

## Linguistic Factors in Specific Learning Difficulty

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I address the topic of 'specific learning disability' with mixed feelings. On the one hand, I applaud the focus on learning, as an end in itself, and the associated focus on disability. On the other hand, I heartily detest the term 'specific', and consider its uncritical use to be the source of many problems. The purpose of my paper is to explain what is wrong with the term, why it obscures rather than clarifies the nature of the disabilities which we wish to understand, and then suggest what we might do about it.

It is not difficult to see why the term was originally felt to be useful. People wished to draw a contrast with disabilities of a more global kind, in which there was fundamental brain damage, or other comparably general disturbances. A widely quoted definition illustrates this perspective: <sup>1</sup>

Children with special [= specific] learning disabilities exhibit a disorder in one or more of the basic psychological processes involved in understanding or in using spoken or written language. These may be manifested in disorders of listening, thinking, talking, reading, writing, spelling, or arithmetic. They include conditions which have been referred to as perceptual handicaps, brain injury, minimal brain dysfunction, dyslexia, developmental aphasia, etc. They do not include learning problems which are due primarily to visual, hearing or motor handicaps, to mental retardation, emotional disturbance, or to environmental disadvantage.

The emphasis of this definition is fairly universal, <sup>2</sup> even though it raises several problems (such as the uncertain boundary between peripheral and central sensory handicap, between minimal and severe brain damage), and even though practice varies greatly (for example, over whether one rigorously excludes all motor handicaps, and all environmental - presumably including all cultural - disadvantage). The point of the definition is to suggest that there is a significant discrepancy between a child's actual level of psycholinguistic functioning and the level of functioning one would expect, given normal intelligence and sensory capability. From this point of view, I suppose it was a natural enough move to use the term 'special' or 'specific' to refer to the more narrowly-defined syndrome.

The trouble comes when one attempts to interpret the term in a positive way and to operationalise the definition in order to get on with a clinical or educational job - such as assessment, teaching or therapy. Then one realises how inspecific the term 'specific' is. For what is specific about the disability characterised by the above definition? Is an 'imperfect ability to think' specific? Or 'an imperfect ability to speak'? Could one conceive of any more general psycholinguistic disabilities than those referred to in the definition? There is something odd about the use of the word 'specific' in this context. My dictionary gives one set of meanings for the word as 'precise, definite, explicit', and this the above definition is not - cf. 'one or more' processes, and the overlaps noted above. The dictionary also gives a medical sense of the word, 'produced by a particular micro-organism (or the medicine that has a particular curative influence on a disease)', and I suspect many people attribute medical connotations to the word when they encounter it. But in the absence of any neurological (or neuropsychological) aetiology for the condition, in our present state of knowledge, we cannot permit this

interpretation. No-one should be fooled by the phrase 'basic psychological processes', as indicating a specific cause, for we do not know what these processes might be. Psychological theories compete for our attention in providing us with an account of them, but here there is much speculation and little orthodoxy. Terms like 'memory', 'perception', 'attention' are widely used, and several operational tests are available to probe these notions; but the relationships which obtain between them, and between them and language, and how these relationships might be invoked when language learning breaks down - here no clear understanding exists.

Nor can the term be saved by appeal to the learning categories excluded by the definition - as would be standard procedure when working with the notion of diagnosis by exclusion in medicine. In the medical model, one can make such a diagnosis only when the symptomatology for each disease is unambiguous, and thus the set of differentiating signs and symptoms clearly understood. In the field of learning disability, by contrast, these conditions do not obtain. We do not know what are the defining characteristics of emotional disturbance, mental retardation, hearing loss, or whatever, when these categories are presented to us in such a general way. Each of these fields is a research area in its own right, where it is now well-known that any linguistic characterisation is going to be extremely complex. Even in the most profoundly handicapped groups (such as severe mental retardation, or profound deafness), individual differences in linguistic skills abound, as is routinely recognised every day in classroom and clinic. And it is not at all clear whether the deficiencies in language manifested by, say, a profoundly deaf person are a result of his deafness, or of one of the other factors mentioned above (such as environmental disadvantage, or an inadequate educational method). So, when someone presents with a set of linguistic symptoms, it becomes a major analytic task to decide which symptoms relate to which causative factors. It is usually not possible to decide with any certainty, and the possibility of a specific learning disability existing alongside the more obvious factors can certainly never be ruled out. If a deaf person has problems in learning to read, are these due to his deafness, or to a specific learning disability which co-exists with his deafness? It is difficult if not impossible to answer such questions, and as a result the term 'specific' cannot be saved by appeal to a process of diagnosis by exclusion. On the contrary, all that is left when we attempt to eliminate these other factors is something very inspecific indeed: it would have been better to call the syndrome 'inspecific learning disability'.

Now I am not merely making a terminological point, in all of this. My concern is with the real-world implications of this argument for anyone working in the field of linguistic diagnosis, assessment, treatment and teaching. I wish to argue that to label a child SLD is not the end of the diagnostic process: it is only the beginning. I wish to argue that SLD, as currently defined, cannot be an acceptable foundation for clinical or educational work, without massive refinement. The problem we all have to face is how to refine the notion, to make it useful for teacher and clinician alike - in a word, how do we make the notion of 'specific' specific?

The most fruitful way of doing this, in my experience is to develop a theoretical model of how language works, which at one extreme is sufficiently general to map into the categories used in general definitions of SLD, and at the other extreme is sufficiently detailed to identify the precise

targets of daily teaching and therapy. At one extreme: notions such as 'reading', 'speaking', etc. At the other extreme: problems such as a child who reads saw as was, or who is having trouble with consonant clusters such as *pl* and *bl*, in his speech. The unfortunate thing is that few theoreticians have opportunity (or sometimes motivation) to study classroom and clinic interaction in relation to their models (this is, I think, largely due to a bias towards experimental studies in the relevant branches of psychology); and few teachers and clinicians have opportunity (or sometimes motivation) to step back from their daily preoccupations and attempt to describe and evaluate what they are doing. I come from a field, linguistics, where the study of language has a strongly descriptive bias, and where the observation and analysis of speaker interaction is a routine part of the job. For example, I run a weekly assessment clinic in which children (most of whom would qualify for the title of 'specific learning disorder of the year') are given detailed linguistic study. The task involves recording the interaction between patient (or pupil) (P) and therapist (or teacher) (T); transcribing it (all of it - T's input as well as P's utterances, and all aspects of P's utterances - sounds, grammar, vocabulary, and so on); analysing the results, to determine the kind and degree of linguistic abnormality present; devising a hypothesis to explain the results; testing the hypothesis in a follow-up session, which is structured in various ways; and drawing up a set of therapeutic guidelines, to enable a systematic approach to be made to the child, by all who deal with him. Usually, at the end of this process, it is possible to make a linguistic diagnosis of the nature of the problem, and prescribe a course of therapeutic action. What is not possible, in our present state of knowledge, is to make anything other than the vaguest generalisations about groups of children, and therefore it is not really diagnosis in the usual sense. The child I saw this week, for example, was unique in several respects; he reminded me of certain other children I had seen in certain respects; but he was the same as none of them. It is always the way, at present: the individual differences stand out, at the expense of the common features. We see the trees, but not the wood. Indeed, at present we are only at the stage of realising that there is a wood. And it will be years before the main pathways are traced through it.

Why should this be? It is of course an extremely time-consuming task to record, transcribe and analyse in this way. I personally can cope with one (or occasionally two) cases a week. There are other things to be done, such as prepare papers for dyslexia conferences. And few other centres work in this way, partly because the techniques for doing the descriptive work are still in the process of being devised.<sup>3</sup> But I am convinced of the necessity of getting this kind of descriptive spade-work done, and am not too bothered by the question of research time (when one recalls how long it took for our understanding of the descriptive anatomy of the human body to reach its present state). And as a result of these initial studies, I think it is possible to provide a link between the two levels of our thinking about SLD I referred to above.

Fig. 1 is a diagram of the main levels we need to recognise as we move from the most general statements about language to the most specific. At the top we see language distinguished from other forms of communication. We may communicate using any of our senses, but the auditory-vocal channel, and its visual encoding, are rightly viewed as primary. A conventional distinction is made between the 'verbal' (i.e. linguistic) and 'non-verbal'

channels of communication: the former subsumes speech and writing; the latter such areas as facial expression, body gesture, and bodily orientation - 'body language', in a well-used phrase.<sup>4</sup> The next level in the diagram represents the two main channels, or modes of language: the auditory, and the visual; and this sub-divides immediately into the main active and passive skills - listening and speaking, on the one hand; reading and writing, on the other. At the next level, each skill can be seen to be analysable linguistically from two points of view: the study of the structures involved in the activity; and the study of the use of those structures in various learning contexts. The study of structure refers to the linguistic patterns which can be identified in the physical form of the language used - patterns of pronunciation or vocabulary, for example. The study of use refers to the ways in which we vary in our control of language, as we move from one social situation to the next. The next level therefore provides a more-detailed breakdown of these possibilities.

There are three main branches of enquiry under the heading of structure: semantics, grammar and transmission system. Semantics, first of all, is the study of the way meaning is structured in language: primarily, it is the study of vocabulary - not just a list of words, but a study of the way words relate to each other and define each other; secondarily, it is the study of the way in which we organise our meaning in stretches of language ('discourses') - giving a logical exposition to a story, for example, or a coherent structure to a paragraph, or a piece of dialogue. The distinction between semantics and grammar can be seen in the following way: if we have a meaning 'in mind', such as a request to have a locked door opened, there are innumerable ways in which we might express this meaning, using the same vocabulary, and also many ways in which the language does not permit us to express this meaning. Among the permitted ways are such sentences as **I need a key to open this door, This door needs a key, This door won't open without a key, Is there a key available to open this door, and so on.** Among the disallowed sentences are **key to the open this door a, need I a key this door to open,** and many more. Grammar is the study of sentence structures and sequences, from the point of view of which strings of words are acceptable in a language, and how they relate to each other. It is usually subdivided into the fields of morphology (the study of the structure of words) and syntax (the study of the structure of sentences).

Let us assume now that we have a meaning 'in mind', and have decided which sentence pattern to use to express it, there now remains the third branch of language structure to be taken into account: we have to choose which way to transmit the message - whether in speech, or in writing - or possibly using some other coded medium (such as finger-spelling, signing, semaphore). The two systems, speech and writing, are of course very different, but they have certain properties in common. In both cases, we need to distinguish between those properties which are independent of a particular language, and those which are dependent. The popular terms, 'pronunciation' and 'writing', do not make this distinction clear, and are the source of much confusion. There are two sides to pronunciation, for example: the range of sounds which the human vocal tract can produce and the human ear perceive, on the one hand; and the much more restricted range of sounds which actually turn up in a language, such as English or French, on the other. The general study of human sound-making and -reception is known as **phonetics**;

the study of the sound system of a particular language is known as **phonology**. All human beings are born with the same capacities for sound in their ears, vocal tracts and brains; and disorders of hearing, articulation or nervous system affect speakers all over the world in the same way, regardless of the language community in which they live. More or less the same things happen to a cleft palate speaker in French, or Chinese, or English, for example. But when speakers have an intact auditory, articulatory and nervous system, it does not therefore follow that they will be able to learn the sound system of their language efficiently - and when there is disability, each language has to be studied in its own terms. A child with an immature pronunciation of English sounds very different from a child with an immature pronunciation of French or Chinese. To say that a child has a 'poor pronunciation', then, does not help much, until we make it clear whether we view his deficit as being primarily a biological one (as conventionally defined in terms of anatomical, physiological or neurological abnormality) or psycholinguistic (as conventionally defined in terms of the learning of psychological or linguistic rules).

The same distinction applies to the study of writing. We may distinguish the range of marks which the human hand (with implement) can produce and the human eye perceive, on the one hand; and the much more restricted range of marks which actually turn up in a language, such as English or French, on the other. The general study of human mark-making and -reception has no widely-agreed name, but I refer to it as **graphetics**, on analogy with phonetics. The study of the mark system (more usually, the writing-system, or orthography) of a particular language is known as **graphology**. And, in similar manner to the above discussion of sounds, we can distinguish between the biological factors which promote the development of an ability to read and write, and the psycholinguistic factors which impede it. To say that a child has 'poor reading', then, does not help much, until we have attempted to disentangle these two variables. One of the reasons why the term **dyslexia** is so confusing, of course, is that it leaves open whether the disorder is best viewed as essentially a neurological syndrome or a psycholinguistic one.

But we are still only half-way down our diagram. Each of the headings at the level of structure needs to be broken down further. As an illustration, let me look further at phonology. How would we proceed to classify the main features of the 'pronunciation system of a language'? The next step is to make a distinction between those features of sound which can be identified as segments, and those which cannot. Under the first heading we have various consonants and vowels, and the ways these combine to form syllables. Under the second heading, we have such sound effects as intonation, rhythm and tone of voice - effects which stretch over whole words, sentences and even at times longer stretches. The next step is to formally recognise the distinction just alluded to: consonants vs. vowels. The next step is to distinguish the different kinds of vowels and consonants: under the latter heading, for instance, plosive and fricative consonants, or bilabial and dental consonants. The next step is to identify particular segments within these systems - for example, the plosive [d], as opposed to [t], [k], etc. And at this point, you might think I ought to stop - for how could there be anything more detailed than the identification of a specific sound, such as [d]? But in fact there are two further levels to take into account, which move us back in the direction of grammar and semantics. We have to ask the grammatical question: where

is the sound [d] being used? in what part of a word (at the beginning, the middle, or the end)? sometimes, even, in what part of a sentence? This is technically known as a study of the sound's **distribution**. And lastly, we have to ask the semantic question: where is the sound [d] being used? in what kind of word? only in the words **daddy** and **dog**, or in a wider range of words?

Now, and only now, are we really in the world of the classroom or clinic. Everyone notices the child who says [lelo] for **yellow**. He does not replace his [j] by [l] everywhere - he does not say [les] for **yes**, for example. His problem is quite specific, to that word, and perhaps a few others; and if a speech therapist chose to work on his pronunciation of [j] in this connection (though this is often unnecessary, as the confusion usually clears up by itself), she would have to choose specific words in specific sentences and work out specific contrasts for him to practice, using specific materials. Likewise, if a teacher were to trace my argument to its conclusion, but in the context of the teaching of reading. Everyone notices the child who reads **was** as **saw**, or vice versa. This again is a quite specific confusion, concerning certain types of words which are reverse images of each other, and if a teacher chose to work on this confusion, she would have to choose specific words in specific sentences and work out specific contrasts for him to practice, using specific materials.

At any given point in the teaching day, or therapy session, we are working on specific problems of this kind - and obviously the more systematically we can identify the range of these problems, and organise our approach to them, the better. But listing a range of problems does not constitute a diagnosis, for which some degree of generalisation needs to be made. The hierarchy in Fig. 1 gives several degrees of generalisation, and therefore - and this is the important point - several levels of diagnosis. It would be perfectly proper (though admittedly somewhat unusual) to refer to a child as having primarily any of the following: a disability in final fricative production (i.e. he has problems in using fricative sounds in final position in words in speech, but he has no problem in perceiving these sounds in the same position in his listening); a disability in fricative production (that is, any fricatives, anywhere in the word); a disability in final consonant production (what is sometimes referred to as 'open syllables'); a disability in consonant production generally (speech consisting of little more than vowels); a disability in the production of segments (neither vowels nor consonants are clear, but there is some clear intonation, etc.); a disability in phonology generally (both segments and intonation, etc. affected); a disability in phonology and grammar together; a disability in phonology and grammar and semantics (i.e. the whole range of linguistic structure, as manifested in speaking, or listening, or reading, or writing); a general structural disability, manifested in more than one of these modes; a general structural disability manifested in all of these modes; a general structural disability, manifested in all of these modes and in other modes of (non-verbal) communication as well. And of course, this is only one path up through the hierarchy. There is another path up through the field of grammar; another up through the field of semantics; and different levels of ability within each of these fields may co-occur. The number of possible symptom-complexes, when all these variables are taken into account, is as near infinite as makes no difference. The aim of research is therefore to determine the dependencies between these categories, to reduce the set of disability patterns to manageable proportions.

And this is where a great deal of progress is currently being made, in identifying putative linguistic syndromes, made up of clusters of phonological, grammatical and semantic features, viewed in relation to the variables of language in use (differential performance in relation to such things as task differences, types of materials, teacher personality, individual or group therapy, and so on). For those involved in the work, it is a long-term programme indeed, but a programme from which several useful insights have already emerged - some cautionary, some constructive. I will mention some of the most important, in my view.

Under the heading of cautionary, there are various warnings. First, the dangers of working uncritically with a medical frame of reference, given the behavioural complexity of the conditions subsumed by the label, 'learning disability'. The vast majority of these conditions will never be given a clear aetiology, in medical terms; and even if they were, the therapist and teacher would still have to construct methods of intervention using behavioural criteria. Even if Johnny's minimal brain damage could be demonstrated on a screen tomorrow, the teacher still has to answer the question 'What shall I teach Johnny next, on Monday?' Secondly, one must beware of relying uncritically on crude quantitative measures of language, in assessing disability: to think of a phonological disability in terms of 'number of sounds used or discriminated'; to think of a reading disability in terms of 'number of words read, or letters recognised'; to think of a grammatical disability in terms of how long his sentences are (one word, two words, etc.); or to think of a semantic disability in terms of the total number of words he uses. Rather, these quantitative measures have to be replaced by qualitative ones, in which the complexity of the linguistic units involved is taken into account. Different sounds involve different degrees of articulatory difficulty; some sounds are more easily discriminated than others; some letters are more easily confused than others; two sentences may have the same number of words, but one might be much more complicated than the other; two children may have exactly the same number of words in their vocabulary, but one child may be using his words in a more creative way than the other; and so on.

Thirdly, we have to realise that the answer to our problems will not come from an over-reliance on language testing. Whatever our level of involvement, we have to be interested in the language behaviour of the whole child, and not simply that fragment of him which manifests itself under test conditions. Tests are of value, in that they provide formal indices of progress, but tests are no substitute for systematic descriptions of children's linguistic behaviour, as they move through their day. It is these descriptions which will guide our intuitions, as teachers and therapists, and prompt the development of remedial programmes. Fourthly, we have to forget the dream of group diagnosis, as things stand at present, and concentrate instead on individual management. The only realistic aim at present, in my view, is to get ourselves into a position where we can be confident that we understand the limitations of an individual child; or, putting this another way, that we can predict his linguistic behaviour. When we are in this position, then we can set up teaching goals with confidence, for that child. There is however no guarantee that a teaching programme set up for one child will work as well on the next. I have the greatest of respect for teachers and therapists who are able to manipulate teaching programmes and materials so that they do work well for many

learning disabled children - but let us pay credit where credit is due: the successes achieved are due entirely to the ingenuity and experience of these professionals, and not to any group diagnostic theory on which the programme claims to be based.

These are some of the cautionary issues which I think need to be borne in mind, as we review this field. But in conclusion, I would like to make a few more constructive comments, as to how we might positively proceed, in developing a more useful concept of specific learning disability. Firstly, it is important to work within the framework of normal language acquisition, insofar as this is known. Properly used, this framework can provide a detailed assessment of language delay, or of any departure from the normal course of language development, in the form of deviant language. It can also provide a set of suggestions for remediation, as we move along the acquisitional scale from where the child is to where he ought to be. However, it must be appreciated that a developmental linguistic perspective is somewhat different, in its detail, from that routinely encountered in other fields of child development. The concept of 'milestones', for example, is not really applicable: in language development, to continue the metaphor, several interesting things are happening every few yards.

Secondly, we need to think in a comprehensive way about the language structures and uses of the children. It is too easy to notice only the most obvious features of aberrant language, and to forget to look for the more subtle underlying problems which usually are more fundamental when it comes to evaluating the disability. It is not difficult to spot most of the errors in a sentence used by a child - for example, using *me* for *I*, omitting the definite article, and leaving out the auxiliary verb *is* in the sentence *me kicking ball*. What is much more difficult is spotting which English sentences, sounds and vocabulary the child is *not* using, in his everyday speech. But whether we are looking for what he is doing, or what he is not doing, the principle is the same: we need to develop our observational techniques so that all of the child's language behaviour is systematically noted. Anything that can go wrong, will go wrong, sooner or later, for some child. And all of us in the field of learning disability need to be able to anticipate the problems before they arise. Hence, the more we are able to learn about the various branches of language, as used by normal adults and children, the better. It is a time-consuming, but not an infinite task. After all, there are only so many things that can go wrong, in phonology, grammar, and semantics.

The same principle applies to the study of reading, where the investigation of learning disability requires that we adopt a more comprehensive frame of reference than is usually the case. Most discussion of reading problems is based on the assumption that reading is essentially a matter of the relationship between sounds, letters and words. But there are so many other factors, which can contribute to the disability, arising out of the nature of the medium. At the most general level, the fact that here we have language organised in the form of a book, with pages, is a fact of life which bears no relationship to anything which goes on in speech, and which as a consequence some children find difficult to comprehend. Then, within a page, we have to consider the whole question of lay-out, especially the relationship of text to illustration - whether, for example, there should be text above a picture, or below (or even running in all directions up through the picture, as in *Meg and Mog* books!), or how the meaning conveyed by the

illustration (a picture of a boy opening a door, glossed by the sentence **The boy is opening the door**, is hardly a source of the excitement and motivation which we hope to induce in our infant readers!). And then, within the text, we have to consider the influence of one of the most neglected topics in the whole field of reading, the way we have to break language up into lines. We are slowly beginning to understand the way in which line-breaks influence reading abilities,<sup>6</sup> and how children can be much helped if the language within a line is structured in certain ways - for example:

Later that day, Mr Brown saw  
a horse.

is easier than:

Later that day, Mr Brown saw a  
horse.

or:

Later that day, Mr.  
Brown saw a horse.

There is evidently a great deal going on in the field of written language, before we even get to the topic of the words and how they are spelled. It is this other information which needs to be taken into account in any comprehensive approach.

Thirdly, we have to appreciate the integrated nature of language disabilities - to see a specific problem in one area in the light of the strengths and weaknesses of other areas of language. It is very rarely the case that single modalities of language are affected: problems of writing usually mean problems of reading, problems of speaking usually mean problems of listening, and - the most important point of all, in view of recent research, problems of reading usually mean problems of speaking and listening. Given the nature of this conference, I should like to end by making a few remarks about this issue. The interdependency of the four main language modes is widely recognised (in this country, especially since the Bullock Report's emphasis on the point). The teaching of reading is seen within the context of the child's previous linguistic experience - that is, his speaking and listening experience. The usual criticism of traditional reading schemes was how far away they were from the kind of language the child was familiar with, and more recent schemes have tried, with varying success, to provide a linguistic world-view which the child can recognise. The field of reading disability has been slower to see this interdependence, but the experimental studies are now accumulating which make it clear that reading disability cannot be understood without reference to the general linguistic abilities of the child, especially as manifested in the period before he began to learn to read. Here, it seems to me, we have another exercise in looking beyond the obvious. It is fairly logical that, as reading is a visual task, one should look to problems of visual processing to provide the explanation of reading difficulty (such as deficiencies in visual perception, organisation, speed of processing or memory), and sometimes one finds such problems. But most 'poor readers' do very well on experimental tests of visual processing skills, as Vellutino shows clearly in his monograph,<sup>7</sup> and another explanation has to be found. Personally, I am convinced by the view that dyslexia is a 'specific' consequence of a general verbal processing deficit - in other words, of a disability in one or other of the verbal coding skills necessary for spoken, as well as written language. What has to be appreciated, of course, is the range of

skills involved. Specifically, to be a good reader, the child needs to have good phonological coding ability, a good control of spoken syntax, and a good vocabulary range in speech, with a good awareness of the structural relationships between words. More generally, he needs to have a readiness to use language, especially in unfamiliar circumstances, an ability to make his knowledge of language explicit (that is, an ability to talk about language), and a receptive attitude towards the language used to him, of which there has to be a great deal (as recent reports on the value of parents reading aloud at home to their children indicate). All of these factors are important, and they relate to other psychological skills - for example, the child's ability to store and retrieve linguistic information in speech presupposes an adequate auditory short term memory; if this is inadequate, his ability to process language serially will be much affected.

The consequences of this view are fairly basic. It means, for instance, that if a child confuses *b* and *d*, or *was* and *saw*, we do not put this down to a simple visual confusion - if only it were so easy! Rather, it would be maintained that the child does 'see' these forms as distinct (in just the way normal children do), but that he is unable to remember which verbal label is associated with which printed form - in other words, he has a deficient verbal coding facility. Years before, when he was learning to speak, he probably demonstrated his deficient coding facility also - but that kind of information is beyond the recall of most parents. Those studies which have been carried out show a clear correlation between children with reading disability and an earlier speech disability. Ingram and others, for example, in a series of studies showed that half the children diagnosed as dyslexic had a history of deviant speech or language development, and there are several other such studies.<sup>8</sup>

But a question arises: why not all the children in the Ingram study? I would stick my neck out here, and say that probably all did have some previous speech problems, but that the methodology used by the authors precluded their discovering this. Without an extremely detailed developmental linguistic history, along the lines of my model above, all the relevant facts are simply not known. A few simple measures will not suffice: the whole of the child's phonology, grammar and semantics needs to be considered, and this was not done. Moreover, I would maintain that dyslexic children as encountered in primary schools very likely still manifest the residue of this earlier general linguistic difficulty. That is, the dyslexic child you are teaching in your classroom now has a residual problem of speaking or listening. But how can that be (I hear you say), when 'there is nothing wrong with Johnny's speech? It is only his reading which is a problem'. I have two answers to this question. One is to remind you of the point made earlier, that the things a child says are not the whole story - there are also things a child does not say, because he is unable to. Are you sure that Johnny is not **avoiding** the use of certain structures in speech, because he 'knows' they are difficult? It must be remembered, in this respect, that the learning of spoken grammar does not cease at age 5: many of the more advanced constructions of the spoken language remain to be learned between the ages of 5 and 12, and I would predict that dyslexic children will have difficulty in acquiring them. A recent paper by Byrne provides evidence on the point, and doubtless many more studies of this kind will confirm it.<sup>9</sup> My second answer to the question is to refer to the demands of language in use: Johnny

may have a reasonable command of spoken language in the playground or at home, but how good is he at using his speech and listening skills when the pressure is on? How good is he at using or responding to complex verbal instructions, on tasks of increasing cognitive complexity? I would predict that Johnny's speech is a little like an injured leg - it holds you up while you are using it normally, but as soon as you put too much weight on it, it gives. Have you put Johnny under linguistic pressure in this way? If so, does his speech not become more non-fluent than those of his peers who are good readers?

I apologise for leaving you with a set of questions to which I do not know all the answers. It is evident that a great deal of work needs to be done, in order to establish these answers - and moreover it is work which has to be done by everyone. Dyslexia, or learning disabilities in general, is not a field for the academic researcher alone. The need for full descriptions of a child's behaviour, of his linguistic strengths and weaknesses, is enormous, and this can be carried out by anyone who has learned to look at language in a systematic way. The irony of the present situation, as I hope my paper has made clear, is that of all the factors which need to be taken into account in looking at learning disabilities of language, it is the linguistic ones themselves which have been most neglected. Part of the reason, as I hope the paper has also made clear, is an uncritical acceptance of such terms as 'specific learning disability'. The solutions are complex, for they raise questions of teacher training and time - time to step back from the children in our care and reflect on the nature of their problems, and knowledge of how to analyse them. We have, at the University of Reading, recently instituted a Diploma in Remedial Language Studies, aimed at providing the special training required to handle learning disabilities of language: each year many teachers express their desire to come on this course, and are accepted; and each year most of them fail to arrive, because their local authorities have refused them secondment. There is obviously a need for fundamental changes in attitude, and I hope that the growth of local dyslexia associations, and the organising of conferences such as this, will foster a climate for change. Inter-disciplinary collaboration is one answer to our problems, at research level; inter-professional collaboration is an answer to our problems, at the level of classroom and clinic. Today's conference brings both groups together, and I wish it every success.

**Footnotes**

- 1 Special education for handicapped children. First Annual Report of the National Advisory Committee on Handicapped Children, Washington 1968. Office of Education: Dept. of Health, Education & Welfare.
- 2 See, for example, L. & M. Tarnopol (eds.), *Reading Disabilities: an International Perspective* (Baltimore: University Park Press, 1976), Ch.1; B.R. Gearhart, *Learning Disabilities: Educational Strategies* (St. Louis: Mosby, 1973), Ch.1.
- 3 See D. Crystal, Terms, time and teeth. *B.J. Dis. Comm.* 17.1 (1982).
- 4 For a discussion of why 'body language' cannot be viewed as language proper, see D. Crystal, *Introduction to Language Pathology* (London: Edward Arnold, 1980), p.33, ff.
- 5 For further criticisms of quantitative approaches, see (for grammar), D. Crystal, P. Fletcher & M. Garman, *The Grammatical Analysis of Language Disability* (London: Edward Arnold, 1976), Ch.1; (for vocabulary), D. Crystal, *Clinical Linguistics* (Vienna: Springer, 1981), p.140.
- 6 See B. Raban, Text display effects on the fluency of young readers. University of Reading, School of Education. The Edward Arnold *Databank* remedial reading series, aimed at 11-13 year-olds, illustrates the application of a systematic line-break principle.
- 7 F.R. Vellutino, *Dyslexia: Theory and Research* (Cambridge, Mass.: M.I.T. Press, 1979).
- 8 See T.T.S. Ingram, A.W. Mason & I. Blackburn, A retrospective study of 82 children with reading disability. *Dev. Med. Ch. Neurol.* 12 (1970), 271-81; J.G. Lyle, Certain antenatal, perinatal and developmental variables and reading retardation in middle class boys. *Ch. Dev.* 41 (1970), 481-91, and see also Vellutino (*ibid.*), Ch.8.
- 9 B. Byrne, Deficient syntactic control in poor readers: is a weak phonetic memory code responsible? *App Psycholing* 2 (1981), 201-12.

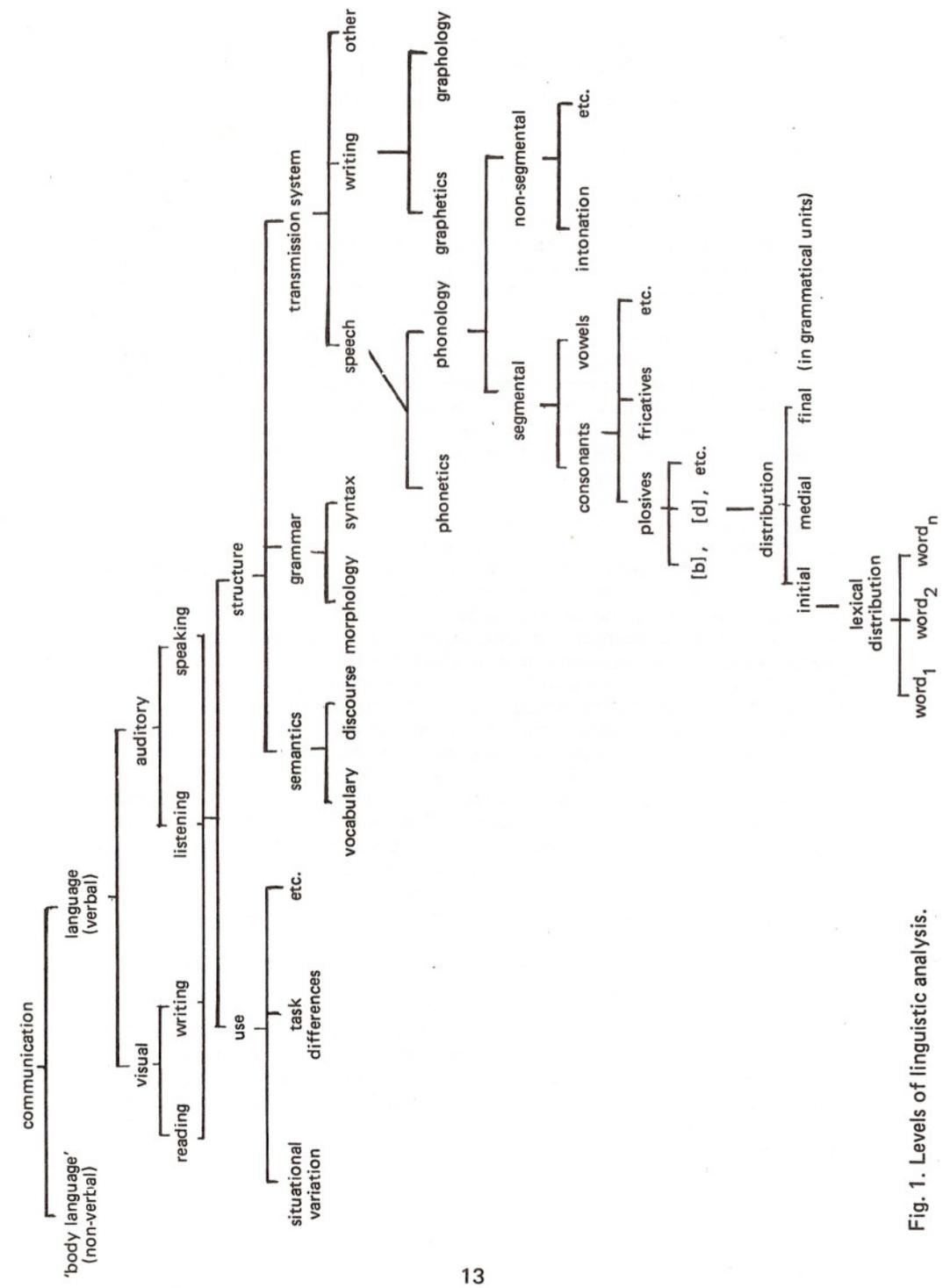


Fig. 1. Levels of linguistic analysis.