Speech Therapy at the Pretoria School for Cerebral Palsy

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In South Africa the last 5 years have seen a growing interest in the many-sided problems of cerebral palsy. For the maximum rehabilitation of the child with cerebral palsy, the services of the paediatrician, orthopaedic surgeon, neurologist, psychologist, physiotherapist, speech therapist, occupational therapist and educationist are required; but this ideal combination is seldom attained.

The Pretoria School for Cerebral Palsy, started by parents of children afflicted with this condition, was opened in 1950, with 3 pupils and 1 therapist, and has since increased to 41 children and a staff of 3 teachers (one a nursery-school teacher), 3 physiotherapists, 1 occupational therapist, 2 speech therapists, a matron and 4 African "helps." Unfortunately the female professional staff is constantly changing and there is never a full complement. The author worked as speech therapist at this School for 21 months up to July 1954.

Only children suffering from cerebral palsy are admitted to the School, but doubtful cases are received and kept under observation for 3-6 months until the diagnosis can be established.

Types of Cerebral Palsy.

"Cerebral Palsy is a term used to designate any paralysis, weakness, inco-ordination or functional aberration of the motor system resulting from a pathological condition in the motor centres of the brain. The disease may be so localized as to cause only motor symptoms. More frequently, however, the brain damage is diffuse and may also cause convulsions, mental retardation, speech defects, behaviour disturbances and sensory losses of varying degrees, particularly in hearing and vision."1

During the first 3½ years of the School the following were the number and types of cerebral palsy in the children handled, and the proportion of these with speech defects:

<table>
<thead>
<tr>
<th>Types</th>
<th>Total Number</th>
<th>Number with Speech Defects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spastic</td>
<td>19</td>
<td>14</td>
</tr>
<tr>
<td>Athetoid</td>
<td>6</td>
<td>4</td>
</tr>
<tr>
<td>Flaccid</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Mixed</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Ataxic</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Rigid</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Aphasic</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Unclassed</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>41</td>
<td>30</td>
</tr>
</tbody>
</table>

Thus 11 children (i.e., 27%) have normal or adequate speech and do not require speech therapy.

Cases have to be chosen carefully as there is insufficient time to give speech therapy to all who are in need of it. Sometimes a complete lack of co-operation from the home will render therapy ineffective in spite of the intelligence of the child. In selection, younger children are given preference to older ones and the more intelligent to the more dull. It is important to spend not more than 20-minute periods daily on therapy, as the children tire easily and their span of attention is short. Individual treatment is preferred, but where 2 cases are similar in respect of age, intelligence and therapy they are taken together.

Approaching the Problem.

In approaching the problem of speech therapy, each case is treated individually and a separate programme worked out for each child; there is no set line of therapy for all spastics or all athetoids. However, the therapy for spastics will involve gaining greater mobility of spastic muscles, whereas that for the athetoid group will involve gaining greater control over the affected muscles, while the ataxic case, in which the cerebellar lesion causes a loss of balance and a diminished sense of awareness of muscle feeling and placement, will to a large extent call for a kinaesthetic approach to therapy. Obviously therefore it is necessary to know the physical diagnosis before starting the speech programme; at the School it is supplied by the paediatrician, who bases it on a full history and physical examination.

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To complete the picture of the case a psychologist's report is also available. An intelligence test is done on each child. Taking into account that the standard mental testing for normal children is not wholly applicable to children with cerebral palsy—they may have speech, motor or sensory handicaps—a fair idea of the child's mental ability can be gauged from repeated I.Q. tests, and an evaluation of the child's progress and ability over a long period.

For this reason, the weekly clinical meetings at the School are an invaluable source of information about each child. At these meetings the physical, educational, and speech progress (or retrogression) is discussed by the staff as well as the emotional adjustment of the child. The parent, too, is invited to discuss any problem and is given advice when needed. Neurological, orthopaedic and psychological changes are noted by a panel of doctors, who re-examine the child at regular intervals during the year. The home environment and the attitude of the parents to the child's physical and speech handicap are important factors to be considered in the speech treatment.

**SPEECH EVALUATION.**

Speech defects in children with cerebral palsy may be directly due to the brain lesion, or they may occur as in normal children, through other organic or functional factors. For the purposes of classification, the follow- ing terminology, adapted from Rohr and Rutherford, is used to describe the speech defects under which the children fall.

1. **Delayed Speech.** Many children with cerebral palsy have failed to develop speech after the age when most normal children have started talking. The cause of this delay may be one of the following:

   (a) Speech is an acquired skill; the normal child hears the words and sees the lip and tongue movements of the people around him. Visual or auditory impairment in a cerebral-palsy child causes him to miss these motivating cues necessary for the development of speech.

   (b) Even if hearing is normal, the effort of moving spastic or athetoid articulatory muscles may be too much for the child, and he gives up the task.

   (c) The child may have no need to develop speech, since all his wants are anticipated by over-protecting parents; the desire to communicate his wants is therefore stifled.

   (d) Silence is a way of expressing fear and anxiety if the child feels unwanted, insecure or unloved.

   (e) The child may not have been sufficiently stimulated. Kasten states that "the child with cerebral palsy is often denied even normal stimulation. Due to his motor impairment he cannot get about to explore the world around him. Quite often, he is not spoken to, read to, or sung to as are his non-handicapped playmates. In fact it is by no means unusual to frequently hear a mother say: 'Why, no, I don't talk to him much, he does not seem to understand, so what's the use?' As a result the child with cerebral palsy, who in reality needs more stimulation than normal children, actually receives much less than a non-handicapped child, and sometimes none at all.

   (f) The child may have an all-round slow physical and mental development. This does not necessarily indicate a low I.Q., but merely a slower rate of growth, with an accompanying slow rate of speech development.

   (g) The child may be mentally retarded.

2. **Cerebral-Palsy Speech.** If the child develops speech, it may be characterized by jerky, indistinct sounds due to organs of speech moving in an uncontrolled way. Sometimes the muscles of the tongue, lip, jaw or uvula are so spastic that movement is severely limited. Very often the speech is slow and monotonous, with a throaty or high-pitched voice, unpleasant to hear. The sounds may be so distorted as to be unintelligible to the listener.

3. **Organic or Structural Defects.** Speech defects may occur in palsied children caused by anomalies of the articulatory organs, other than those caused by the lesion of the C.N.S. Malformations such as mal-occlusion of the teeth, cleft palate, harelip and nasal obstructions are included under this category.

4. **Hard-of-Hearing Speech.** This type of speech defect is frequently found among the athetoid group. The hearing loss is due to defect in the preceptive apparatus. Very often it involves high-frequency sounds such as s, sh, ch, th. The child cannot hear or distinguish these sounds correctly and therefore produces them incorrectly or not at all.

5. **Stuttering.** Stuttering may occur among cerebral-palsy children, perhaps as a result of confused cerebral dominance.

6. **Voice Disorders.** Included here are differences in rate, volume, pitch and rhythm.

7. **Breathing Disorders.** Most children with cerebral-palsy have breathing disorders affect-
breathing musculature, the breath is said to
s ‘out of phase.’ The child may be unable to
direct the flow of air through the mouth dur-
S ing speech, or movement may be so inhibited
ch, or movement may be so inhibited
p. Those patients whose outstanding dif-
states:
c‘ooming, spelling, or writing, the patient may be
ranted difficulties consist of an impairment of
ability in speaking, word finding, oral read-
ing, spelling, or writing, the patient may be
classified as an expressive aphasic.” Very
often it appears as if the child’s lack of re-
sponse to speech is due to deafness, but in an
aphasic hearing is usually unaffected. If the
child develops a certain amount of speech,
sentence structure is distorted, “small” words
are often left out, while writing is characterized
by “mirror” formation of letters and words.

The speech defects found at the School are
enumerated in the right-hand column of the
table on page 13 (one child may have more
than one defect).

Speech Examination. Before speech therapy
is begun, a thorough speech examination must
be made to determine the possible cause or
causes of the delay or defect in the speech.
The treatment will depend on these factors.
The examination will include:
1. A physical examination of the speech
organisms to discover any structural malfor-
tation.
2. A test of the ability of the child to move
tongue, lips, uvula, jaws, etc., for adequate
speech performance.
3. A test of all the speech sounds in initial,
medial and final positions, using pictures or
objects. From this phonetic inventory omissions,
distortions, and substitutions of sound
during speech can be detected.
4. A crude hearing test is given and if
possible an audiometer test.
5. Force and direction of the breath, as
well as whether it is in co-ordination with the
act of speech, are noted.
6. Sucking, chewing and swallowing acts
are gauged.
7. Voice factors such as pitch and quality
are noted.
8. A recording of the child’s speech is taken
to determine understandability and, after in-
tervals, to determine progress if any. Record-
ings are valuable for therapy, as they provide
excellent auditory stimulation. Very often the
child has no idea what his speech sounds like,
and the recordings allow him to hear himself
and his defects.

THERAPY AND TECHNIQUES.
The child who, from the age 2+ years onwards
has little or no speech is treated for delayed
speech. At all times the child is encouraged
to make sounds, to babble, to indulge in all
manner of vocal play. He must be taught
to watch the lips, hear the sounds and feel
the placement and voice vibrations.

Speech must be a pleasurable activity as
well as a necessary one. For stimulation, toys,
pictures, rhymes, songs, games and dramatiza-
tions are used, depending on the age and
amount of speech the child already has.

At the school there are regular singing
periods apart from the speech lessons, in
which the nursery group and the older groups
are separately taken. The children sing and
dramatize English and Afrikaans songs, and
from their obvious enjoyment of the whole
procedure it is clear that they are being
stimulated and motivated to vocalise. In this
group, too, there is a certain amount of healthy
competition, and each one tries to sing well
so that he, or she will be chosen to be the
“Matrosie,” or “Little Miss Muffet.”

The mother must be instructed to babble
with the child, to talk, sing and read to him.
While she is doing his physical exercises with
him, she can rhythmically count or sing in
time with the actions. Defects in the limited
speech at this stage are ignored. Any attempt
to vocalize or say a new word is praised.

At the same time it is important to strengthen
the speech musculature. The organs of speech
have a primary function other than for speech.
The act of chewing and swallowing employs
the same muscles as those used for speech.
Therefore practice in basic functions, such as
chewing, sucking and swallowing form an im-
portant part of therapy. The mother is in-
structed to encourage the child to eat “hard
foods” and to swallow all liquids through a
straw. This procedure is adopted at school,
too. In this manner the muscles of speech are
strengthened and drooling, so often found in
cerebral-palsy children, is diminished. The
“chewing-method” is successful in achieving
“improvement of the functions of the mouth
and speech organs, as well as of the voice.”

In delayed speech, all types of cerebral-
palsy are similarly treated. In an atmosphere
of quiet, relaxation is practised, using a rag doll to illustrate floppy legs and arms, or demonstrating the difference between the feel of tense muscles and soft muscles. Later, when the development of speech is progressing, differentiation is made between the types of cerebral-palsy, so that appropriate methods of exercising can be given. Strictly speaking, though, there is not much difference in the methods adopted for spastics and athetoids.

It has been said that "there are 3 ways to treat the speech of the spastic paralytic: first, relaxation; second, relaxation; and third, relaxation." The same may be said to apply to the treatment of athetoids. If the affected muscles can be relaxed, the spastic can be taught to move them in the desired direction, and the athetoid can learn to control them.

Whilst in a relaxed position the child is then given breathing exercises, first on his back, and later in a sitting position. The child learns the "feel" of correct breathing by gently pushing the rib cage in and out. To promote greater breath force there are many games which the child can play, such as blowing out a candle, blowing bubbles, or blowing up a balloon. Later he can combine breathing and articulation by vocalizing a sound, e.g., "ah," and at the same time seeing how far a toy aeroplane will fly—the flight lasting as long as the vocalization.

The child is also taught to direct the air through the mouth. Here again, blowing games are used, as well as exercises for improving the movements of the soft palate. The tongue is subject to a greater amount of involvement causing speech defects than any other of the articulatory organs. Tongue exercises, therefore, are given in the majority of cases. In order to encourage the child to move the tongue up, out, to the sides, or round the mouth, he is instructed to lick a lollipop by placing it in a certain position on the mouth, or outside the mouth. As a variation, a rubber mask with a moveable tongue is used, and the child has to imitate its actions. The rubber "funny man" is used, too, for lip exercises to stretch the lips into a smile or pucker them or open them into an "ah" position. With the use of games, jaw and uvula exercises are similarly given.

If the child uses certain sounds incorrectly owing to functional or organic causes, the sounds are practised, not in isolation, but in words. For this purpose scrap-books containing large pictures illustrating the particular words are used for each child. For example, if a child substitutes "t" for "th" in his speech, large illustrations of a thumb and a thimble are pasted in to a scrap-book. Parents have to help find the pictures and the child can participate by cutting them out and pasting them in (if his physical handicap permits). An other set of cards roughly drawn by the therapist and duplicating the pictures provide many varied games to stimulate further practice on the sound. The "feel" of the sound on the child's hand often provides the cue for correct imitation and motivation, e.g., letting the child feel the breath force as the therapist repeats an explosive consonant. All physical exercises to gain muscle strength and control, and speech sound exercises are done in front of the mirror so that the child can make use of all sensory stimuli, visual, auditory and tactile.

The treatment of aphasics is an interesting challenge to any speech therapist. It is a matter of stimulating the child through auditory, visual and kinesthetic means until a meaningful response is elicited. One of the children at the School, a mixed type of expressive-receptive aphasia, responded dramatically to treatment: it began by the child holding a left ball, noting its size, shape, and texture, and hearing several repetitions of the word "bal." At the same time she watched the formation of the word in the mirror. After several weeks of constant repetition, she responded by saying "bal" when she saw the ball. From then on, sentences were constructed around this word, always dramatizing the action, e.g., "skop die bal." New words were then introduced until an extensive vocabulary was built up. The results were far better for the expressive impairment than for the receptive.

In treating the hard-of-hearing child, lip-reading is taught and, together with the visual cues, kinesthetic and a great deal of auditory stimulation is given. Earphones attached to the recording machine are an important aid to stimulate hearing. The school as yet does not possess a "train-ear." In the one case where a hearing aid has been purchased for a hard-of-hearing child, the results were disappointing; the parents could not afford a reliable set, and the child, owing to low intelligence, could not adjust herself to this apparatus. "It is urgent that all deaf cerebral-palsy children of good ability who have residual capacity to benefit from the use of hearing aid should be given auditory training from the beginning of their education."
RESULTS.

What is the aim of the speech therapist in dealing with these children? Evans says, "Perfect speech is usually an impossibility..." If the speech sounds acceptable even if not high-grade, it should be accepted by the clinician and the effort praised." In judging the results of nearly 5 years therapy, therefore, the question has not been whether the child can now speak normally, but rather, whether in the very slow process of developing or improving his speech, certain goals have been reached and maintained. For instance, can A now lift his tongue into a position to say "1"? Can B now blow out a candle directing the flow of air through the mouth? Has C stopped drooling? Is D correctly substituting "th" in words instead of "f"?

It is extremely difficult to assess the results objectively. The following is a subjective attempt to assess the children's progress at speech:

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
<th>Total in improved Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speech</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Delayed Speech</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Cerebral-Palsy</td>
<td>5</td>
<td>18</td>
</tr>
<tr>
<td>Organic or Structural Defects</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Hand-eeing Speech</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Stuttering</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Voice Disorders</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>Breathing Disorders</td>
<td>3</td>
<td>15</td>
</tr>
<tr>
<td>Aphasia</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

DIFFICULTIES.

The difficulties encountered in the speech therapy of children with cerebral-palsy have posed many problems, most important of which are relaxation and breathing. The therapist may spend months trying to relax a spastic or athetoid in supine or prone position only to find that there is no carry-over in a sitting or standing position, and certainly no carry-over during the act of speech. Similarly, the child may learn a form of speech and breathing, yet during speaking it may be quite "out of phase," or entirely inadequate for speech. In other words the carry-over is often absent here too.

The therapist must query whether a spastic muscle can be completely relaxed, or whether an athetoid muscle can be controlled. Particularly during speech, when articulatory and breathing muscles are in action, how near to normal can the parts be conditioned, so that adequate speech can be achieved?

A hand-manipulated iron lung, used in the United States for teaching correct breathing, should be tried here, as well as all the stimulating "gadgets" for motivating speech. Apparatus has been constructed which lights up or rings bells when the child says a particular word correctly.

Another important problem at the school is that of achieving an accurate assessment of the child's hearing ability. Crude hearing tests are not very reliable and the results are subjective. Tests using the pure-tone audiometer are difficult to use in a young child, since he does not know what is required of him and he tires easily. It is even more difficult to assess the accuracy of such a test when given to children of sub-normal intelligence. Varying degrees of hearing-loss seem to be relatively common among palsied children, and this aspect has been sadly neglected in examination and therapy and for record purposes.

A difficulty peculiar to South African therapists is that of language. Naturally, each child is given therapy in his home language but sometimes there is a confusion of both languages in the home and the child has this added difficulty to cope with. Also, although there is a wealth of speech sound material at hand in English, the therapist must compile all Afrikaans material from magazines, books, verse, etc. An Afrikaans phonetic speech book would be of great help to speech therapists.

The present classification of speech defects is not proved very satisfactory. Delayed speech and cerebral-palsy speech include too wide a variety of defects. Leather's recently published classification should be of greater value for diagnostic and therapeutic purposes and to gain a more objective assessment of results.

With cerebral-palsy there is no "full understanding of the implications of the injury to the total organism." To increase the understanding, the greatest co-operation is necessary between the speech therapist and the physiotherapist. Indeed, full co-operation is necessary among all staff members of a school to co-ordinate physical and educational methods.

SUMMARY.

Cerebral-palsy is prolonged and difficult, and in its treatment it is necessary for workers in various fields to pool their observations and experience.

Speech therapy is one of the primary needs, communication between individuals for social and economic needs being so essential.
Experience of 41 children at the Pretoria School for Cerebral-Palsy is described. Types of cerebral-palsy and speech defects found in these children are detailed. Methods and techniques in speech therapy are reviewed. Results and difficulties are discussed.

My thanks are due to Dr. B. Epstein, chairman of the Board of Management of the Pretoria School for Cerebral-Palsy, for his encouragement and assistance, and for allowing me access to files and records.

REFERENCES.

THE CONQUEST OF STUTTERING
C. VAN Riper
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For centuries the treatment of stuttering has wrecked itself on the rock of symptom avoidance. The various therapeutic methods used, from relaxation, rate control, unusual modes of speech, have been focused on the same goal which has betrayed every stutterer's own attempts to heal himself: the attempt to speak without stuttering. Such an effort carries with it itself, even when successful, the seeds of its own eventual failure. For avoidance breeds fear. When we flee from fear, we magnify it. The situation and word fears so long conditioned in the adult stutterer can hardly be erased by such measures. According to modern learning theory, anxiety conditioned responses never extinguish completely. One pairing of the shock with the conditioned stimuli restores them to almost full strength. And so we find the discouraging frequency of relapses in stuttering therapy. Moreover, much of the older methods did little more than to repress the symptoms. The powerful suggestion employed by most therapists can indeed produce such repression temporarily. But stuttering, like murder, will out! We may be able to hold down the cuffed spring of the disorder for a time, but so long as it is intact and as strong as ever, it will eventually escape from our grasp. We are but mortals with no ability to sustain a repression for long. No matter how successful we become, existence will sooner or later cause morals to ebb. No environment, however favorable, will be without its moments of trauma. To build fluency upon an attitude alone is to use flux instead of mortar for the foundation. And so at these inescapable moments of ego weakness, the fears invade our minds again, and the stuttering returns to haunt our lives.

Is there no way to exorcise this evil ghost whose strength seems almost of the supernatural? The psychoanalysts have tried and most of them confess failure since speech, their healing tool, is itself affected. The myriad devices, methods and tricks which have been used upon stutterers since the dawn of history give us little hope of success from that direction. Witchcraft and surgery, vocal training and hypnotism, in none of these have we found consistent effectiveness. Our inability to cope with the severe stutterer after all these years still reflects discredit upon our profession. Perhaps we have been working in the wrong direction. The stutterer does not need to be taught how to talk normally. He already has that skill, as much of his speech testifies. Suppose, instead of trying to keep him from stuttering with all of its attendant evils, we try to train him to modify his symptoms in the direction of fluency. The immense variety of stuttering symptoms suggests that among them there might be a few types which society would not punish. Among them there should...