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Assessment of Speech and Language Skills in Children

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ABSTRACT

A speech and language assessment procedure was developed to study different aspects of speech and language skills in children 6.5 years old who had needed intensive care in the neonatal period. It was required that the procedure could be carried out at one examination session and that it should characterize a broad spectrum of language skills and permit detection of deviations in language development.

The assessment comprises three parts. Part A is an evaluation of the child's spontaneous speech during a 10- to 15-minute conversation between the child and the assessor. Eight different variables are assessed, and an overview of the child's conversational behaviour is obtained. Part B is an assessment of speech and language skills. A set procedure is used to assess auditory discrimination, interaction between auditory and speech motor capacity, different comprehension functions, vocabulary and word fluency. Some motor tasks are included to elucidate the relationship between speech and non-linguistic fine motor activity. Part C is an interview with the parents.

A control group of 40 children was tested. The assessment protocol is now being applied for follow-up examination of children who have needed neonatal intensive care at Uppsala University Hospital, Sweden.

INTRODUCTION

During the last twenty years the perinatal mortality rate in the industrialized countries has markedly decreased. Several factors have contributed to this development, such as improvement in maternal care, improved supervision during delivery, and advances in early neonatal basic care and neonatal intensive care. Those children who have required intensive care or other special treatment in the neonatal period have often been followed up for one or two years at the paediatric departments where they have been treated, after which their further follow-up has been the responsibility of health centres. In recent years it has been increasingly questioned whether examination of the neurological and motor development alone during the first years of life is sufficient for obtaining a picture of the children's developmental progress and health. It is considered by some authors that the assessment of their development would be more reliable if it included not only motor functions but also linguistic and literary skills, as well as social adjustment.

A comprehensive follow-up study of all children from the County of Uppsala who have required intensive care in the neonatal period was started in 1986 and is continuing. The aim is to study their linguistic, social and motor development and to consider the final results in relation to background factors and neonatal treatment.

The routine examination of pronunciation defects that is performed by the Swedish child health care services at the screening of four-year-olds in The County of Uppsala is not sufficient for a follow-up study and needs to be supplemented with more complete examinations at pre-school age (6 1/2 years). Only a few tests can be used at an age of 6½ years. Some of these tests are too extensive to be performed in one session, e.g the Illinois Test of Psycholinguistic Abilities (Holmgren 1984) and the Nelli test (Holmberg & Sahlén 1986), and some only measure one aspect of language development such as pronunciation tests and vocabulary tests, e.g the Peabody Picture Vocabulary Test (Dunn 1959) and SPIQ (Rydberg & Höghielm 1974). To be able to

examine different aspects of the children's language skills at the age of 6 1/2 years, we designed an age-adapted assessment programme. This comprises both an evaluation of the child's spontaneous speech in a conversation and a formal assessment protocol appropriate for the child's age. The results can be graded on a scale from 0 to 5.

The protocol was tested on 40 healthy children. Eighteen months after the original assessments, the original recordings were reassessed in order to evaluate the reproducibility of the test.

The protocol is designed so as to permit comparisons of children who have required intensive care with healthy children in a wide range of aspects of speech and language development and to diagnose deviations from what is considered normal. In addition the design of this protocol should make it possible to correlate results of linguistic tasks and related motor functions with conversational behaviour. Furthermore on an individual basis it should reveal both strengths and weaknesses in the set of abilities contributing to good linguistic competence and communicative behaviour and thereby pointing out areas requiring more detailed investigation and therapy.

MATERIAL

The assessment was performed on 40 healthy children, 20 boys and 20 girls. All children were 6 1/2 years old (±one month) at the time of the assessment. The children were sampled from two periods. Twenty-six of the children were born in November 1980 and fourteen in April-May 1981. The children were sampled randomly from the population register that is kept for all children in the County of Uppsala, and which was obtained through the Administrative Bureau of Child Health Care in Uppsala. Every third child from the first period and every tenth child from the second period was called until the quota of 20 girls and 20 boys had been obtained.

The criteria established were:

- that the child should live within a reasonable travelling

distance,
- that the child should not have received any form of extra speech and language training,
- that the child should have Swedish as his/her native language, and
- that the child should not have required intensive care in the neonatal period.

If any child did not fulfil the above criteria, the next child on the register was called. No child had to be excluded because of extra speech or language training. Four children/families did not wish to participate in the study, six could not be reached at the given address and two children were unable to take part because of illness in the family. In these cases also the next child on the list was called.

Most of the children were assessed at or near the hospital. Seven boys were assessed in their own homes, as the parents were unable to take them to the hospital. One girl was examined at a day nursery.

METHODS

Assessment of speech and language skills

The assessments were performed by a speech therapist with considerable clinical experience (MJ). In all cases the assessor and the child were sitting opposite each other, at a distance of about 75 cm. In most cases one or both of the parents were present.

The content of the assessment was chosen with a view to measuring a broad spectrum of different language-related skills within a length of time reasonable for one session. Each examination took about 1 1/2 hours. This period included a 15-minute break for a snack, during which the parents answered questions concerning the child's development.

In general, the children exhibited a positive attitude to the

assessment. Some of them were a little shy at first, but not to such an extent as to affect the results. Only one child was hesitant and unwilling to carry out the whole test.

The assessment consists of three parts. Part A is an evaluation of the child's spontaneous speech during a 10- to 15-minute conversation between the child and the assessor. Eight different variables are assessed and an overview of the child's conversational behaviour is obtained. The assessor asks the child to talk about his room or the room in which he sleeps at home. During the conversation the assessor tries to get the child to talk about different pieces of furniture and toys and their positions in the room. Other topics might also arise during the conversation. The aim is to hold a dialogue with the child and not merely to question him. All conversations are recorded on tape for analysis.

Part B is an assessment of specific speech and language skills. It is carried out with the use of set procedures. This assessment also includes non-linguistic motor tasks for the fingers, hands and mouth with the aim of elucidating the relationship between speech motor function and other fine motor activity. The profile obtained in part B complements the findings concerning spontaneous speech in part A, and makes it possible to compare achievements in the different tasks with the child's conversational behaviour.

Part C is an interview with the parents.

In all cases the assessment began with the set procedures, Part B, as this placed no great demands on the child's initiative. The evaluation of spontaneous speech, Part A, was then made on the basis of the conversation, which was held in a friendly (non-threatening) atmosphere. Most children felt that the assessment was already completed and appeared to be able to talk in a relaxed manner. Part C, the interview with the parents, was performed in the break halfway through part B.

The speech and language assessment protocol

Part A. Evaluation of spontaneous speech

This evaluation is based on an elaborated version of Birgitta Johnsen's method "Eight rating scales for the assessment of spontaneous speech in aphasia" (1988). These eight scales were retained in this further developed version, but the content of the scales, especially those elucidating phonology and sentence structure, was modified in order to characterize the language development and also to identify deviations from what is considered normal development.

In addition to assessing the formal aspects (A3-A6, below) of the child's language, an assessment is made of the child's interaction in the conversation, i.e. his ability to shift between the roles of speaker and listener, his willingness to converse and his attitude towards the conversations, and also the information given by the child. This evaluation of spontaneous speech thus sheds light on the entire conversational situation and attempts to capture most aspects of the child's use of language to communicate. The purpose is to identify areas of strengths and weaknesses in the child's spontaneous speech by use of a graded scale ranging from "no ability" to "good ability" in the speech used during the discussion. No detailed conversation analysis is included (Uplac).

A1. Ability to give information

This variable captures the extent to which the child manages to give adequate information, with regard both to the content and to the amount. Speech intelligibility is also considered. If necessary the assessor introduces new topics to make it easier for the child to show his ability.

A2. Speech motor function

Both hyper- and hypofunction of the speech motor activity may occur, and affect spontaneous speech. The speech motor function

variable includes the speed of speech, the speech rhythm, the pronunciation, the length of the utterances, and resonance. This section comprises an overall evaluation of the motor function of speech.

A3. Sound pattern

This variable concerns the ability to use correct sounds at correct places in words. All deviations concerning the sound pattern of words are included in this category (e.g substitutions, permutations, assimilations). These are phenomena which normally occur to a varying extent in all children, but are particularly frequent in children with delayed or deviant phonological development.

A4. Word finding

This variable concerns the ability to "find words" when talking. Problems with this can be exhibited in various ways. The child may stop short when talking and become quiet and possibly hesitant. A child may repeatedly ask "What is it called?", another may start from the beginning or use circumlocution and paraphrase. In some cases the problem is apparent as a markedly skew distribution between different word classes.

A5. Word selection

This variable concerns the ability to choose the right word when speaking. Some children use inappropriate words in their spontaneous speech which make the listener react or misunderstand. For example a child may say that he has a "train" in the desk drawer instead of a "conductor's cap", that the desk is "lying" on the floor instead of "standing", or that there is a "necklace" instead of a "hotplate", on the stove for boiling potatoes. This kind of error in word selection is recorded here.

A6. Sentence structure, grammar

Here the ability to form grammatically correct sentences is assessed. Omission of sentence constituents, omission of words, word-order errors, and errors in the inflected forms of words are recorded. In ordinary spontaneous speech there will always be a number of incomplete sentences which are not perceived as erroneous by the listener, and these are therefore not recorded in the assessment.

A7. Conversational interaction

Conversational interaction involves the ability to shift between the role of speaker and listener. Different situations, different ages, and different topics of conversation are associated with different degrees of balance between the roles as listener and speaker. Extra care is therefore exercised when judging inappropriacy in a child. Only when very clear conversational problems are experienced are these recorded. A child may take primarily the role of a speaker, thus engaging in a monologue without apparently observing or waiting for the listener's responses. The child may even appear not to care whether the listener responds or not. One has to make an extra effort to get the child to react to one's own remarks or comments. On the other hand the child may be a very passive listener without making any spontaneous comments. Both ways make the assessor feel that he is not getting full contact with the child in the conversation.

A deficient language ability may also affect the conversational interaction. In such cases a child may become self-conscious, frustrated by misunderstanding, or withdraw from the conversation. These instances, reflecting a primary linguistic handicap, are also recorded.

A8. Motivation, initiative for interaction

This variable concerns the willingness to take part in interaction. Considerable tolerance is exercised towards what is considered appropriate. There may be a variation in appropriacy

from great willingness to a shy, cautious and hesitant attitude. When a child appears to be reluctant to engage in conversation and interaction and the assessor therefore needs to make special efforts to gain or retain the child's attention, this is recorded. Too intrusive or intense behaviour may also be experienced as inappropriate.

A1-8. Assessment scale

The assessment scales are graded from 0-5. A description of each level is given in the assessment protocol. Grade 5 is only used for the scales A2-A7. It represents good ability, without notable deficiencies or problems. Grade 4 means moderate problems that are only noticeable to an observant listener or professional, 3 means manifest problems, where the listener might need clarifications or special adjustments, 2 means considerable problems or very limited ability, 1 means hardly any ability, and 0 is given when there is no ability at all within a particular scale.

A1, information, and A8, motivation, are the two variables which are the most likely to reflect unfamiliarity with the situation. Grade 4 includes both good, adequate ability and moderate problems or difficulties, and is therefore the highest grade given. Grades below 4 are only given when there appear to be manifest problems. In the original model grade 5 was used for too profuse and uncontrolled information (A1) and an exaggerated desire for contact (A8). These are now graded 3b.

The profile obtained gives an overall picture, showing how the child participates in a conversation and where any weaknesses may lie. The assessments on the defined levels are of a qualitative nature, however, and require an assessor with knowledge about and experience in listening to the communication of children. It is particularly important for the variables concerned with interaction, A7 and A8, to avoid any negative influence of the assessor's own behaviour on the child.

The different variables co-vary according to different patterns.

For example the ability to give information (A1) can be affected by the attitude towards conversation (A8), major difficulties in speech motor function (A2), or by formal language problems (A3, A4, A5, A6). Difficulties in the speech motor function (A2) can affect the child's development regarding sound patterns (A3) and sentence structure (A5), and if the difficulties are severe, they may also affect motivation (A8) and the ability to take part in interaction (A8, A7).

In many cases motivation for communication (A8) is closely related to the ability to carry out interaction (A7). On the other hand, there are children who are eager to engage in conversation (A8) and yet appear to have difficulty in understanding the conversational partner and in responding appropriately (A7). Children with good functional conversation skills (A7) may not be interested in engaging in a conversation (A8).

In connection with the assessment of spontaneous speech, the assessor also makes a rough classification of the use of gestures and facial expressions grading them: no or poor facial expressions or gestures, ordinary use or very frequent use of gestures, or odd facial expressions. Flow of speech and prosody are also roughly graded by the assessor as normal, with moderate difficulty or deviation, or with serious difficulty or striking deviation.

Part B. Assessment based on set procedures

Parts of this section of the assessment are based on material from Nelli, a neurolinguistic examination procedure for children with language disorders (Holmberg & Sahlén, 1986).

Non-linguistic motor tasks (B1-B3)

B1. Finger and hand movement patterns

The aim of these tasks is to elucidate the ability to find and learn fine motor movement patterns.

B2. Mouth positions

An assessment is made of the ability to assume and retain different positions of the tongue and lips.

B3. Mouth movements

The ability to find different tongue and lip movements is also assessed.

Imitation tasks (B4-B6)

B4. Articulatory positions

Isolated sounds
Pairs of sounds
Isolated syllables
Rapid series of similar syllables

In this section the ability to find the right position and mode of articulation is assessed. Demands are placed on interaction between auditory and speech motor function and maintenance of motor rapidity in articulatory movements.

B5. Articulatory patterns

Repeated sequences of different syllables
Repeated short Swedish phrases
Isolated Swedish words (4-6 syllables)
Sequences of Swedish words
Meaningless words

Here the ability to find articulatory patterns in different kinds of tasks is evaluated. High demands are placed on the interaction between the auditory and the speech sensory-motor capacity to control articulation and to sustain repeated articulatory patterns. To assess the ability further, some of the tasks consists in "tongue twisters". The child's phonemic ability as observed in B11 (see below) has to be taken into account. If the

child has a lisp or a deviant r sound and this does not affect other sounds, this is regarded as apropriate.

B6. Sentences

The ability to reproduce sentences of different complexity and length is assessed. This is a complex task which requires some linguistic maturity, especially with regard to vocabulary and grammar.

Comprehension (B7-B9)

B7. Logical, grammatical constructions

These tasks have the aim of elucidating the ability to comprehend sentences with such grammatical structures that the whole sentence has to be kept in mind before it can be interpreted (e.g. Karin is taller than Eva. "Who is the shortest?")

B8. Retell a story

This task is given to elucidate the ability to listen to, understand, remember and retell a story.

B9. Follow instructions

Here an assessment is made of the ability to follow instructions of the type: "Point at... with..." and "Point with... at...". Pressure is placed on the child's power of listening and understanding of relationships expressed by prepositions. A pen, a rubber and a pair of scissors are used.

Complementary information (B10-B14)

B10. Auditory discrimination

The aim of these tasks is to elucidate the ability to listen to and discriminate between a large number of minimal pair words mixed with similar pair words. Different vowel, consonant and consonant cluster distinctions are tested.

B11. Phoneme inventory

In this section the aim is to assess the pronunciation of Swedish phonemes in initial, middle and final positions and in consonant clusters. The child is asked to imitate simple Swedish everyday words in order to elucidate his most basic ability.

B12. Auditory short-term memory

The short-term memory is assessed by asking the child to repeat unrelated Swedish words, series of nouns and series of verbs.

B13. Word fluency

Here the ability to find noun words is evaluated. The child is asked to name as many articles of clothing and as many edible things as possible in 1.5 minutes in each category.

B14. Peabody Picture Vocabulary Test (1959)

This test measures passive vocabulary. A Swedish translation of the original test is used. The results are interpreted in relation to developmental norms.

B1-13. Assessment scales

The assessment scales are graded from 0-5. The characteristics of each level are given with the assessment protocol. A score of 5 represents no mistakes at all and 0 is given when the child participates in all the tasks but gives no correct answer. In the

auditory discrimination task, 0 is given when more than 43 of the 122 questions are incorrectly answered. When a child for some reason (e.g. physical disability, mental retardation, unwillingness) does not participate or complete a task, this is marked as "not assessed".

Part C. Interview with the parents

The purpose of the interview is to obtain information from the parents about the child's hearing, possible hereditary tendencies to late speech development, and any reading and writing difficulties. The parents are also asked about the occurrence of stuttering, different stages in the child's language development, right- and left-handedness in the family, and their opinion of the child's fine motor function and word memory.

Treatment of data

Student's *t*-test on independent observations was used for statistical analysis.

RESULTS

Results of assessments with use of this protocol in 40 healthy children are presented in Tables 1, 2, 3, 4 and 5.

Mean values, standard deviations, median values and ranges are given. A mode value is given only when the result has been obtained in more than 50 % of the assessments. As seen in Table 1, the mean value for the variables in the assessment of spontaneous speech lay between 3.9 and 5.0, with values of around 4 for the ability to give information and for motivation. There were no significant differences with regard to spontaneous speech between boys and girls (Table 2).

Table 1. Results of assessments of spontaneous speech in 40 children. Mode values are given only when more than 50% of the assessments gave the same result.

	Variable	n	average	SD	median	range	mode
A1	Information	40	3.9	0.3	4	3-4	4
A2	Articulatory motor function	40	5.0	0.2	5	4-5	5
A3	Sound pattern	40	4.5	0.6	5	3-5	5
A4	Word finding	40	4.9	0.5	5	3-5	5
A5	Word selection	40	4.9	0.4	5	3-5	5
A6	Sentence structure, grammar	40	4.8	0.4	5	4-5	5
A7	Conversational interaction	40	4.9	0.5	5	3-5	5
A8	Motivation, initiative for interaction	40	4.0	0.2	4	3-4	4

Table 2. Comparison of the results of the assessment of spontaneous speech in girls and boys. Mode values see table 1.

Variable	A1	A2	A3	A4	A5	A6	A7	A8
Girls								
n	20	20	20	20	20	20	20	20
Average	3.9	5.0	4.5	4.7	4.9	4.8	4.8	4.0
±SD	0.4	0.0	0.6	0.7	0.5	0.4	0.6	0.2
Median	4	5	4.5	5	5	5	5	4
Range	3-4	5-5	3-5	3-5	3-5	4-5	3-5	3-4
Mode	4	5	-	5	5	5	5	4
Boys								
n	20	20	20	20	20	20	20	20
Average	4.0	5.0	4.6	5.0	4.9	4.9	5.0	4.0
±SD	0.0	0.2	0.5	0.0	0.3	0.4	0.0	0.0
Median	4	5	5	5	5	5	5	4
Range	4-4	4-5	4-5	5-5	4-5	4-5	5-5	4-4
Mode	4	5	5	5	5	5	5	4

Table 3. Number of infants with different results in the first assessment and the reassessment of the recording (n=40).

Difference	A1	A2	A3	A4	A5	A6	A7	A8
+ 2	0	0	0	0	0	0	0	0
+ 1	0	0	0	1	1	1	3	0
- 1	1	7	13	7	5	13	1	1
- 2	0	1	1	3	0	0	0	0

When the spontaneous speech samples were reassessed, essentially the same results were obtained but with somewhat lower scoring at the reassessment. Differences are indicated in Table 3 as + or - 1 or 2.

The results of non-linguistic and linguistic tasks are presented in Tables 4 and 5. The mean values lay between 3.4 and 4.8 for those variables that are graded from 0 to 5. There were statistically significant differences between boys and girls only for B1 ($p<0.01$), i.e. finger and hand movement patterns, where girls performed better than boys, and for B14 ($p<0.01$), the Peaboby Picture Vocabulary Test, where boys performed better than girls. No mode values are given for five of the linguistic variables in part B, as seen in Table 4. When the results from girls and boys were separated (Table 5), only a few mode values could be given for the linguistic variables.

In connection with the conversation, markedly frequent gestures and lively facial expressions were noted in two children. Seven children had minor disorders of speech fluency. One of these children also showed a moderate deviation in prosody.

Table 4. Results of the assessment using the set procedures in 40 children. Mode values are give only when more than 50% of the assessments gave the same result.

All children

	Variable	n	average	SD	median	range	mode
B1	Finger and hand movement patterns	40	4.5	0.6	5	3-5	5
B2	Mouth positions	37	4.7	0.6	5	3-5	5
B3	Mouth movements	38	4.8	0.4	5	3-5	5
B4	Articulatory positions	40	4.5	0.6	5	3-5	5
B5	Articulatory patterns	40	3.4	1.1	4	1-5	-
B6	Sentences	40	3.8	0.8	4	1-5	4
B7	Logical, grammatical constructions	40	4.3	0.9	4.5	2-5	-
B8	Retell a story	39	3.5	1.1	4	0-5	4
B9	Follow instructions	40	4.6	0.6	5	3-5	5
B10	Auditory discrimination	40	3.6	0.9	4	1-5	4
B11	Phoneme inventory	40	4.5	0.6	5	3-5	5
B12	Auditory short-term memory	40	4.2	0.7	4	3-5	-
B13	Word fluency	39	4.0	0.9	4	2-5	-
B14	Peabody Picture Vocabulary Test	40	7.81	1.59	7.46	4.83-11.33	-

Table 5. Results of the assessment using the set procedures in girls. Mode values are given only when more than 50% of the assessments gave the same result.

Girls

	Variable	n	average	SD	median	range	mode
B1	Finger and hand movement patterns	20	4.8	0.6	5	3-5	5
B2	Mouth positions	19	4.7	0.7	5	3-5	5
B3	Mouth movements	19	4.8	0.5	5	3-5	5
B4	Articulatory positions	20	4.5	0.7	5	3-5	5
B5	Articulatory patterns	20	3.2	1.3	3.5	1-5	-
B6	Sentences	20	3.6	1.1	4	1-5	-
B7	Logical, grammatical constructions	20	4.2	0.9	4	2-5	-
B8	Retell a story	19	3.6	1.1	4	0-5	4
B9	Follow instructions	20	4.7	0.5	5	4-5	5
B10	Auditory discrimination	20	3.4	1.0	3	1-5	-
B11	Phoneme inventory	20	4.6	0.5	5	4-5	5
B12	Auditory short-term memory	20	4.0	0.7	4	3-5	-
B13	Word fluency	19	4.2	0.8	4	3-5	-
B14	Peabody Picture Vocabulary Test	20	7.08	1.25	7.09	4.83-10.33	-

Table 5 (cont.). Results of the assessment using the set procedures in boys. Mode values are given only when more than 50% of the assessments gave the same result.

Boys

	Variable	n	average	SD	median	range	mode
B1	Finger and hand movement patterns	20	4.3	0.5	4	4-5	4
B2	Mouth positions	18	4.6	0.6	5	3-5	5
B3	Mouth movements	19	4.9	0.3	5	4-5	5
B4	Articulatory positions	20	4.5	0.5	4.5	4-5	-
B5	Articulatory patterns	20	3.7	0.9	4	2-5	-
B6	Sentences	20	4.0	0.5	4	3-5	4
B7	Logical, grammatical constructions	20	4.4	0.9	5	2-5	5
B8	Retell a story	20	3.5	1.2	4	0-5	-
B9	Follow instructions	20	4.5	0.7	5	3-5	5
B10	Auditory discrimination	20	3.9	0.6	4	2-5	4
B11	Phoneme inventory	20	4.5	0.6	4.5	3-5	-
B12	Auditory short-term memory	20	4.4	0.7	4	3-5	-
B13	Word fluency	20	3.9	1.0	4	2-5	-
B14	Peabody Picture Vocabulary Test	20	8.55	1.58	8.34	6.50-11.33	-

DISCUSSION

This language assessment protocol for children aged 6 1/2 has been constructed on the basis of an assessment of spontaneous speech in adult patients with aphasia (Johnsen 1988). Parts of other language tests, such as Nelli (Holmberg & Sahlén 1986) and the Peabody Picture Vocabulary Test (Dunn 1959), were also incorporated into the assessment. The language assessment protocol has been developed for the purpose of speech and language assessment of children of upper pre-school age. The primary purpose is to evaluate the developmental progress in children who have needed neonatal intensive care. It is our hope that the methodology presented here will also be useful in the follow-up of other risk groups. No similar assessment protocol has hitherto been standardized in such a way as to permit population studies with good reproducibility.

The assessment protocol has been found to be feasible for a study of children aged 6 1/2. It permits a broad characterization of the child's spontaneous speech and communicative behaviour and, at the same time, an examination of basic linguistic skills. The children, in this case a random selection of six-year-olds without any known health or developmental problems, participated in the assessment programme. As speech and language are a complex function which has to be studied in several parts, these assessments always take a considerable amount of time. For the purpose of this study the assessment protocol was used on a limited group of 40 children.

The results of parts A and B show that in this population of children the measurement values display moderate variation. For all variables the mean values lie within the upper half of the scale. In other words, for a given language dimension, the great majority of children in a normal population can be regarded as non-deviating in the clinical assessment. The reproducibility study of part A showed good agreement for the different variables. The same speech therapist has carried out the assessments and the reassessments.

Naturally there are subjective components in the assessments of several of the linguistic functions, but the criteria were the same for all children. The greatest variation was noted for the sound pattern, in the evaluation of spontaneous speech, and for "articulatory patterns" and the task "retell a story" in the assessment using set procedures.

The assessment protocol is currently being used for children who have required neonatal intensive care. Preliminary results of these studies are under preparation.

CONCLUSION

A new protocol for the assessment of speech and language skills in 6 1/2 year old children has been developed. The assessment permits characterization of a child's spontaneous speech and communicative behaviour and at the same time evaluation of basic linguistic skills. With this protocol there is moderate variation in the results obtained for each variable in a normal population. Reassessment of the evaluation of spontaneous speech has shown good reproducibility.

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