

LANGUAGE EXAMINATION IN SCHOOL-AGE DYSPHASIC CHILDREN

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School-age dysphasia is a condition characterized chiefly by delay in learning (generally in reading and writing) which is not due to any provable abnormality in the articulatory apparatus, in hearing, in psychical processes or in intelligence. Nevertheless, articulatory disorders, hearing impairments, emotional disturbances and/or feeble-mindedness may accompany the picture, but they are not the cause for it. Language examination in dysphasic school-children must be made in several steps: 1) Spontaneous speech examination (narrating, describing, talking together); 2) Examination of repeated syllables, words or sentences; 3) Oral and mental repetition of series of words and sentences (with or without change of posture); 4) Hearing perception and comprehension tests (sensibilized audiometric tests); 5) Drawing interpretation or reading; 6) Drawing representation or writing (copy, composition, dictation); 7) Examination of other linguistic systems (singing, kinesthetic reading, mathematical calculation, etc.). Every one of these examinations includes several items. For instance, the examination of repeated syllables, words and sentences contains: a) Repetition of the isolate phoneme, of the phoneme in syllable-function and of the phoneme in word-function; b) Repetition of words with different meters; c) Repetition of words similar to each other which present different accents and repetition of words deformed by incorrect accent; d) Repetition of easy words with meaning unknown to the patients, repetition of „difficult” words (with or without meaning); e) Analytical repetition of complete words, first phonetically and then been spelling them; f) Syntetic repetition of words (easy or difficult) fragmented by phonemes, by letters, by syllables or arbitrarily; g) Repetition of series of words which do not require any attention or memory; h) Integrated repetition of incomplete words; i) Oral and mental repetition of series of words and sentences (with or without change of posture); j) Repetition of words and sentences distorted by special procedures and with the use of the audiometer (sensibilized speech audiometry); k) Rapid and slow repetition of series of words enunciated without a change of movement (logometria by repetition); l) Repetition of speech in singing.

In order to limit our exposition to the exigences of this Congress, here we shall only refer to **some** linguistic symptoms, according the examination of 300 preschool children.

We have already pointed out that the period of beginning of speech in children with syndrome of school-age dysphasia is generally coincident with that of children without these problems, something which is not observed in dysphasia or in hospital infantile aphasia. What occurs with articulatory

**MISTAKES IN PRONUNCIATION FOUND IN CHILDREN THAT ENTER
PRIMARY SCHOOL**

	Difficulty in pronouncing the „R”	Difficulty in pronouncing the „S”	Rhinolalias	Other Dyslalias
Children without these problems	4 %	1.5 %	11 %	1.5 %
Children with school-age dysphasia	Dyslexia	1.5 %	2 %	0.5 %
	Severe Dysphasia		2 %	
	Immaturity		0.5 %	
Mentally deficient children	—	—	0.5 %	1 %
TOTALS	8 %	3 %	15.5 %	3 %

TABLE I

defects, the incidence of which is well known in school-age dysphasia, is quite different.

We shall see the following subjects, successively: 1) Articulatory difficulties, 2) Language comprehension, 3) Word memorization, 4) Repetition of words, 5) Visual perception and memorization, 6) Visuomotor co-ordination, 7) Visual Motor Gestalt Test (Bender's test) in school-age dysphasic children. The characteristics of reading and writing are not analyzed in this paper because it refers to the preschool child.

Articulatory difficulties: For every 21.3 children with school-age dysphasia problems there are 10 with articulatory defects even at the age of six, which gives us a percentage of 46 of this type of children who are dyslalic at the age of six. For every 38.8 children without these problems there are 10 with dyslalias, which gives us a percentage of 26 of children without problems that show dyslalias at the age of six.

CONCRETE COMPREHENSION

	Children without learning troubles	Children with school-age dysphasia
Very good	10.5 %	3 %
Good	54.7 %	51 %
Fair	29.3 %	33 %
Bad	5.4 %	12.5 %

TABLE II

The most common defects in pronunciation at school age are difficulties in pronouncing the „R” and the „S”, and rhinolalias, the details of all which can be seen in Table I, where, for didactic reasons, it is not mentioned that in some children the dyslalias were multiple.

We shall only mention the existence of **stuttering** in 2 per cent of the children that enter the first grade. Approximately half of these children showed problems accompanying school-age dysphasia.

Language comprehension: One is wont to consider that comprehension is pretty well maintained in children with school-age dysphasia syndromes. That notwithstanding, those, who attain a very good concrete comprehension, are very few (3 per cent), but it is true that the majority of them (the same as normal children) give responses that may be considered good, as can be seen in Table II.

At the ordinary examinations, children with school-age dysphasia appear with a comprehension and with narrating and describing possibilities that can be comparable (if we let aside the deficiencies in expression, and visual and

WORD MEMORIZATION

Diagnosis	School	1 word	2 words	3 words	4 words	5 words	6 words	7 words
Children without any problem	56	5.5 %	12.5 %	7 %	43.5 %	16.2 %	12.5 %	2 %
	60	4.2 %	6.2 %	13.6 %	43.2 %	21 %	8 %	1 %
	120	2.5 %	1 %	33 %	39 %	22.7 %	1.5 %	—
	Average	4 %	6.5 %	17.8 %	41.8 %	19.9 %	7.4 %	1 %
Immature children	56	40 %	—	20 %	20 %	20 %	—	—
	60	—	—	28.5 %	14 %	57 %	—	—
	120	—	16.5 %	33 %	16.5 %	33 %	—	—
	Average	13.3 %	5.5 %	27.1 %	16.8 %	36 %	—	—
Dysphasia-dyslexia	56	7.1 %	14.2 %	28.5 %	14.2 %	28.5 %	7.1 %	—
	60	8.3 %	8.3 %	25 %	29.1 %	16.6 %	8.3 %	4.1 %
	120	—	5.5 %	16.6 %	44.4 %	16.6 %	16.6 %	—
	Average	5.1 %	9.3 %	23.3 %	29.2 %	20.5 %	10.6 %	1.3 %
Mentally deficient children	56	40 %	—	—	40 %	20 %	—	—
	60	25 %	—	25 %	—	50 %	—	—
	120	12.5 %	12.5 %	62.5 %	12.5 %	—	—	—
	Average	25.8 %	4.1 %	29.1 %	17.5 %	23.3 %	—	—

(56: district school; 60: central school; 120: suburban school)

TABLE III

abstract comprehension) to similar conditions in children without these problems. This is all the more evident because the dysphasic schoolchild has fewer dyslexia components and more dysarthria components. Of the total number of pupils that enter the first grade, about 52 per cent are able to perform the required comprehension tests with good results and only about 8 per cent perform them badly. The worst performance is found in feeble-minded children.

Word memorization: Regarding the memorization of words in series, it is appropriate to point out that the children with the school-age dysphasia syndrome as well as those without these problems mostly repeat 4 words out of a series of 7. Only in the mentally retarded does one observe a minor incidence. The details per school can be seen in Table III, remembering that school 60 is the central school, 56 the intermediate one and 120 the peripheral one.

Descriptive test and word repetition tests: In order to observe spontaneous speech, a picture representing familiar activities was shown to the school-age children. It was striking to verify that dysphasic school-age children could describe the picture in a standard form, similar to the normal children. The word repetition tests were taken: 1st) by the repetition of series of easy words (repeated 1 by 1 or 3 by 3 and with the child's back turned to avoid visual aid), and 2nd) by the repetition of series of difficult words (repeated 1 by 1 facing the child and with a clear and slow articulation). The results obtained by repetition of series of easy words can be divided into two groups: 1st) repetition with errors, 2nd) repetition without errors. We understand under „errors“ the following defects: 1) transformation of words into other words, 2) suppression of words, 3) additions of sound elements or syllables, 4) deformation of words, 5) disorder in the repetition of the arrangement of the three words or in the arrangement of the sound elements of a word. The general results obtained show that only 31,3 per cent of the children without problems are unable to repeat the whole series of words presented correctly. 45,26 per cent of the dysphasic school-age children are in the same situation. The difference between normal and dysphasic children is greater if the word repetition tests were taken under special conditions, as the sensibilized speech audiometry tests are. The obtained results of repetition of difficult

REPETITION OF SERIES OF WORDS (THREE BY THREE)

		Suburban school	District school	Central school	Total averages
Children without problems	Without error	57 %	55,55 %	93,6 %	68,71 %
	With error	43 %	44,45 %	6,4 %	31,29 %
Children with school-age dysphasia	Without error	55 %	44,44 %	64,8 %	54,74 %
	With error	45 %	55,56 %	35,2 %	45,26 %

TABLE IV

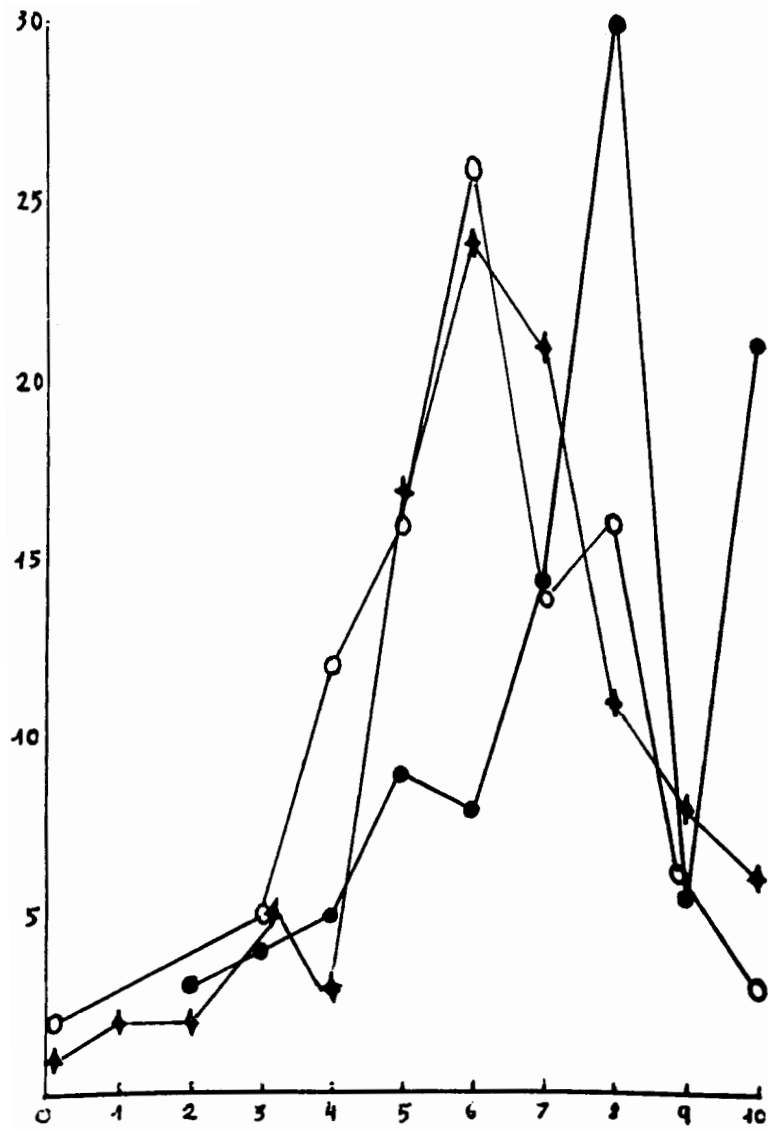


FIGURE 1

Repetition of difficult words in 300 six-year-old school-children

- Suburban school
- ▲—▲ District school
- Central school

words can be represented by curves indicating the number of words repeated in different groups of children. In figure 1 we see the curves (in percentage) obtained by repetition of difficult words in 300 six-year-old school-children. The suburban children have greater possibilities of correct repetition of difficult words than the district or central school-children. Nevertheless the curves obtained with suburban children is more oscillating than the other curves. In figure 2 we compare, in percentage the curves of correct repetition in normal and dysphasic children: the highest average of percentages in children without problems reaches 8 correct repeated words; the highest average of percentages in dysphasic school-age children reaches 3 correct repeated words. In general the curve obtained in dysphasic children is oscillating, like a mountain chain, and less high than the curve obtained in normal children. It is important to know these facts before interpreting the results obtained by speech audiometry or distorted speech audiometry. (Fig. 1 and 2).

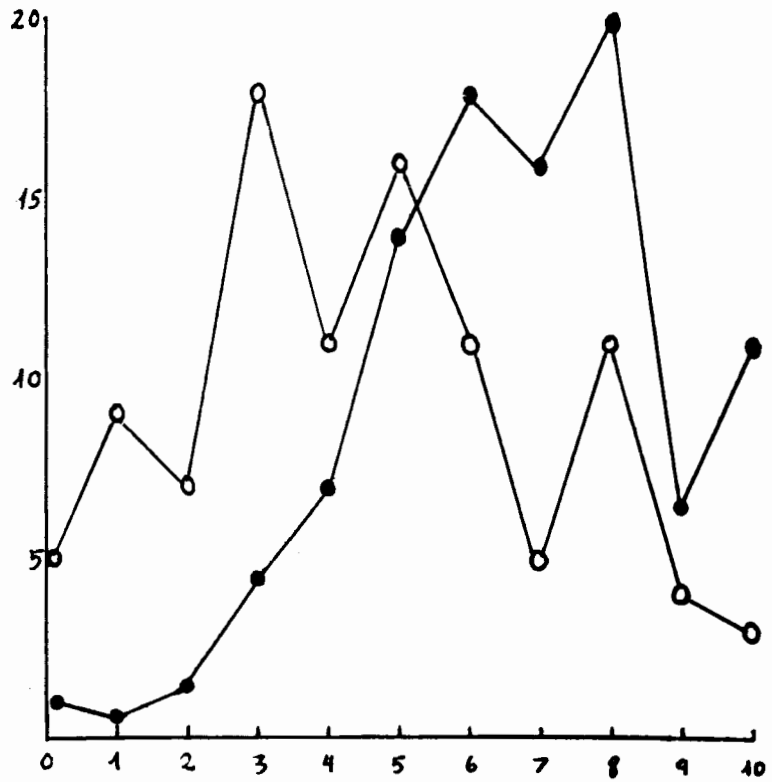


FIGURE 2

Repetition of words; comparison, in percentage, between normal and dysphasic children

- *Dysphasic children*
- *Children without problems*

Visual perception and memorization: Just as we have pointed out in another paper, dyslexia, by definition, presupposes a good peripheral ocular mechanism, wherefore we cannot accept ocular factors (for example, ametropia), consequently, we shall not busy ourselves with the visual sensorium in the dyslexias in this paper. If one investigates qualitative (concrete) visual perception and memorization of figures, one observes that most of these children, whether they show the syndromes we are dealing with or not, are capable of giving the names of 5 figures of a total of 7 shown to them. If three simple geometric figures are shown to them to be copied, some of them invert one or more. Of the 300 children we began to examine in 1959, 69 children inverted these figures upon copying, 44 of which children did not show the school-age dysphasic syndrome; 20 did show it and 5 were feeble-minded. Of the 44 children without this syndrome, 3 were left-handed and 9 showed a history of left-handedness in the family. Of the 20 children with the school-age dysphasic syndrome, dyslexia or the phenomena of deficiency in attention and memory predominated in 15, and symptoms of immaturity predominated in 5. The percentages, referring to the totals of each of these diagnosis — and not to the total of the children — studied are the following:

INVERSION OF FIGURES

Children without school-age dysphasia	21.7 percent
Dysphasic-dyslexic children	26.7 percent
Immature children	29 percent
Feeble-minded children	29 percent

As one observes, the findings are a little higher in children with the school-age dysphasia syndromes or with mental retardation, than in children without these problems. With regard to the so-called memory of realization, that is the memorization of a movement made in the air by the observer, the same proportion of difficulties was verified in the children that entered school whether they displayed syndromes of school-age dysphasia or not: the great majority was rated as of fair or good response (70 per cent).

Visuomotor Co-ordination: The results are higher among children without school-age dysphasia. The details can be observed in Table V.

VISUOMOTOR CO-ORDINATION

Results	Children without school-age dysphasia	Children with school-age dysphasia	Children with feeble-mindedness
Very good	15,76 %	—	—
Good	64,73 %	50,68 %	17,64 %
Fair	17,73 %	39,72 %	47,00 %
Bad	1,97 %	9,58 %	35,30 %

TABLE V

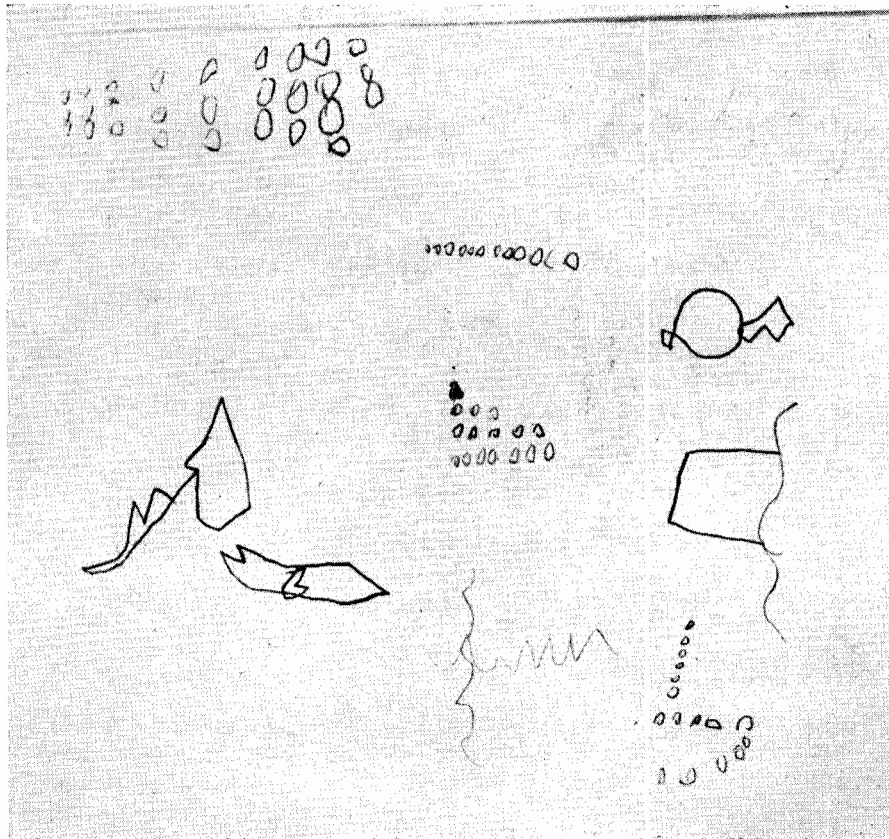


FIGURE 3

Gestalt drawings, by Oswald, a 6.6-year-old school-age dysphasic boy

Visual Motor Gestalt Test (Bender's Test) in school-age dysphasic children

a) **The B.G. test in the most severe dysphasic school children:** (Figure 3) These children have serious difficulties in the acquisition of reading and writing, there being evident troubles in attention, in abstract memory and in mediate memory. The average age upon entering the first grade was 6 years 7 months. Some of them had repeated the grade for failure in the acquisition of reading and writing. Although Bender's test must not be related to the average of maturation, the latter was established in the dysphasic children at 5 years 9 months. In this type of children, the maturation level obtained by this test is, only as an exception, superior to their chronological age. From the examination of the successive tests taken in each child, it follows:

Movement is simple, a little hard or stiff in parts, lacking rhythm. The

whole is better than in the mentally handicapped children. The reproduction reveals neat outlines, a few of them, diffused, not the majority. The drawing may be fragmented in some figures and always reveals preoccupation for connections. The organization is of inaccurate reproduction and it may reveal number concept. There usually are no duplications, and the whole may be bad, although there may be good details; only occasionally the whole makes a good impression. There are evident deformations, but the additions, if there are any, are scarce. There may eventually be auxiliary lines and rubber erasings. The orientation may give us rotations, with a tendency to verticality, turns of the sheet, separation of parts, adhesion of parts, or also with greater frequency, a phenomenon that consists in directional changes in drawings such as the inclined square in figure A, or the inner rhombus in figure 8: upon being unable to reproduce it, the direction is changed and hence the appearance of peaks or protuberances which indicates the consciousness of failures in orientation and in connections, and the serious difficulties in remedying them. It is in this way that the shape simulates a sort of triangle or „star“. In like manner, there may be transformations of circles into points or vice versa, filled out circles, curves for straight lines, and there may be elements suggesting perseveration. The size appears medium, with omissions of intercrossings and angles. There may be signs of impulsiveness and aggressiveness (particularly in the figure 6 one can observe hardness and inversion of waves).

In the course of learning, generally during the first year at school, the test is made more micrographic, maintaining its characteristics of lack of rhythm, and it may show perseverance. Generally it is made more simple and begins to lose its characteristics of hardness and stiffness, although some deviations still draw one's attention. The reproduction of the outlines appears sometimes clear sometimes blurred. The shape is sometimes fragmented. The organization shows inaccuracy in reproduction, the whole still continues being bad. New deformations and additions may appear in the desire to obtain forms and connections that seem to escape. The orientation shows us rotations, adhesion or superposition. There are circles in place of points, perseverations of the same and occasionally omissions of intercrossings, of angles and of details (for example, the inner rhombus in the figure 8). At the end of the first year at school, however, the angles are wont to begin to be produced.

Later, generally in the second year of training, the rhombus or the inclined square begin to be produced with correctness, the same as the intercrossings. The circles tend to be filled out and the signs of impulsiveness tend to be minor. In general, at the end of the second year there is a clear mastery although it is not possible to observe any compensation in the instability of the responses. The movement loses its perseveration and its hardness. The distribution gains, although the shape remains micrographic or resting on one of the edges of the paper. The outlines are clear and the shape continuous. The reproduction tends towards accuracy, there is, in general, respect for number, few deformations and few alterations of orientation (rotations, connections). Nevertheless, the rotations do not manage to disappear and sudden appearances of total or partial rotations and superpositions may

surprise us. Filled out circles may likewise exist, but perseverations rarely persist. Usually there are no omissions of importance either.

In short, what continues to dominate the development of the condition is the bad impression of the whole, the preoccupation for the connections, the persistence of sudden disorientations (with new deformations and additions),

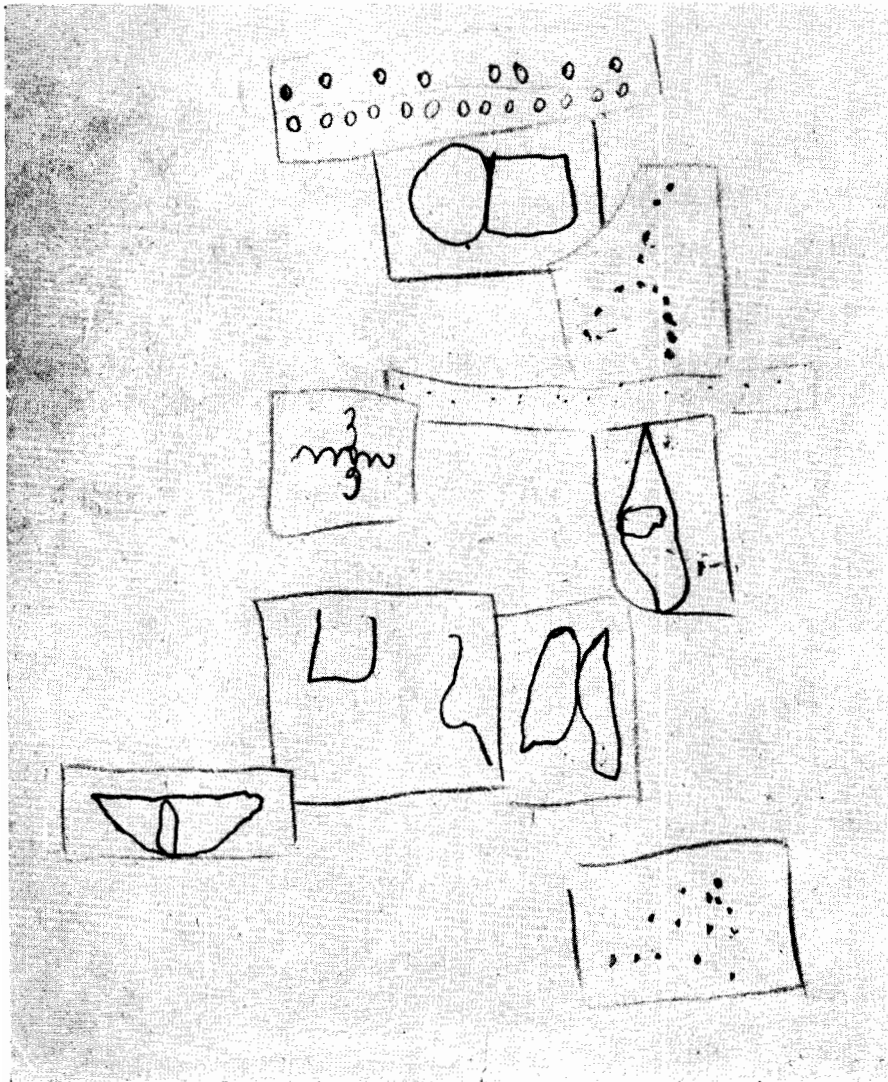


FIGURE 4

Gestalt drawings, by Angela, a 6.7-year-old dyslexic girl

the tendency towards perseveration and towards micrography, and the instability of the responses.

b) **The B.G. test in the dysphasic-dyslexic school-children:** (Figure 4) In the face of the different ordinary examinations, what draws one's attention most in these children is the evident difficulty they show in acquiring reading and writing. The average age upon entering the first grade was 6 years 4 months and the average maturation established with this test was 5 years 9 months.

The drawings show the following characteristics:

Generally badly directed movement, neat and clear outlines, tendency towards continuous shape in some children and towards fragmented shape in others; slight stiffness (but less than that of the mentally handicapped children). Reproduction is inaccurate and a bad whole prevails over some good details. They may be duplications of one of the figures, omissions of parts. The deviations of orientation (total or partial rotations) and bad connections, which are performed either because of adhesions or because of separation of parts, are very frequent and manifest. Superpositions may likewise be appraised. They transform points into circles or into little „springs“ of compressed strokes. Neither perseveration nor elaboration are frequent. Exceptionally, there are free associations around the drawings. As far as the size of the latter is concerned, it is normal and its distribution on the sheet is disorderly.

During the period of teaching, generally after the first year of school practice, the development of Bender's test is the following: With regard to movement, the clear appearance of perseveration in points or circles is noticed. The shape in general has lost pretty much of its stiffness and it is better distributed. Reproduction displays hard outlines, the shape is mostly continuous (occasionally somewhat fragmented), the organization reveals a reproduction that tends towards a greater accuracy. Duplications do not exist. The whole appears good and proportioned with few deformations, rotations, adhesions and occasional retraces. Nevertheless, some rotations may still appear, the same as exceptional superpositions. There also exist graphic connections, retraces, corrections, which reveals the child's preoccupation for its orientation. In the forms, the points (which sometimes appear with addition) or circles predominate, giving these elements a character of perseveration. The size is medium and the omissions, especially the angular ones, are scarce.

As the teaching advances, and generally in the second year of the same, one observes a much better distribution of the figures, although they sometimes tend to move towards the edges of the pages. There are still elements of perseveration in points or circles. The outlines are clear and the shapes are generally continuous. The organization shows a reproduction that tends towards accuracy but serious orientation troubles still remain: partial or total rotations, separation of parts and alteration of connection in the form of adhesions or separations. There still exist circles for points and the size is medium or slightly smaller. The omission of angles or intercrossings are scarce.

In short, what continues to dominate the condition is the existence of rotation, of bad connections, of little alteration in the form; retracing and perseveration of the shape (medium size).

GENERAL CONCLUSIONS

- 1st) The correct diagnosis of school-age dysphasia must be made on the basis of neurological, psychological and linguistic symptoms.
- 2nd) Linguistic examination in school-age dysphasic children is very important: it permits the insuring of a correct diagnosis.
- 3rd) We must be cautious in the interpretation of pure-tone audiometric tests made on school-age dysphasic children because the latter may give a false impairment of hearing.
- 4rd) We must be cautious in the interpretation of speech audiometry or distorted speech audiometry made on school-age dysphasic children because many of them are unable to repeat a series of words correctly under these circumstances.

EXAMEN DU LANGAGE CHEZ LES ENFANTS DYSPHASIQUES SCOLAIRES

Le dépistage du langage chez les enfants dysphasiques scolaires est très important pour établir un diagnostic certain. On commence tout d'abord avec: 1) Le dépistage du langage spontané (narrer, décrire, s'entretenir), 2) Le dépistage de syllabes, mots ou phrases répétées, 3) La répétition orale et mentale de séries de mots et de phrases (avec ou sans changement de posture); après on continue avec, 4) Les tests de perception et compréhension auditives (audiométrie vocale sensibilisée), 5) L'interprétation du dessin ou de la lecture, 6) La représentation du dessin ou de l'écriture (copie, composition, dictée); finalement on fait le dépistage des autres systèmes du langage (le chant, la lecture kinesthésique, le calcul arithmétique, etc). Chacun de ces examens comprend différents **items**.

Dans ce travail on parle seulement de **quelques** symptômes linguistiques (d'après l'examen de 300 enfants pré-scolaires).

Difficultés articulatoires: Pour chaque 21,3 des enfants dysphasiques scolaires, il y a 10 (46 pour cent) avec des défauts d'articulation (malgré qu'ils soient âgés de 6 ans). Pour chaque 38,8 des enfants **sans problèmes** il y a 10 (26 pour cent) avec des défauts d'articulation. (En ce qui concerne les défauts de prononciation, se renseigner sur les résultats obtenus dans le Tableau no. 1).

Le bégaiement a été trouvé chez 2 pour cent des enfants qui entraient à l'école primaire (et la moitié de ceux-ci présentaient des symptômes de dysphasie scolaire). On suppose que la **compréhension du langage** est conservée dans la plupart des syndrômes de dysphasie scolaire, mais les épreuves montrent des résultats très bons — même avec des épreuves de compréhension concrète — seulement dans 3 pour cent de ces syndrômes. Cependant la plupart obtient des résultats **bons** (Tableau II).

Répétition de mots. Les enfants dysphasiques scolaires, similairement aux enfants normaux, peuvent répéter par coeur 4 mots d'une série de 7. Egalement, ils peuvent **décrire** une „scène” de la même façon que les enfants normaux. La répétition de séries de mots simples (isolés ou groupés de 3

en 3), sans l'aide visuelle (c'est-à-dire avec l'enfant tourné), et la répétition de séries de mots difficiles (isolés) en face de l'expérimentateur nous renseigne sur deux sortes de réponses: a) répétition avec des défauts et b) répétition sans défauts. Nous comprenons avec l'expression: „défaut" 1) La transformation d'un mot dans un autre mot, 2) La suppression de mots, 3) les additions d'éléments sonores ou de syllabes, 4) la déformation de la parole, 5) le trouble (dans la répétition) de l'ordonnance des trois mots ou de l'ordonnance des éléments sonores d'un mot. Seulement le 31,3 pour cent des enfants sans problèmes est incapable de répéter correctement la totalité des séries, tandis que le 45,26 pour cent des enfants dysphasiques scolaires se retrouve dans les mêmes conditions.

Ces considérations sont importantes pour interpréter les résultats obtenus avec l'audiométrie vocale sensibilisée. En général les enfants des faubourgs ont plus de chance à répéter correctement les mots difficiles (voir figure No. 1). En outre, la plupart des enfants normaux, sont capables de répéter 8 mots corrects, tandis que la plupart des enfants dysphasiques seulement arrivent à 3.

Perception visuelle et mémoire concrète: Presque tous les enfants âgés de 6 ans (normaux ou dysphasiques scolaires) peuvent se rappeler de 5 noms de figures représentatives d'objets. L'inversion ou la rotation de figures géométriques à la copie, est plus fréquente chez les enfants dysphasiques scolaires (26,7 pour cent) que chez les enfants sans problèmes (21,7 pour cent).

Co-ordination visuo-motrice: Les données sont pires chez les enfants dysphasiques scolaires.

Test de Bender: Ce test, en général, nous renseigne, chez les enfants dysphasiques scolaires, sur la désorganisation de la structuration spatiale. Les dessins montrent une constante préoccupation pour les connexions, qui sont mauvaises, entre les différentes traces de la même figure; il y a des rotations et la forme peut être respectée. Le papier fréquemment présente des dessins effacés et corrigés.

Conclusions

- 1) Le dépistage du langage est importante, avec l'examen neurologique et psychologique pour arriver au diagnostic certain de dysphasie scolaire.
- 2) L'hypoacousie, que montrent — à travers l'audiométrie tonale — quelques enfants dysphasiques scolaires, peut-être fausse.
- 3) Quelques enfants dysphasiques scolaires ne sont pas capables de répéter correctement des séries de mots et ça nous oblige à prendre attention sur les résultats obtenus chez ces enfants avec l'audiométrie vocale ou l'audiométrie vocale sensibilisée.

REFERENCES

See references of „Dysphasic symptoms in school-children as manifestation of central deafness”.

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