4:
The children seated around the vibratory board perceive the sounds, amplified according to the loss, through the body and through the headsets connected to the SUVAG unit.

FIG 5:
Even at this stage the children use vibrotactile information leaning onto the vibratory board connected to the bone vibrator.

FIG 6:
(A) Repeating the phoneme 'PA' the speech therapist and the children hit the floor with a clenched fist with every utterance.
(B) Repeating the phoneme 'TA' the speech therapist and the children hit the floor with one foot ('t') and open their bodies ('a') at the same time.
(C) Repeating the phoneme 'LA' the speech therapist and the children wave their arms with every utterance.

FIG 7:
Phonetic drawing: a series of dots ('a') is a visual representation of the repeated pronunciation of the pohoneme 'PA' (pa-pa-pa), while a straigt line represents the prolonged emission of the same phoneme (paaaaa).

FIG 8:
Dramatization: the speech therapist shows the bees touching the nose and the mouth of the child. The acoustic signal is perceived through the headsets linked to the SUVAG unit through the infra red system.

FIG 9:
(A) Individual therapy: in treating dyslallia at first both visual and auditory perception are used, and then
(B) only the auditory one (exercise with the mouth hidden).
INTERMEDIATE STAGE or the stage of verbalization

FIG 10:
(A) *'a happy butterfly'*
(B) 'is flying'
(C) 'in all his splendor'
Nursery rhymes, thanks to their melodic content, favorize large and slow movements, thus helping in the acquisition of rhythmic and intonational speech patterns.

FIG 11:
Dramatizaton- representing the Zoo: in this phase the children use their individual hearing aids.
(A) The speech therapist explains the game and gives each child the task to impersonate an animal.
(B) One of the children hides and the others call him while miming the animal which they impersonate.
(C) The child impersonating a bee is inspired by her own experience.

FIG 12:
Musical therapy in group: a group of children is singing a nursery rhyme following the sound of the flute and observing a musical picture.

FIG 13:
Individual therapy: treating of dyslallis with the use of optimal frequency filtering for each sound accompanied by the adequate rhythmical movements (phonetic rhythms).

FIG 14:
Individual musical therapy: the child corrects his voice during the production of a musical nursery rhyme following the intonative line which appears on screen. Such a machine helps compare the child's production to that of the therapist's (shown above): the visual feed back helps the child correct his mistakes especially in rhythm and intonation.

the acquisition of the language, but also in the socialization of the treated patients.

4) Phonetic and syntactic globally structural material (a word is always preceeded by an article, a sentence is complete in all its syntactic parts, etc.) is presented to the treated patients from the first phases of the therapy.

b) Individual exercise

It always closely follows group exercise; in the course of individual exercise, the speech therapist is in close contact with only one patient thus improving his pronunciation and correcting his impairment in the most adequate way by using particular psychological mechanisms connected to interpersonal relationship through the use of the following:

— an amplifying apparatus with a specific filtering system (SUVAG);

— an apparatus for the prosodic visualization of the voice by means of which disturbances of the voice and speech are corrected;

— elementary games or special technical equipment (films, slides), which are interesting to the patient and which stimulate their cooperation. Group and individual exercises are repeated in various phases, becoming always more complex with regard to the progressive maturation of the patient and to the programmed and joined rehabilitational levels. The illustrated techniques require the use of various equipment made up of various elements that are in contact with the patient during the different phases of the treatment and in successive time spans: this adds to the quantity and quality of the phonetic material offered to the child, thus improving the acquisition of harmonic speech, and it also contributes to a better socialization, creating a favourable contact between the child and his surroundings, established not only with other children from his group, but also with other adults, i. e. the speech therapist; this plays a major role in the life of an impaired child who generally attempts to speak only with his parents and, as a consequence of this, is isolated from other adults.

TREATMENT PHASES

1) PREPARATORY PHASE OR THAT OF LALLATION

Age: 12—24 months

This is a phase in which hearing aids are introduced and first acoustic information is given to the child: however these exercises do not assume the character of real and properly coordinated exercise because the patient's young age makes it impossible for him to perform rhythmical and rehearsed movements of the body.

The patient is first given a hearing aid: choosing a hearing aid and regulating it correctly requires a long period of time during which the

patient's reactions to a sound stimulus should carefully be studied, as well as all the provisions necessary for an adequate control of the hearing threshold and for a better adaptability to the hearing aid.

From the point of view of the rehabilitation, this phase is considered preparatory with respect to the following ones as long as the patient:

— makes the first contact with the speech therapist

— receives the first tactile and visual sensations which are coordinated with sound stimulations. In this phase, a structured correlation between body movement and sound emission is missing.

Initially this period of treatment is realized in groups of three children; a critical analysis of our work has nevertheless observed that, according to Piaget's theory, children up to the age of 24 months are not able to relate to more than one person and that they do not find satisfaction in group activities. As a result of these observations treatment of this age group was therefore conducted by means of individual therapeutical sessions in which the speech therapist stimulated vocalization with only one patient.

During such a rehabilitational period, the sensuous stimulations were as follows:

a) vibrotactile

b) acoustic

c) visual

a) The first phase of speech therapy with an age group ranging from 12 to 24 months is conducted by first exploiting vibrotactile perception and then associating the latter to the use of hearing aids.

The child is placed against a wooden board so to maintain direct contact with it (fig. 1). One or more vibrators are placed on the board with the vibrating part placed against it and the child receives vibrotactile informations through the board on which he is sitting.

Gradually, the vibrator is given to the child who, out of curiosity or simply in order to imitate the movements of the speech therapist, places it against those parts of his body that, with regard to him, are the most likely to perceive the vibrations.

The patient thus learns to associate the presence of vibrations to the sound of the voice as opposed to absence of vibrations and silence.

b) The patient is given hearing aids which are to be used with the vibrator. The sound stimulations are made up of sounds which have adequately been amplified and varying in rhythm, duration and intensity; these are emitted to the child through headphones thus making him aware of the concepts of space (direction of the sound) and time (duration and rhythm) with regard to these stimulations.

c) to stimulate the child's attention, the sense of vision is also used by means of a visual voice monitor (for eg. SI 80) which teaches the child the

difference between silence and sound (voice) by means of observations and the conceptual maturation of the following notions:

— silence — absence of light (or of a sign)

— noise (or voice) — presence of light (or of a sign).

2) RHYTHMICAL ACTIVITIES OF THE BODY

In this phase body movement (body rhythm) which is associated with vocal production is simple and it does not reach the rhythmic coordination attained by patients of a higher age group (fig. 2). The patient, by means of various toys and through play, is required to emit sounds which are relatively typical of each game and enriched with a rhythmic stress pattern.

It is important that these games have a strong emotional note in order to stimulate the child; a falling doll and the simultaneous emission of the vowel »U« denotes disapproval over the event, or else beating of the drum with the hand (fig. 3) or tapping a piece of chalk on the table, or bouncing a ball on the pavement, accompanied by the rhythmic pronunciation of monosyllables (ba-ba; bum-bum-bum; etc.), all stimulate the patient into improving his auditive and tactile senses, makes him acquire a notion of rhythm through movements of arms, legs and head, which accompany the acoustic message, makes him emit precise sounds under the guidance of the speech therapists, and makes him participate in a group activity and at the same time socialize with others from the group.

3) DRAMATIZATION

The activity of play has been initiated by the therapist and charged with emotional content, such as polarizing a child's attention thus rendering him disposable for therapy. During this phase of rehabilitation little sketches in which the characters re-live definite emotional situations are presented to the children. The verbal content of this basic form of dramatization is accompanied by extremely accentuated mimicry of the body in order to point out the semantic content of those activities which are being proposed.

II) PRESCHOOL PHASE

Aged: 2—5 years

A child of this age is sufficiently mature to participate in group activities together with other patients who are guided in the acquisition of speech. One of the conditions for the formation of a group is that it should be uniform in age and in the degree of hearing impairment.

a) GROUP exercise

1) SENSORY STIMULATIONS

a) acoustic and vibrotactile

b) musical

a) The speech therapy is conducted by means of an amplifier connected to either a vibrator or head-phones (fig. 4); the latter are used to establish the children's concentration, to arouse their interest in the treatment activities, thus conditioning them for a closer participation.

An amplified message is transmitted to the child through headphones and the intensity is regulated first by the speech therapist and then by the child. The amplification regards all the frequencies where the treatment is conducted in the »direct channel«, that is to say through the amplification of all acoustic components of a verbal message.

During such group activities hearing aids are also used since the children get accustomed to them as well as to the code that they transmit. In this phase of the treatment vibrotactile stimulations are still of fundamental importance for the acquisition of rhythm and intonation of speech: the children are placed against a wooden board on which a vibrator is positioned so as to transmit vibratactile information to them. (fig. 5)

b) in this phase of the treament the first musical stimulations are introduced, and the children are thus being acquainted with sounds of different musical instruments (for example the drum and the trumpet), and are thus being induced to freely associate body movements to their respective sound. Gradually, the sounds presented to the children are produced in rhythmical sequences, — starting with the simplest and gradually moving on to more complex ones, — which are to be identified and then reproduced.

2) RHYTHMIC ACTIVITIES OF THE BODY

During group therapy rhythmic activities of the body are introduced, these being of great assistance for either the positioning and the correction of phonemes, or for the assimilation of the prosodic elements of speech and that of more complex rhythmic structures. The rhythm of the body is a macromovement which involves the wohle body and is associated with verbal production; this theory arises from the phono-motoric analysis of the elements of speech. Macromovements influence the subtler movements, that is the phono-articulatory ones, respecting the particular characteristics of every phoneme (tension, intesity, space and time).
For example:

— »PA« is accompanied by a clear beat of the fist against a surface (fig. 6a)

— »TA« is reproduced by stumping of the foot on the floor for the »T« and by an opening of the arms for the »A« (fig. 6b)

— »LA« is shown by an undullation of open arms (fig. 6c)

The verbal production can also be improved by a graphic presentation of elements that make up speech (phonetic graphism); vocal emission can be accompanied by a drawing of a point, of a sign, of a line etc. in order to express either the sound characteristic of a phoneme or the rhythm which accompanies its pronunciation. For example, the pronunciation of the phoneme »PA« which is repeated several times (PA, PA, PA. . .) could graphically be expressed by a series of successive points made with chalk on the blackboard (fig. 7), and the emission of a prolonged phoneme (PAAAA) is represented by a straight line (fig. 7b).

Rhythmically expressed gestures, graphic signs which accompany them and the phonemes pronounced at the same time constitute the basis of a series of exercises which are extremely useful in giving the patient precise information not only on the articulatory movements that pronunciation of various phonemes contain, but also primarily on the rhythm which phonation in all its unity has to respect.

3) DRAMATIZATION

Dramatization primarily consists of a mental structurization of spech through presentation of events in the form of sketches which involve the child from an emotional point of view. Sketches that are used in the dramatization are extremely simple: for example, bees stinging a child's nose or mouth are being imitated (fig. 8) or »talking puppets« acting out a simple dialogue tend to arouse intense expressive reactions. Apart from teaching the little patients to use elementary phrases acquired in the course of both individual and group exercise (elementary use of speech) thus improving their diction, these activities also stimulate them into conceiving new experiences (creative use of speech) which are adapted to new emotional situations created by the games in which they take part.

b) INDIVIDUAL EXERCISES

Simultaneous to group therapy, all the children from the group undergo individual therapy which potentiates collective work.

Individual therapy is practised at the same time as the hearing aids and head-phones are being introduced. The latter are used by means of amplification of all frequencies (direct channel) or, if the child is sufficiently mature to give the speech therapist correct information, they are used to filter the sound message in a more adequate way so that the child can perceive the verbal message in the best possible way (Optimal Hearing Field — C. O. A.) Speech defficiencies manifested in the course of group activities are specially treated in detail in the course of individual therapy.

The following is primarily corrected:

— lack of muscular tension which determines the alteration of articulation (fig. 9a and 9b);

— rhythm and intonation of speech;

— voice parameters (pitch and intensity).

III INTERMEDIATE PHASE

Age: from 5 to 9 years

In this phase speech therapy helps the child acquire a richer vocabulary, are more complex syntactic expression, a voice correchtly modulated by means of more complex musical notions.

a) Group exercise

1) Sensory stimulations

a) vibrotactile and acoustic

b) musical

a) Vibrotactile stimulations are progressively reduced in number to the point where they are no longer required and the therapist animates the patients by means of visual and acoustic stimulations.

Hence group therapy is conducted by alternative use of headphones and hearing aids in order to progressively adapt the child into perceiving the sound message through hearing aids, thus gradually to hearing conditions of everyday life.

b) In this phase the first nursery rhymes which the children have to repeat oraly are introduced. Initially, they are made up of phonemic sequences which are joined together and which have an extremely simple rhythm, which are later substituted by brief words and are further developed into phrases accompanied by gradually more complex rhythmical structures. The children, gathered in a group, (fig. 12), listen to a musical sequence successively associating it to a little song presented by the speech therapist; in chorus with the speech therapist the children perform the song by either listening to the rhythm of the musical instrument or by observing a drawing (a musical pattern) which symbolizes the semantic, syntactic and melodic content of the nursery rhyme. Consequently, the group performs the sequence without the assistance of the speech therapist and finally each child performs it alone, guided only by the musical instrument.

2) Rhythmic activities of the body (Body rhythm and Phonetic rhythm)

The patients execute broad movements of the body (body rhythm); these are performed by the whole body and in their second phase are associated to phrases or nursery rhymes (phonetic and musical rhythms); this stimulates the patient to perform with rhythmic movements of the body, the tempo of the sentence, the rhythm and intonation of the pronoun-

ced phrases (fig. 10a, 10b, 10c). This rhythmic activity is performed in continuation — not in fragments as in the preceeding phrases —respecting a certain harmony: it directs the patient towards a fluent eloquence, avoiding the use of fragmentary phrases.

3) Dramatization

Its intention is to improve the spontaneity of speech. The patients take part in performances generally more complex in comparison to the ones from the earlier phases. They perform theatrical sketches experienced in the form of play, which in a certain manner reproduce real situations. For example, each child impersonates an animal, and in doing so he wears clothes or masks which characterize the animal; he hides while the other children look for him, calling him, and in so doing they mime the animals which they represent (fig. 11a, 11b and 11c). Audiovisual material, such as slides or films, can also be used for dramatization: these show certain episodes of everyday life, following events in proper chronological order; the patients reproduce these events by re-living them, and by actively taking part in their development with adequate gestures: this stimulates various psychological mechanisms (limitation, competition, etc.) such as inventing phrases, creating dialogues, improving creativity in speech, all of which has been acquired in earlier phases.

b) Individual therapy

Individual therapy runs parallel to that of the group; its tendency is to globally improve a child's speech, by taking into consideration his specific difficulties (for example articulatory, vocal and cognitive ones) and by means of an adequate approach. Individual therapy is performed through either head-phones or hearing aids in order to accustom the child to the type of amplification to be adopted in everyday life and to the type of message the hearing aids would furnish during the day; the use of head-phones connected to an amplifying apparatus for instrumental filtering, as has already been mentioned, permits to render more practical the acoustic discrimination of a child, assisting him in the acquisition of correct articulatory and prosodic elements. The patient is taught to perceive the sound message, adequately amplified and filtered, which the speech therapist transmits to him through the head-phones: the chosen filtering is accomplished by choosing the band of frequencies which permits a better differentiation of vowels based on those characteristics given to the patient by the speech therapist (optimum field). This band of frequencies comes in successive intervals and it is enlarged in an attempt to use all the range of frequencies as often as possible; this is obtained progressively by making the patient accomplish adequate exercises which accustom him to always improve the discrimination also when inserting sounds which were not initially used for the objectives of vocal discrimination. In this phase, the individual rehabilitational treatment essentially provides for the following:

— improves the acoustic discrimination in a child by encouraging »listening« in situations where the mouth is being screened;

— corrects audiogenus dyslalia;

— potentiates the capacity for vocal modulation in a child in the domain of the phrase, a nursery rhyme or of the song, correcting the characteristic monotony of a deaf person's voice. In the course of individual therapy patients who have in music therapy groupwork shown certain impairments are stimulated to reinforce the acquisition of rhythm and melody. The child repeats with the therapist (fig. 14) a sequence which is already known to him, observing on a monitor of visual voice display (SI 80) the prosodic line of his vocal emission, and he can correct his own mistakes by following the example given to him by the therapist which can be seen on the same apparatus. This technique, proposed at and put into effect by our School, furnishing the patient with an extremely valuable visual feedback, has obtained good results in a remarkably short period of time.

IV) SCHOOL PHASE

Age: from 9 years and above

This is the final phase which completes and consolidates the fundamental acquisitions of a child; the patients are required not only to repeat and use all phonemes correctly, but also to reproduce more complex linguistic structures, from the grammatical, rhythmical and intonational point of view.

This phase of rehabilitational treatment involves primarily individual spech therapy sessions where ACOUSTIC STIMULATIONS are used: those that have been filtered and amplified are used to either correct possible remaining dyslalia or to improve phrase structuring, or to consolidate prosodic elements of a spoken message.

Furthermore, these exercises tend, in the best possible way, to develop the patient's auditive canal so that he may better compensate for his hearing impairement.

RHYTHMIC ACTIVITIES OF THE BODY and the DRAMATIZATION are used not only to enrich the linguistic knowledge of the patient and to stimulate his verbal creativity, but primarily to improve the prosody of speech by acquiring rhythm, intonation, accent and pause as a whole; it is obvious that this kind of exercise is gradually being dropped as the patient's interest lessens. Every further improvement is therefore achieved through individual treatment which is practised according to the patient's disponibility and psychological motivation. This phase can be prolonged for several years obtaining results which will be all the more satisfactory in as far as the range of the linguistic knowledge and correct prosody of the patient is wider.

IN CONCLUSION, the patient reeducated through the verbo-tonal method:

— acquires an articulated speech because he has become used to continually conversing with other patients from the group and with the speech therapists;

— speaks the language respecting its intonation, timbre and rhythm which the various exercises based on rhythmic activities of the body and dramatization have made it possible for him to acquire;

— is socialized in as far as the techniques acquired have continually been stimulating him to play, to confront others, to live with other children as well as with the staff — speech therapists — who have introduced him into the adult world;

— is always being driven, especially through group work, to create new expressions which respond to emotional stimulations to which he is exposed and which introduce him to a creative use of speech.

The use of stimulative group exercise, rich in interests and charged with emotions stimulates cooperation among patients and their contact with the speech therapisas: these exercises, the unquestioned fundamental importance of which is rehabilitation, should also be integrated into individual ones, which not only improve the results, but which enable the speech therapist to intervene through interpersonal relations which are of considerate importance from the point of view of both didactics and psychology. The success of these techniques is based on various factors among which we single out the following:

— the use of adequate technical instruments which enable an optimal use of all sensuous canals (hearing, sight, touch) as well as those sensory in order to accomplish the best possible rehabilitation of speech;

— acquisition — also by means of intense rhytmical activities and an active participation in drama exercises — not only of single words or phrases, but also those of rhythm, timbre and of the intonation of speech, must be agreeable and harmonic;

— a gradual acquisition of speech, in successive phases, which leads to a gradual enrichment and a continual improvement of prosody;

— a relevant adaptability of the rehabilitational method to social structures, to cultural situations, and to ambiental conditions in which the patient lives.

SUMMARY

The authors illustrate the verbo-tonal method, initiated by prof. Guberina, for speech rehabilitation of children with serious hearing impairment by referring to personal observations which have matured at the Centre for Phoniatrics of the Clinic of Otorynolaryngology at the II Faculty of Science — Medicine and Surgery in Naples.

The verbo-tonal method makes use of the following:

— auditive stimulations, amplified and heard initially through head-phones of the apparatus SUVAG and later through use of adequate hearing aids;

— tactile, visual and proprioperceptive stimulations which have been adequately amplified;

This method includes successive phases of rehabilitation; the authors classify them as follows:

— preparatory phase or that of vocalization;

— preschool phase or that of syllabization;

— intermediary phase or that of verbalization;

— school phase or that of structurization.

The techniques used include:

— group exercises during which the patient, together with other patients with a similar hearing impairment and psycho-intellectual development, listens to and reproduces sounds by associating them to body rhythm (BODY AND PHONETIC RHYTHM);

— individual exercise during which the speech therapist is in close contact with one child and thus improves his speech and corrects the defects.

To conclude, the authors have contributed towards the improvement of the numerous possibilities of rehabilitation through the verbotonal method by introducing original methods which potentiate the results; musical stimulations (music therapy), carried out in a group or individually, and the use of a voice prosody monitor in order to improve the intonation of speech by means of a visual feed-back.

Sažetak

PRIMJENA VERBOTONALNE METODE U UVJETIMA ORL KLINIKE U NAPULJU

Autori analiziraju svoju primjenu verbotonalne metode u uvjetima ORL Klinike, što do sada nije bila praksa rehabilitacije slušanja i govora. Rad je u Klinici ORL uglavnom individualan, a postupci se strogo ravnaju po dobnim skupinama. Posebne inovacije napuljske škole su slijedeće:

1) Muzikoterapija

2) Unošenje analizatora za bolju kontrolu prozodijskih elemenata u govoru.