

29 Clinical Linguistics

DAVID CRYSTAL

Clinical linguistics is the application of the linguistic sciences to the study of language disability in all its forms. The label "disability" should not be too narrowly interpreted. It relates to anyone whose ability to use language is sufficiently undeveloped or impaired as to require special treatment or teaching – whether or not they attend a "clinic" in a surgery or hospital. It is one of several which have been used to characterize the difficulties involved: others include *disorder*, *dysfunction*, *disturbance*, *disadvantage*, *deficit*, *deprivation*, and *handicap*. These labels differ in their nuances and expectations, and vary in their standing as terms with professional status; some, indeed, are emotionally loaded and politically sensitive. But from a clinical linguistic point of view, what is important is the way they indicate the existence of a domain of abnormal language use which, in its range and complexity, warrants specialist investigation. The aim of this chapter, accordingly, is to describe the kinds of difficulty typically encountered, and to illustrate the way in which clinical linguistics can provide insight into the nature of these conditions.

Language disability has a wide variety of causes, only some of which are demonstrably medical, and thus we are just as likely to encounter a person with a serious linguistic difficulty in a school classroom, a pre-school play-group, a young adult training center, or a home for the aged. The professionals who are involved in the care and treatment of language-handicapped people also illustrate a wide range of backgrounds: they include speech and language pathologists / therapists, school-teachers, educational and clinical psychologists, pediatricians, and social workers. A six-year-old child with a language disability may attend a hospital clinic in the morning, receiving help from a speech and language clinician, then go to school in the afternoon and receive further help from a teacher. Although the settings are clinical and educational, respectively, it is the same child moving about, with the same problem – and clinical linguistics, as a branch of applied linguistics, was devised without reference to the social contexts in which diagnosis and intervention take place, being focussed specifically on the nature of the impaired linguistic system within the

individual. Because there is no convenient term which subsumes both the medical and behavioral contexts of language disability; and as "educational" has already been appropriated for the study of language development in "normal" school settings, "clinical" has had to carry a heavier terminological responsibility than it is etymologically entitled to receive.

1 Identifying Linguistic Symptoms

The earliest references to difficulties with spoken or written language can be found in ancient texts: stuttering, loss of speech, and pronunciation disturbance are noticeable and dramatic effects, and have for centuries generated interpretations which have ranged from the medical to the demonic. If there is one generalization which can be made about the contribution of linguistics to this subject in recent decades, it is this: that attention has now come to be focussed on the less noticeable but often much more important symptoms of language disability, and to those aspects of the problem which have been ignored or misdiagnosed. "Less noticeable" here refers to any feature of speech production other than the audible qualities of pronunciation, the order and omission of surface grammatical elements, and the actual items which constitute vocabulary. These features exclude a great deal – in particular, most of the properties of phonological systems, the sense relations between lexical items, the constraints operating on discourse in interaction, and the many ramifications of underlying syntactic structure. All of these can and do play a major part in identifying the various kinds of language disability, but their importance has emerged only in the clinical linguistic era of study.

Here are two examples of the use of a linguistic perspective in these different areas.

- It is an easy matter to spot that a child is mispronouncing a sound, as in the various kinds of lisp; it is a much more difficult matter to determine what is wrong when a child is replacing sounds in an apparently random way, such as saying ['viwi:], ['wiwo:], or ['mivi:] for "window." Establishing that there is an underlying pattern in such substitutions requires a phonological perspective. In this case, we would note the constant labial element in the consonant within the stressed syllable, and the influence which this syllable is exercising on the shape of the unstressed syllable – a kind of consonant harmony. We would also note that these kinds of substitutions are commonplace in normal child development during the second year. If, then, they were encountered in a much older child, they would support a diagnosis of delayed phonological development. ("Delayed" here is in contrast with "deviant," in which the phonological substitutions would be falling well outside the expected patterns – as when "window" might emerge as ['a?a], a typical early pronunciation from a child born with a cleft palate.)

- Similarly, in the field of grammar, it is easy to spot such morphological errors as *mouses* or *tooked*; far less easy to work out what is going on when there are problems with sentence structure. One six-year-old boy was able to say such sentences as *That car is red* and *My car is in the garage*, but could not be persuaded to say *That's a red car* or *My red car*. Asked "Is that a red car or a yellow car?" he would become non-fluent and produce such strings as *A car - a red*, losing control of the clause structure as a whole. The problem turned out to be a difficulty in simultaneously using a developed noun phrase within a clause: as long as the noun phrases consisted solely of a determiner + noun, there was no problem. But asked to insert an adjective (or any other extra element), and the whole sentence structure broke down. To appreciate the nature of this difficulty requires the analyst not only to make an appropriate syntactic analysis but also to appreciate the implications of a syntactic hierarchy for mental processing. Both syntactic and psycholinguistic perspectives are essential.

The use of a clinical linguistic frame of reference has also enabled people to make progress in identifying disorders of language *comprehension*, which are far more difficult to spot by comparison with language *production*. It is not difficult to hear from a taped sample of speech that a child has made an error in pronunciation or word order – a production error. It is much more difficult to establish that a child has failed to *perceive* a distinction between sounds or been unable to *understand* a grammatical structure or a particular choice of words. That requires careful testing and the controlling of variables. For example, one language-delayed four-year-old pointed to a picture of a bowl of mixed fruit, and said *apples*. The observation seemed acceptable, as there were indeed some apples in the bowl. It only emerged later that he was overextending the meaning of this word, using it to mean "fruit" as a whole. The point became apparent when the speech pathologist drew a series of pictures of different kinds of fruit, discovering in the process that, to the child, they were all "apples." Interestingly, precisely the same kind of problem has been observed in adults who have certain kinds of aphasia.

Disorders of a pragmatic kind, likewise, have often remained undiagnosed, or have been misdiagnosed as problems of a psychological or social behavioral type. A child who fails to follow conversational norms, perhaps by not responding to questions, or by showing bad behavior when asked to carry out a task, is often considered to be awkward or uncooperative. One child would persistently call everyone, adults as well as other children, by their surname. For those who did not understand the linguistic basis of his difficulty, this was unacceptably rude behavior. It is in fact only since the 1980s that people have begun to recognize the possibility that such behavior may ultimately be caused by an inability to cope with the pragmatic pressures of conversation – one of which, of course, is the ability to understand the rules governing the use of first names, second names, titles, and other conventional forms (such as "Sir" in classrooms).

It is partly because of these problems of missed and mistaken diagnosis that statistics vary so much about the number of people thought to be coping with a language disability. Very few statistics in this domain are reliable, because of the problem of deciding what counts as a language disability – given that disabilities have such a wide range of manifestations from “mild” through “moderate” to “severe,” and that variations in methods of counting are so evident (Webster, 1988). If just the “noticeable” symptoms are taken into account, most estimates suggest that around 2 to 3 percent of the population are seriously affected by language disability; but if we include the “less noticeable” symptoms, that percentage will almost double; and if difficulties with reading and writing are added to those which affect speaking and listening, the figures will double again.

In many ways, the history of language pathology, and the identification of linguistic symptoms, has been a reflection of the history of ideas in linguistics. Impressionistic phonetic observations of the utterances of aphasic individuals were first made by neurologists in the late nineteenth century. By the mid-twentieth century these had been superseded by more systematic transcriptions, especially when a cadre of phonetically trained speech and language professionals came into being. By the 1950s phonetic descriptions were being routinely supplemented by some sort of phonological analysis (in phonemic terms). From the late 1950s, tests of language disability began to take into account basic (from the point of view of acquisition) morphological contrasts, such as singular vs. plural, or present vs. past tense; and in the 1960s the first serious attempts at sentence classification began to be made. Sophisticated syntactic accounts of disability emerged during the 1970s, and since then there have been sporadic yet insightful applications of notions from semantics and pragmatics – once again, reflecting the (also sporadically insightful) state of the art in those subjects.

There is another historical trend within linguistics which needs to be considered. The twentieth century has seen a slowly emerging *holistic* approach to language study. Its origins can be found in the integrated models of early theoreticians – such as Saussure’s integration of synchronic and diachronic dimensions of inquiry, or the conception of the linguistic sign as a relationship between form and meaning. The emergence of interactional models of communication, both in communication theory and in the human sciences, brought a recognition of the complementary roles of production and reception in the communicative act (as in the influential model of the “speech chain” presented by Denes and Pinson 1973). The growth of semiotics, with its focus on patterned communication in all modes, whether in animals or humans, drew attention to the role of nonverbal communication (e.g. facial expression, bodily gesture), and thus helped to clarify exactly what was involved in the specifically linguistic dimension of communication (Sebeok et al. 1964). The influence of psychology brought a focus on the whole individual, whether as language-acquiring child or as language-using adult, and resulted in new developmental and clinical psycholinguistic perspectives (Clark and Clark 1977). And there

was an increasing awareness of the need to bring language structure into connection with language use, with fresh perspectives deriving from sociolinguistics, ethnography, and pragmatics (Gumperz and Hymes 1972). All of this provides a theoretical background for the contemporary professional interest in holistic approaches, where the focus is on the patient or pupil as a "whole person," and in which a language disability is no longer seen solely as a problem of communication, but is viewed in relation to the whole range of cognitive and social factors which affect the ability of the individual to function in society (Crystal and Varley 1998).

Here is an example of this change of emphasis. A young man was concerned about his high-pitched voice, which he felt was impeding his ability to mix with other people and find a girlfriend. He complained he was often mistaken for a woman over the telephone. After a few sessions with a speech pathologist there was a significant lowering of pitch level – and, within a traditional therapeutic perspective, that would have been sufficient intervention. But the patient's social problems remained; and it was only when a holistic perspective was adopted that the real problem was uncovered. By observing the young man in his place of work, and seeing the way in which he behaved while interacting with other people, it emerged that he was someone who habitually invaded other people's personal space, standing too close to them while talking, and making them feel threatened and anxious. This, rather than his voice, was the true cause of his social difficulties. He perceived his voice to be a problem, but not his body-language. Further work on non-verbal (proxemic) communication skills was plainly necessary, and this in due course produced the desired result.

2 The Role of Clinical Linguistics

Seen within this historical perspective, the role of clinical linguistics, as an applied linguistic discipline, can be summarized under five headings.

2.1 Clarification

A long-standing aim for the subject has been to clarify areas of (especially terminological) confusion found in the traditional metalanguage and classification of disability. Over the past century there has been a proliferation of competing and overlapping terms for types and symptoms of disordered linguistic behavior. For example, what one author might describe as an *articulation error* others might describe as a *misarticulation*, *dyslalia*, *pronunciation defect*, or *phonetic handicap*. It would be naive to hope that systematic linguistic descriptions can resolve all such confusion – if for no other reason than that linguistics

itself is by no means short of competing descriptions and terminology! – but a precise account, using explicit criteria, can at least clearly indicate the range of data to which a term relates, and thus contribute to better mutual comprehension.

2.2 Description

A major area of clinical linguistic research has been to provide ways of describing and analyzing the linguistic behavior of patients, and of the clinicians and others who interact with them. Until fairly recently, there were no published descriptive case studies of the language of individual patients, as encountered in a sample of their speech. There are still very few which look comprehensively at all linguistic levels; and even fewer which trace the progress of a patient longitudinally, over time, or sociolinguistically, over different social contexts. But the number of such studies is on the increase, as illustrated by the collection edited by Perkins and Howard (1995), and by the publishing policy of such journals as *Child Language Teaching and Therapy*, which strongly supports the need for case studies. The aim, as ever, is to establish system in what often seems to be randomness. For some disorders, such as cases of delay in child language acquisition, the systeminess is often easy to demonstrate, at least for the early years of acquisition, as there are normative models of language development which can be used as an orientation. For others, such as the various kinds of adult aphasia, the task is more problematic.

2.3 Diagnosis

An important aim of clinical linguistics is to provide a classification of patient linguistic behaviors, as part of the process of differential diagnosis. For decades, diagnosis of language disability was carried out on a solely medical basis, with the causes of a problem identified in terms of impaired anatomy, physiology, or neurology – aphasia, cleft palate speech, deafness, dyspraxia, dysphonia, and many other such “syndromes” were identified in this way. But, when an increasing number of people with language disability were encountered who did not have any medical reason for their problem (thought to be as many as 60 percent of all cases), it became evident that a purely medical model of investigation would not suffice. Most children suffering from language delay, for example, do not have a clear medical explanation for their condition. A linguistically informed classification, in which a language disability is characterized explicitly with reference to its use of phonetic, phonological, grammatical, semantic, pragmatic, and other variables, can provide an alternative diagnostic model, and one which is more able to provide insights about intervention in cases where there is no clear evidence of any medical condition.

2.4 Assessment

Clinical linguistics has also been much involved in devising more sophisticated assessments of abnormal linguistic behavior. The notion of *assessment* is here being contrasted with *diagnosis*. A diagnosis tells us what is "wrong" with a patient; an assessment tells us just how seriously the patient is "wrong." In the case of children with language disability, assessment usually takes place by locating a selection of the various features of the child's language on charts (of phonology, grammar, etc.) which have been organized on developmental lines, based on research in child language acquisition. Children can then be seen to be so many months or years behind the norm, with respect to their use of those features, or can be seen to be completely abnormal ("off the chart," deviant). For example, a seven-year-old child who was still using such forms as *mouses* (typical of a four-year-old) would be seen to be three years delayed, in respect of that feature. Similar procedures have been devised for use with adult patients, though it has proved to be more difficult to keep control of the larger number of variables involved in the adult language.

2.5 Intervention

The ultimate goal of clinical linguistics is to formulate hypotheses for the remediation of abnormal linguistic behavior. Not all aspects of a patient's problem are directly relevant to the need for linguistically based intervention, of course – outside the linguist's purview are disorders of eating and swallowing, for example – but for those which are relevant, clinical linguistics can help clinicians to make an informed judgment about "what to teach next," and to monitor the outcome of an intervention hypothesis, as treatment proceeds. To a large extent, this means moving well beyond the patient's language, to include an investigation of the language used by the person(s) carrying out the intervention, the kind of teaching materials used, and the setting in which the interaction takes place.

These five areas identify the scope of clinical linguistics, seen as a discipline of applied linguistics. It should perhaps also be added that the subject also has a potential theoretical linguistic relevance, in that its findings will doubtless one day make a contribution to neuroscience and cognitive science. But that goes beyond the remit of the present chapter (see further, Crystal, 1981/9: 6).

3 Linguistic Insights

We can summarize much of the preceding discussion by saying that the chief aim of clinical linguistics is to provide the clinician with increasing levels of

insight and confidence in arriving at linguistic decisions. Basic insights are of course not difficult to achieve, as has been repeatedly shown since the 1960s through the analysis of short audio samples of clinical interactions: an influential early approach was Crystal et al. (1976) (see also Crystal 1982/92 and the collection of papers in Perkins and Howard 1995). A 15-minute sample is often enough to yield illuminating patterns of a phonological, grammatical, or semantic kind – patterns which would not otherwise be apparent to even an experienced listener. The problem lies not just in the listener's inability to distinguish the many variables which are being simultaneously used by the patient, but to notice the many variables which are *not* being used. To take an example from grammar, it is not difficult to spot that someone is using a pronoun wrongly or omitting an auxiliary verb (*him gone, she jumping*); it is a quite different matter to spot that certain features are completely lacking (e.g. no adverbs used at all, or no use of prepositional phrases). Only a systematic survey of all the potentially relevant features can guarantee that nothing of importance is being omitted, and such surveys invariably provide the clinician with insight into the linguistic abilities of the patient. They also, inevitably, generate clinical confidence – a sense that one is in control of the situation.

Rather more interesting are those cases where a linguistic analysis enables the clinical linguist to *explain* a general characteristic of a disability, or even of a class of disabilities. For example, research in child language acquisition has begun to show that, when children are making progress in one area of language, they may be making a loss in another (Camarata and Schwartz 1985, Panagos and Prelock 1982). A typical example is the observation that pronunciation deteriorates when children attempt more advanced syntactic constructions than those they have previously been producing satisfactorily. This kind of "trade-off" between phonology and syntax – and between other combinations of levels, and also between features within levels – has turned out to be an important effect in language disability, where it can be "manipulated" in a clinical intervention. For example, during a therapy session in which the six-year-old language-delayed boy referred to above was being taught to insert adjectives within noun phrases, the child's attempts at a noun phrase without the adjective were always pronounced with good phonology and fluency; whereas his attempts to say the noun phrase with the adjective in place resulted in erratic pausing, stuttering, and a deterioration in segmental phonological accuracy. This behavior could be "switched on and off" by the therapist, and provided clear evidence in support of the view that there are limitations on the amount of linguistic processing which may take place at any point in development (Crystal 1987). Once a phenomenon of this kind is noticed, of course, it can be put to use as a hypothesis in other contexts: if a normally fluent patient manifests non-fluency, it gives good reason for the clinician to suspect that a processing overload is taking place. Something may be being taught too quickly or in the wrong order.

This example illustrates the three pillars of any clinical linguistic approach: description – grading – intervention. Good description of an oral sample is at

the heart of all clinical linguistic study – a principle which has its roots in classical linguistic anthropology – but in the context of language disability, such a description cannot stand alone. The information it contains needs to be graded in some way, so that the speaker's level of linguistic achievement can be assessed: such grading, as we have already seen, typically takes the form of a chart or scale on which stages of development are recognized – the stages deriving from a synthesis of the findings in child language acquisition research. Once the information contained in a sample is transferred onto such a chart, it is possible to make a tentative diagnosis, by establishing a pattern in the distribution of linguistic forms. Even if a diagnosis is not possible, it is at least possible to see the charted information as an assessment, which identifies the nature of the gap between where the patient is and where he or she ought to be. If the patient was five years old, but the distribution of linguistic forms was clustering around the two-year level, one would conclude that the patient was three years delayed – and of course it is possible that different degrees of delay might be found within different linguistic levels. A patient might be three years delayed in grammar, but only two years delayed in phonology (or not delayed at all). Similarly, a patient might be three years delayed in the acquisition of clause structure, but only two years in the acquisition of phrase structure. Plainly, there are innumerable possibilities, when all the variables in phonology, grammar, semantics, and pragmatics are taken into account. The expectation, however, is that certain patterns of delay will recur between patients, enabling us to group patients into a small number of linguistically defined diagnostic types (or syndromes). This is the long-term aim of a great deal of contemporary research. And a corresponding aim motivates much of the current work in adult language disability, too, though the extrapolation of grading procedures derived from child language research plainly has its limitations in such cases.

Once patients have been located on such a chart, and their linguistic age turns out to be below their chronological age, the targets of intervention are automatically set: the aim is to make them progress from where they are (on the chart) to where they ought to be. Because there are so many variables, a number of possible pathways suggest themselves. Clinical linguistics is not yet at the stage where it can provide principles enabling clinicians to decide which pathway will produce the best outcome. All that can be done, in the present state of knowledge, is to work systematically through some of the possibilities, slowly building up a more advanced linguistic system, and looking out for indications that the treatment is paying off (such as when a pattern is carried over to spontaneous use outside the clinic) or not (such as the appearance of unexpected non-fluency). All change needs to be regularly monitored, to demonstrate that progress is being made – this is the task of assessment. The keeping of comprehensive linguistic records is a further priority, without which the efficacy of intervention can never be demonstrated.

Clinical linguistics has been operating along these lines since the late 1960s, and a great deal of research has been carried out, especially in relation to the

task of establishing reliable methodological procedures (e.g. how to standardize samples) and practicable descriptive techniques. There are now several introductory books on the subject (Crystal 1981/9, Ball 1993, Grundy 1995), a growing number of case studies (Perkins and Howard 1995), and a major journal (*Clinical Linguistics and Phonetics*). However, although all areas of linguistic structure and use have received some investigation, certain areas are still much neglected. Semantics has received the least attention, judging by the record of published articles and textbooks. If we take, as an illustration, all the papers which have been published to date in *Clinical Linguistics and Phonetics* since its inception (1987–8), we find over 230 items. Excluding the 30 or so which deal with general issues of theory and method, we are left with 150 devoted to phonetics and phonology – illustrating the continuing importance attached to the most “traditional” areas of linguistic inquiry. The other levels of linguistic description are far less represented – grammar has some 20 items, prosody (including the rhythm problems found in stuttering) and pragmatics / discourse have some 15 each – but even these are well covered, by comparison with semantics. Semantic issues are indeed sometimes invoked as factors in studies of other topics, but there are only two items in the whole oeuvre dealing directly with “core” semantic issues, such as vocabulary (Herman 1990, Edwards 1992). There is one further item on the syndrome of “semantic-pragmatic disorder” (Snow 1996), but this largely deals – not untypically, it must be said – with the pragmatic factors involved in the syndrome (such as abnormalities of conversational interaction) rather than the semantic ones. A glance at other clinical journals suggests that this situation is by no means unique. Semantics, it seems, is a frontier which has still to be crossed in clinical linguistics.