Personal practice

Assessment of the slow preschool child

D M B HALL

Department of Child Health, St George's Hospital Medical School, London

Most of the serious handicaps of childhood present long before the age of 3 years. In the 3 to 5 year age group the commonest cause for concern is that the child is progressing more slowly than his peers, either in acquisition of language, motor coordination, or in all aspects of development. The purpose of this paper is firstly to review the concept of 'slowness', and then to discuss the paediatrician's contribution to the management of these children. I shall concentrate on slowness in learning to speak, because this is by far the commonest presenting complaint. Evaluation of symptoms and signs associated with gait or other aspects of motor function must always include a careful neurological examination, which is well described in standard texts and will not be discussed here.

What does 'slow' mean?

In some developmental disorders—for instance, autism or profound mental handicap—the pattern of behaviour and function is qualitatively different from that of the normal child. No one would use the term 'slow' to describe such children. Slowness is generally taken to imply that the child's pattern of development is essentially similar to that of a younger normal child.

How slow must a child be before he is given this label? The problem has many parallels in medicine. How high is high blood pressure? How overweight must one be to be designated obese?

It is reasonable to define slow development in terms such as 'a score on a standard developmental or psychological test that is more than two standard deviations below the mean.' This definition would include about 2 to 3% of children. In practice, however, one does not only consider the child's developmental function; many other factors play a part in making the decision to designate a child slow.

PARENTAL EXPECTATIONS

A child whose progress is only slightly below average may well be regarded as slow by highly

educated professional parents whose standard of normality is an intelligence quotient in the superior range. Such parents are sometimes described in rather disparaging terms as pressurising or over-ambitious but their concerns are perfectly legitimate. In contrast, a child of below average ability may be regarded as normal by parents whose own education and intelligence are limited. It is the mismatch between their expectations and the child's actual ability and temperament that causes anxiety and disappointment to parents.¹

AVAILABILITY OF RESOURCES

All children benefit from stimulation and good teaching.² Indeed, bright children make better use of learning opportunities than slow children. The designation of the slowest 3% of children as slow, therefore, is no more logical than selecting the slowest five, 10, or even 20%. It is the availability of resources that determines how many children are referred for treatment or early education.

QUALITY OF PARENTAL CARE

Slow development can sometimes be attributed to inadequate stimulation at home. Some children are less vulnerable than others to adverse circumstances and their development may remain within normal limits, in spite of an impoverished home life.³ Nevertheless, they may well be performing far below their true genetic potential. It follows that simply measuring the level of development can never indicate whether intervention is desirable. An effort should be made to help parents improve their child rearing abilities. Even the best of treatment or schooling is a poor substitute for good parental care.^{4 5}

DIFFERENCES IN DEFINITION

Paediatricians regard children with slow development as having a medical problem, which they call 'developmental delay'. This definition is not shared by our colleagues in other disciplines. For instance, the educationalist recognises that all children need

education⁶ and that some may at various times need additional specialised help in order to learn. The linguist and the psychologist are interested in the process of the acquisition of language,⁷ variations in development, and external influences on learning. To the sociologist, slowness in children might be a reflection of poverty, deprivation, and economic injustice, compounded by the self interest of the professional classes who decide which talents and skills are important!

Paediatricians should recognise that there is no monopoly of wisdom in these matters. The uniquely medical role is to diagnose those specific conditions that can adversely affect a child's development⁸ while accepting that in most cases the diagnosis of slow development is inevitably imprecise.

Differential diagnosis

For all the reasons discussed above it is not possible to define slow language development precisely, and I shall not attempt to do so. For our purposes it becomes a problem when someone is worried.

The ability to communicate is prized in our

competitive society, and slowness in the acquisition of language is rightly regarded as an important problem. It may be a sign of some more serious underlying disease, and is associated with an increased risk of educational problems in the future.⁹ The figure summarises the terminology used to describe the various aspects of language.

The problem presented by the parents is nearly always associated with impaired production of speech—that is, the expressive language. It cannot be overemphasised, however, that the child's ability to comprehend is equally important. It is helpful to divide the diagnostic process into five stages.

WHAT EXACTLY IS WRONG WITH THE CHILD'S SPEECH? The parents' account of expressive language can nearly always be trusted, but they often underestimate the child's output because of reluctance to credit him with a word if the articulation is not clear. Parents worry most often about lack of clarity in the child's speech. As a rough guide, a child's speech should be comprehensible to the family by the time he is 3.

From the prognostic point of view, isolated

Figure Terminology used to describe various aspects of language.

articulation difficulties are rarely serious.¹⁰ More worrying is the child whose speech output is severely limited and who makes little effort to communicate. The inability to describe a simple picture at the age of 4 is a warning sign of learning difficulties in primary school.

There are a number of uncommon disorders that cause serious problems in speech production in spite of normal comprehension, intellect, and hearing. Diagnosis is difficult, but useful clues include persistent dribbling, or problems with chewing and swallowing; an expressionless face; a severely restricted range of individual sounds; lack of progress over a period of time, and other motor disorders (for example, Duchenne muscular dystrophy and ataxic cerebral palsy may present with speech disorders).

IS THERE ANY IMPAIRMENT OF COMPREHENSION?¹¹

The usual answer to the question, 'How much does he understand when you talk to him?' is, 'Everything.' Parents tend to overestimate comprehension because children are good at recognising gestures and other clues, such as preparation for a meal or bedtime. It follows that if the parents have recognised the child's difficulty in understanding, it is almost certain that comprehension is seriously impaired.

WHAT DO THE PARENTS FEEL ABOUT THE CHILD'S HEARING?

DOES THE CHILD PERFORM NORMALLY IN OTHER RESPECTS?

For instance does he play normally, help himself in washing and dressing, and help in the home? These are all activities that do not require language and may be learned by visual observation alone. A psychologist would designate these tasks 'non-verbal abilities'.

ARE HIS ATTENTION, CONCENTRATION, AND SOCIAL COMPETENCE NORMAL?

Does the child show attachment to the parents and respond normally to strangers?

Causes of impaired comprehension

Pronounced difficulty in comprehension is associated with four possible diagnoses, all of them potentially serious.¹²

(i) If expressive language and comprehension are limited, but all other functions are normal, the diagnosis is loss of hearing until proved otherwise. The deaf child of normal intelligence can make sense of the world through vision alone. The

diagnosis is still missed because both parents and doctors find it hard to believe that a deaf child can look and behave so normally in all other respects.

(ii) There are some children who in spite of normal non-verbal intelligence and good hearing, fail to develop language normally. Opinions differ on the incidence and precise definition of this group of developmental problems, which are collectively known as language disorders.¹³

(iii) If the child's non-verbal skills and the ability to concentrate or play constructively are also impaired, it is likely that the slow language development is a reflection of an overall backwardness. The intelligence quotient is usually in the borderline range of ability or just below, now designated learning difficulties rather than mild mental handicap.

Most children with severe mental handicap present in the first year; nevertheless, it is not unknown for a child with an intelligence quotient of 50 or less to present between the ages of 36 and 42 months for the first time, with language deficit as the presenting symptom. Usually the parents have sensed that the problem goes beyond speech development, but they seldom recognise the importance of their observations and the diagnosis of mental handicap comes as a devastating blow.

(iv) Abnormality of social behaviour with a lack of interest in people and failure to show normal attachment to familiar adults, may suggest the diagnosis of autism. The classical autistic child shows grossly abnormal behaviour and it is usually obvious that there is some serious problem. Milder degrees of social impairment cause diagnostic difficulties. Asperger's syndrome and semantic-pragmatic disorder are fashionable names to describe these often puzzling children.¹⁴

Clinical evaluation

HISTORY

It is important to establish who is worried and about what. If the parents themselves are worried there is seldom any difficulty with the consultation. If the suggestion that the child has a problem comes from another professional they may be resentful, hostile, or perhaps guilty that they failed to recognise it themselves.

The value of a developmental history depends on the precision of the questions. For instance, 'Is he talking?' is vague but, 'How many words can he say that you can understand?' is precise (table).¹² Although they are usually reliable about the child's current abilities, parents rarely recall accurately the ages at which previous milestones were achieved; they do, however, remember whether the child was

Table *Questions to parents to find out how much they know about their child's ability to speak and understand*

Expressive language

How much can he say?
 Any sounds that you understand?
 Any words that you recognise?
 How many words: a few, up to 10, 10 to 20, or too many to count?
 Does he join words—if so, how many?
 Can he make up long sentences?
 Does he copy what you say, and does he understand what he copies?
 Are you worried because he does not say much, or because his speech is hard to understand, or both?
 Can he make you understand what he wants—if so, how?
 What language(s) are used at home, and which does he use best?
 Does he ask questions using what, where, when, and why?
 Can he tell you what he has been doing—for example, at playgroup?
 Does he try to tell you a story?

Comprehension

Does he understand everyday noises like a bottle being shaken or a bath running?
 Does he understand baby game words (often accompanied by a gesture) like pat a cake, and wave bye bye?
 How much does he understand when you talk to him?
 Does he understand better if you point to the thing you are talking about, or if he can see your face?
 Does he understand:
 Names of objects, people, and pets?
 Simple instructions like 'shut the door' and 'get your slippers'?
 Two part instructions like 'get your coat from the kitchen'?
 More complex instructions?
 Can you make a bargain with him—for example, let me finish this and then I will play with you?
 Can you tell him what is going to happen—for example, we are going in the car to the hospital?
 Can you tell him a story, and does he follow it?
 Could you change the details of the story or leave a bit out without him noticing?

obviously late in smiling, sitting, walking, and talking.

The usual information about past, family, and obstetric history should be gathered. Family history is particularly important as unusual patterns of development often run in families.

DEVELOPMENTAL EXAMINATION

This begins as soon as I meet the child and parents, and includes assessment of the way the child plays and talks before I intrude, and his social demeanour and response to the strange situation; all these give insight into his degree of maturity. I watch the child walking, and if possible running and jumping. Fine motor function can be observed by giving the child some play materials to use while the history is being taken.

I prefer to look at non-verbal performance before language as it is less threatening to the child. I use bricks, crayon and paper, a puzzle or formboard, and a colour sorting task. I am more interested in

the child's approach to the task than the exact degree of function. One of the aims of the exercise is to decide whether the child is likely to need special help in school, so I am particularly interested in concentration and ability to follow the task through; I note whether he responds to suggestions and assistance in playing. I also want to know whether there is an important discrepancy between non-verbal and language abilities.

When assessing language I look first at comprehension. There are two reasons for this preference. Firstly, I can obtain clear information about expressive language from the parents, but they do not always find it easy to describe comprehension so precisely. Secondly, it is usually easy to test comprehension because the child does not have to give a spoken response to questions; comprehension can be tested by asking the child to respond by pointing.

Every 3 year old should be able to select one from an array of a dozen common objects correctly when asked to do so in a clear voice. Nearly all children of this age can recognise an object by function (for example, which one do you sweep with?) and obey commands with two information carrying words (for example, give the doll to mummy). The older the child the more comprehension he is expected to have.¹⁵

The child should not be asked questions that demand a spoken response, otherwise he may simply cry or refuse to cooperate. If a child does not tell me the name of a toy, I tell him rather than wait for him to respond. By conveying to a child that it does not matter whether he talks, most will be persuaded to do so.

In this age group hearing can be assessed by using a speech discrimination test such as McCormick's toy test.¹⁶ At the age of 3 inability to cooperate with this test is itself a useful indicator that something is wrong. If the child does not use English at home, the parents can sometimes be trained to give the test. When this is not feasible I use a performance test, either with a portable audiometer or the 'go' game. An impedance measurement is invaluable if a mild hearing loss is found.¹⁷

The behaviour of the child during the test is helpful. It is vital to distinguish between lack of cooperation (which usually means poor technique), immaturity associated with general backwardness, and hearing loss. The child with a moderate hearing loss is characteristically cooperative when the examiner's voice is comfortably loud, but loses interest or becomes upset when the voice is dropped to minimal intensity. Middle ear disorders are common; pronounced language or overall retardation should not be attributed to conductive hearing loss unless there is evidence that the hearing loss is

of long standing, and then the diagnosis should only be made with caution.¹⁸

The possibility of a defect in vision should be considered, particularly if the child is described as clumsy. He may, for instance, feel for steps with his foot before descending, or bump into objects. I arrange a complete eye examination if I have any doubts.

PHYSICAL EXAMINATION

This is seldom rewarding in children with minor learning difficulties, or speech and language problems. Occasionally one finds signs of a dysmorphic syndrome. A severe disorder of expressive language or any evidence of muscle weakness, incoordination, or spasticity, are indications for a complete neurological examination.

FURTHER ASSESSMENT

The paediatrician's role is often that of an intermediary between the parents or the professional who first voiced concern, and the multidisciplinary team of specialists who can contribute to diagnosis. The opinion of a speech therapist is often invaluable in describing with greater expertise the nature of the child's language difficulty. A standardised test such as the Reynell language scale is particularly useful when a more precise estimate of the comprehension deficit is required. An experienced physiotherapist or occupational therapist may be helpful in the assessment of a clumsy child. A shared consultation between therapist and paediatrician is often an economical way of assessing developmental problems.

A formal psychometric assessment using a standardised test may be useful in children with complex language disorders or physical handicaps that impair communication. It is important to choose a test that is relevant to the question being asked. Unfortunately most doctors are only trained to use the Griffiths scale, which is not always the most appropriate choice.

Investigations are rarely helpful unless one of the neurological disorders listed above are suspected. With these exceptions, children with speech and language problems do not need computed tomography, assessment of metabolic function, or electroencephalography. The only two tests that I frequently request are a chromosome study (fragile-X and Klinefelter's syndrome¹⁹) and estimation of creatine phosphokinase activity to exclude Duchenne muscular dystrophy.

Explanation

In explaining the situation to the parents, I try to

distinguish between the presenting functional problems and the cause. For instance, terms like 'speech and language disorder' or 'learning difficulties' may describe the pattern of difficulty, but give no clue to the cause. Of course, in most cases we simply do not know what causes these problems. Parents like to know what they are *not* caused by, brain tumours and perinatal brain damage being two common worries.

I do not think that perinatal damage as a result of anoxia in a baby born at full term should be accepted as the cause of a learning or language difficulty unless there was stage 2 or 3 hypoxic ischaemic encephalopathy, and even then I am cautious, because most survivors of hypoxic ischaemic encephalopathy have cerebral palsy.^{20 21}

A family history of slow language development or general learning problems is often obtained, suggesting that genetic predisposition plays a part in many cases.

Other possible causes of developmental problems include prenatal dysmorphic syndromes and severe intrauterine malnutrition. Environmental deprivation is undoubtedly important in some cases and may be accompanied or preceded by a history of non-organic failure to thrive.²² This can, however, be a damaging and cruel diagnosis; even if parents are not actually told that their child's problem is being attributed to poor parental care, they can usually deduce that this is what the experts think.

Intervention

It is essential to find out what the parents feel about intervention. Some resent the stigma that they feel is attached to a medical label, and prefer intervention to be offered in an educational rather than a medical context. In this view they are supported by the Education Act of 1981, which describes children as having special needs rather than defects or disorders.

The literature on preschool intervention²³ suggests that it is possible to help children with a variety of special needs; any programme that includes parents has a greater chance of success; and attitude and adaptation to adult life are likely to be improved more than actual performance.

I therefore encourage parents to seek and accept preschool help, to look at the content and quality of teaching and care being offered rather than the name of the school or unit, to regard therapists as consultants who should advise the parents and teachers as well as working directly with the child, and to recognise that the educational system can never replace parents.

Information for parents

I prepare a written report for the parents and with their agreement I send a copy to the local education department, as well as to the general practitioner, and to the nursery or school if relevant. The parents are given a leaflet about the Education Act, and if there is a diagnosis of language disorder, mental handicap, or a specific syndrome, they are told about the relevant voluntary organisation, as required by the Act.

References

- ¹ Clarke AM, Clarke ADB. Thirty years of child psychology: a selective review. *J Child Psychol Psychiatry* 1986;**27**:719–60.
- ² Clark MM, Cheyne WM. *Studies in pre-school education*. Scottish Council for Research in Education. Sevenoaks: Hodder and Stoughton Educational, 1979.
- ³ Bradley RH. Assessing the family environment of young children. In: Fitzgerald HE, Lester BM, Yogman MW, eds. *Theory and research in behavioural pediatrics*. New York: Plenum Press, 1986:47–97.
- ⁴ Rutter M. The long-term effects of early experience. *Dev Med Child Neurol* 1980;**22**:800–15.
- ⁵ Lazar I, Darlington RB. Lasting effects of early education. *Monographs of the Society for Research in Child Development*. 1982;**47**:1–151.
- ⁶ Pearson L, Lindsay G. *Special needs in the primary school*. Windsor: NFER-Nelson, 1986.
- ⁷ Fletcher P. Aspects of language development in the pre-school years. In: Yule W, Rutter M, eds. *Language development and disorders*. *Clinics in developmental medicine*, 101/102. Oxford: Blackwell Scientific Publications, 1987:70–89.
- ⁸ Gordon N. Developmental disorders of speech and language. In: Yule W, Rutter M, eds. *Language development and disorders*. *Clinics in developmental medicine*, 101/102. Oxford: Blackwell Scientific Publications, 1987:189–205.
- ⁹ Silva PA. Epidemiology, longitudinal course, and some associated factors: an update. In: Yule W, Rutter M, eds. *Language development and disorders*. *Clinics in developmental medicine*, 101/102. Oxford: Blackwell Scientific Publications, 1987:1–15.
- ¹⁰ Bishop DVM, Edmundson A. Language impaired 4 year olds; distinguishing transient from persistent impairment. *J Speech Hear Disord* 1987;**52**:156–73.
- ¹¹ Bishop DVM. The concept of comprehension in language disorder. In: Martin JAM, Fletcher P, Grunwell P, Hall DMB, eds. *Proceedings of the first international symposium on specific speech and language disorders in children*. London: Association for All Speech Impaired Children (AFASIC), 1987:75–87.*
- ¹² Hall DMB. *The child with a handicap*. Oxford: Blackwell Scientific Publications, 1984.
- ¹³ Berger M. What is a language disorder? In: Martin JAM, Fletcher P, Grunwell P, Hall DMB, eds. *Proceedings of the first international symposium on specific speech and language disorders in children*. London: Association for All Speech Impaired Children (AFASIC), 1987:60–74.*
- ¹⁴ Howlin P. Asperger's syndrome—does it exist and what can be done about it? In: Martin JAM, Fletcher P, Grunwell P, Hall DMB, eds. *Proceedings of the first international symposium on specific speech and language disorders in children*. London: Association for All Speech Impaired Children (AFASIC), 1987:295–304.*
- ¹⁵ Wells CG. Variation in child language. In: Fletcher P, Garman M, eds. *Language acquisition*. 2nd ed. Cambridge: Cambridge University Press, 1986:109–39.
- ¹⁶ McCormick B. The toy discrimination test; an aid for screening the hearing of children above a mental age of two years. *Public Health* 1977;**91**:67–9.
- ¹⁷ McCormick B. *Screening for hearing impairment in young children*. London: Croom Helm, 1988.
- ¹⁸ Paradise JL. Otitis media during early life; how hazardous to development? A critical review of the evidence. *Pediatrics* 1981;**68**:869–73.
- ¹⁹ Robinson RJ. The causes of language disorder. In: Martin JAM, Fletcher P, Grunwell P, Hall DMB, eds. *Proceedings of the first international symposium on specific speech and language disorders in children*. London: Association for All Speech Impaired Children (AFASIC), 1987:1–19.*
- ²⁰ Bishop DVM. The causes of specific developmental language disorder ('developmental dysphasia'). *J Child Psychol Psychiatry* 1987;**28**:1–8.
- ²¹ Levine MI, Grindulis H, Sands C, Moore JR. Comparison of two methods of predicting outcome in perinatal asphyxia. *Lancet* 1986;**i**:67–9.
- ²² Downey L, Skuse D, Heptinstall E, Puckering C, Zur-szpiro S. Growth retardation and developmental delay amongst inner-city children. *J Child Psychol Psychiatry* 1987;**28**:529–41.
- ²³ Guralnick MJ, Bennett FC. *The effectiveness of early intervention for at-risk and handicapped children*. Orlando, Florida: Academic Press, 1987.

*The *Proceedings of the first international symposium on specific speech and language disorders in children* is available from AFASIC, 347 Central Markets, Smithfield, London EC1.

Correspondence to Dr DMB Hall, Department of Child Health, St George's Hospital Medical School, Cranmer Terrace, London SW17 0RE.