CHILD PSYCHIATRY

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Advances in the study of mental subnormality had, until the mid-sixties, been more rapid than progress in the general field of child psychiatry. Tizard (1966) attributed this rapid progress to the willingness of research workers in the former field to use scientific methods and suggested that other areas of child psychiatry may have lagged behind because clinicians were less 'interested in posing questions that permit of scientific answers'.

However, such criticisms overlooked the special problems that had faced the investigator in child psychiatry. Cognitive deficiency, which is the primary identifying characteristic of mental subnormality, readily lends itself to measurement and quantification. The subnormality population is also more static and therefore more easily accessible for investigation. For these reasons, clinical, biological, epidemiological and therapeutic studies were more readily carried out. The phenomena of child psychiatry, on the other hand, do not present any such single identifying characteristic but comprise instead a wide range of behavioural dysfunction. Its problems were accordingly of greater complexity, proving less susceptible to precise measurement, and its population was less easily studied.

With the increased attention to the development of sophisticated techniques and behavioural and other measuring instruments of adequate reliability and validity, a scientific approach has become possible.

The wider application of such scientific methods has led to a striking burgeoning of research over the last decade. In this chapter we can, therefore, deal with only some of the areas in which important advances have been recorded. These include:

Classification and *Diagnosis* of the behaviour disorders of childhood which constitute the majority of cases dealt with daily in child psychiatric clinics.

Psychosis in early childhood which is proving to be of great theoretical interest and in which the advances have been comparatively rapid.

Enuresis, a condition of common interest to general practitioners, paediatricians, child psychiatrists and psychologists, and which has been put under the research microscope of workers in multiple fields.

And, finally, *Behaviour Modification*, in which research is proving increasingly popular because it lends itself so well to scientific scrutiny.

BEHAVIOUR CLUSTERS AND CLASSIFICATION

One of the main principles of classification is that it should reduce information to manageable proportions. Inevitably, condensation leads to a loss of information and it is this factor in particular which has made classification unpopular with certain dynamic child psychiatrists. Indeed, it has been fashionable amongst them, in the past, to deny the value and necessity for classification on two grounds. Firstly, they see the uniqueness of the individual being submerged both in terms of behaviour and its presumed antecedents (Szurek, 1956). Secondly, they consider that the complexity and severity of the clinical picture may not be adequately reflected, nor, indeed, is justice done to aetiological and cross-cultural variations.

On the other hand, the essence of classification is that it is a 'shorthand' and is not intended to provide a detailed description of disorders. Stengel (1960) expressed this particularly well when he said that a classification needed to be 'snappy and handy'. However, if it is too 'snappy' it will not be able to differentiate between clinical pictures. The objective should be to compromise so as to provide full enough coverage so as to be clinically differentiating while being adequately concise, easy to use for the clinician, and practicable for the statistician. Another principle is that the system needs to employ what can sometime be accepted as a common or basic language which will allow communication both within and between countries.

Until recently the main classificatory system available was the Eighth International Classification of Diseases (ICD). This proved unsatisfactory and disenchanting for child psychiatrists. Within the jungle of subdivisions and codings available for general psychiatric disorders, child psychiatry was confined almost to a single specific one. Hence by common assent it was perceived as unworkable, leading to maximal loss of information and a minimum of discrimination. In another crucial respect it was found wanting, this being in terms of lack of relevance to the psychiatric disorders of childhood. In summary it was too brief, irrelevant, and not workable as far as practising child psychiatrists were concerned.

The Multiaxial Classification

Recent proposals (Wing, 1970a; Essen-Möller, 1971; Rutter et al, 1969) concerning the use of a multiaxial approach to classification (Rutter, Tizard and Whitmore, 1970; Rutter, 1965a, 1974) based on empirical research rather than theoretical models (Shepherd et al, 1968) more adequately meet the above criticisms by allowing a fuller record of the patient to be achieved. This is in essence a multiple-category schema with the first axis used to describe clinical psychiatric syndromes, the second the intellectual level, the third aetiological factors, and the fourth psychosocial factors. Clearly, fuller and clinically relevant descriptions, in child psychiatric terms, emerge on a number of

meaningful axes. It is reasonably comprehensive and as it is mandatory to code each axis, there is little possibility of information being overlooked.

As in every classification, there are a number of minor deficiencies, but major ones are few. Perhaps the most notable is the lack of success of the fourth axis (Rutter, Shaffer and Shepherd, 1973) which is probably a reflection of the patchiness and inadequacy of our knowledge in this area. Secondly, the system provides no way of indicating severity. Thirdly, aetiological and descriptive classifying principles are confused in the category of 'adaptation reaction'. Then, certain rare conditions have their own subcategories (e.g. Gilles de la Tourette) whilst some common conditions do not (e.g. school refusal). In addition, there are questions about what constitutes a developmental disorder. Nevertheless, this work makes a major contribution towards standardisation of psychiatric diagnosis and in the development of a classification which has been tested in routine clinical practice for feasibility and reliability. Not surprisingly, it has achieved much in the way of general approval.

The Behaviour Disorders

Returning now to the behaviour disorders and hence the first axis, the question arises of how to subcategorise those, for until disorders can be identified and characterised, they cannot be studied (Rutter, 1965a). Rutter (1965a) has advanced three principles which he has followed in developing his categories: an acceptable classification should be based on facts and needs to be operationally defined; it should convey clinically relevant information, and the aim should be to classify disorders, not children. His categorisation on the first axis is, in essence, a phenomenological one which seeks to identify clusters of characteristics the patient shares with others. The first axis includes nine broad psychiatric syndromes:

Normal variation
Adaptation reactions
Specific developmental disorders, e.g. speech and language disorders
Conduct disorders
Neurotic disorders
Psychoses
Personality disorders
Psychosomatic disorders
Manifestations of mental subnormality only
Other clinical syndromes, e.g. Gilles de la Tourette's syndrome.

Few child psychiatrists would argue about the clinical relevance of the first axis. The question is how it works in practice. The following table reveals that when 22 child psychiatrists rated 255 cases (consecutive referrals to their

clinics) some 55 per cent were included in the two categories of neurotic and conduct disorder, and another 17 per cent in the three categories of normal variation, adaptation reaction and personality disorder.

Clinical study (Rutter, Shaffer and Shepherd, 1973)

Neurotic	79
Conduct	61
Adaptation	25
Normal variation	6
Personality	13

Rutter, Shaffer and Shepherd (1973) point out that the attempt to allocate neurotic conduct disorders into mutually exclusive classes was not highly successful as there was a considerable degree of overlap, and hence, they conclude that there should be provision for a mixed type of disorder. In fact, in an epidemiological study on the Isle of Wight (Rutter et al, 1970), neurotic and conduct disorder proved the commonest conditions and when the mixed group is included, they cover over 90 per cent of the cases. It is to be noted that the mixed group of conduct and neurotic disorder proved large (about 20 per cent). As this latter group was found to have much in common with the pure conduct disorder group, these groups were pooled for research purposes. Conduct disorders were more frequent in boys and neurotic disorders more frequent in girls. It has been amply demonstrated by Rutter in various publications and reviews (Rutter, 1965a; Rutter et al, 1970; Rutter, Shaffer and Shepherd, 1973), that these groups differ in terms of symptomatology, sex distribution, family factors and even later social adjustment.

Multivariate analysis

There is evidence from multivariate studies that the distinction between neurotic and conduct categories has statistical validity. Using a teacher check-list of 800 primary school children, Peterson (1961) identified two major clusters consisting of 'conduct problems' (essentially aggression) and 'personality problems' (essentially withdrawal). Additionally, a similar pattern of factors was found by Conners (1970) when he analysed behaviour ratings by parents on groups of patients and normal controls. The same two above behaviour patterns have been broadly identified, with reasonable regularity, in different populations of children despite differences in basic methods and techniques, in the sets of behavioural items included, and in the populations studied (Kolvin, Wolff et al, 1975). The universality of these patterns, in form but not necessarily content, is borne out by the fact that they emerge in delinquency research (Field, 1967) in child psychiatric research (Hewitt and Jenkins, 1946;

Collins, Maxwell and Cameron, 1962; Wolff, 1967; Conners, 1970) and in research with children in ordinary schools (Peterson, 1961; Conners, 1970).

The features most frequently represented in the neurotic group vary according to age—for instance, at the infant school age (Kolvin, Wolff, et al, 1975) they include anxiety, sensitivity, solitariness, shyness, self-consciousness etc. However, in their work with older children, Rutter and his colleagues (1970) include such features as anxiety or depression, obsessions, compulsions, phobias, and conversion hysteria. The common features in the conduct group, at the infant age, include aggressiveness, assertiveness, tantrums, disobedience, destructiveness, pilfering, etc. However, their definition covers behaviour which gives rise to social disapproval and includes certain types of delinquency and other kinds of antisocial behaviour such as fighting, bullying, destructiveness, etc. The behaviour had also to be abnormal in its sociocultural context.

Not only have principal component and factor analytic research provided evidence in support of the dichotomy into conduct and neurotic disorders but, in a cluster analytical technique using data from three-year olds, two clusters suggesting conduct and neurotic disorders were also found (Wolkind and Everitt, 1974). Furthermore, this study provides evidence suggesting that these clusters are meaningful and have prognostic significance.

Along with Rutter and his colleagues (1970) the Newcastle group (Kolvin, Wolff, et al, 1975; Garside et al, 1975) see systematic interviewing of parents as the most sensitive way of eliciting information for measuring change or making a contribution towards a diagnostic formulation. The latter group has used principal component analyses of such data to identify the components of behaviour. On the basis of this work they have developed brief questionnaires based on parental interview for quantifying behaviour along four dimensions: neurotic, antisocial, psychosomatic and phobic.

The Newcastle group (Garside et al, 1975), in a recent reminder, point out that there is a tendency to disregard the last two of the three components of behaviour proposed by Cattell (1950), namely, what children do—*behavioural content*; how they do it—*temperamental style*; and why they do it—*motivation.* Using a parental interviewing instrument and principal component analysis, they, following the work of Thomas, Chess and Birch (1968), and of Graham, Rutter and George (1973), have identified four dimensions of temperament, namely: mood, activity-intensity, withdrawal and poor adaptation, and irregularity. They point out that such dimensions can be used to provide an alternative classification to the neurotic-conduct dichotomy proposed by Rutter. This would consist of using mutually exclusive temperamental categories, i.e. mainly withdrawn or mainly displaying a negative mood.

They argue that behavioural dimensions from factor or principal component analyses, though derived from normal populations, can be applied to abnormal populations of children, as the normal and abnormal populations differ only in degree (Quay, 1972; Conners, 1970). These instruments may provide one solution to two related difficulties when using the multiaxial approach. Such

dimensional descriptions, possibly in clinical work but certainly in research, can complement the categorical breakdown by *reflecting severity* and also by *indicating the degree of overlap*. For instance, a child who is classified as neurotic would score highly on the neurotic dimension but could also score relatively highly on the conduct dimension. The main temperamental dimensions can be used in a similar way.

The future holds the prospect of child psychiatrists from different countries and cultures using a common language and similar system in classifying and more fully describing the disorders of child psychiatry.

PSYCHOSIS IN EARLY CHILDHOOD

It is over 30 years since Kanner (1943) produced his brilliant descriptive account of the condition he labelled infantile autism. Initially, there was poor agreement about terminology, a proliferation of synonyms, a wide expansion of the concept and also considerable uncertainty about the nature and aetiology of the condition. In spite of the confusion, and possibly because of the mystique, the attention generated by the condition in both professionals and in the lay public was considerable. Psychotherapies based on highly speculative explanatory theories proved popular and, for almost two decades, absorbed a disproportionately high amount of the available professional resources. This has been followed by a more scientific, empirical approach to nosology and theorising, yielding a more fruitful frame of reference for therapy. In 1975 one may talk about the state of the science rather than the state of the art with unknown features lessening and with every possible avenue of research being subject to rigorous scientific scrutiny.

Diagnostic Criteria and Classification

Characteristics of the condition

Kanner (1943) saw the condition as being characterised by three primary features: a profound failure to develop social relationships and aloneness (autism); an obsessional desire for maintaining environmental 'status quo' (sameness); and an onset within the first two years of life—together with secondary features in the sphere of communication and motor behaviour. Kolvin's (1971—I) criteria were broadly similar—in terms of age of onset, a self-isolating pattern of social behaviour, catastrophic reactions to environmental changes and/or stereotyped motor movements.

Diagnostic criteria and discriminants

As Eisenberg (1957) has pointed out, the specification of criteria for diagnosis is a crucial and essential exercise. The hope of Kolvin and his colleagues (1971—II) was to develop a set of diagnostic criteria based on statistical frequency analysis rather than on clinical impression. From their research,

they have listed a hierarchy of symptoms according to their frequency and discriminant value between the two major psychotic groups (infantile and late-onset). The formula evolved, therefore, allowed for a maximising of the discriminant value of the symptoms so that there should be little difficulty in distinguishing these two groups. Rutter's (1974) solution, in identifying discriminants between infantile autism and other child psychiatric disorders, controlled for IQ, sex and age, is essentially similar. He found that there were only three symptoms which were universally present and specific in terms of being significantly more frequent in the autistic group—a profound and general failure to develop social relationships, language retardation and ritualistic or compulsive behaviour. However, as each of these symptoms can occur in the absence of the others, none can be regarded as pathognomonic.

Other workers have developed diagnostic checklists (Rimland, 1968; Polan and Spencer, 1959; DeMyer, Churchill et al, 1971) or screen instruments (Creak, 1964) in an attempt to make diagnosis more objective (Rimland, 1968). Using relatively structured and standardised diagnostic systems and even different systems, collaborators can apparently achieve good agreement (DeMyer, 1971) on diagnosis. Such agreement lessens considerably when the instruments are used by people who do not collaborate. Nevertheless, such diagnostic systems or instruments are invaluable in distinguishing autistic children from other diagnostic groups (DeMyer, Churchill et al, 1971). The instruments are of little use in attempting to distinguish different subgroups of autism.

Nosological issues

The failure of Soviet psychiatrists (Vrono, 1974) to address themselves to nosological issues and their lack of development of clearly defined ascertainment criteria (Kolvin, 1974) have greatly diminished the value of a vast amount of work by modern Anglo-American research standards. It has also not facilitated cross-cultural comparisons.

The traditional psychiatric approach to classification pioneered by Kraepelin (1913) was to undertake detailed clinical examination of phenomena and, where possible, to study the onset, course and natural history of the condition. With the scarcity of aetiological knowledge (Slater and Roth, 1969), workers based their classifications on symptomatological or phenomenological criteria, being dependent on the identification of harmonies and constancies of features that were thought to have prognostic or predictive utility in terms of course and outcome.

In the Anglo-American child psychiatric literature, Kanner proved the master of the descriptive classificatory technique. But he was not alone in this exercise. A wide diversity of psychotic disorders of childhood were conceptualised and were eponymously labelled (Kanner, Heller, Bender, etc.). While the communality of these disorders was not very evident, with different centres using different terms for the same condition or the same term for

different conditions, the most widely held assumption was that there was a single psychosis of childhood and, indeed, even of adulthood, with an underlying single pathological process. An extension of this assumption was that all the varieties identified consitituted subtypes of adult schizophrenia.

There were three interlocking contributions which brought some order and simplicity to this highly complex field. Firstly, there were the skilful and now classical reviews by Eisenberg (1957, 1968) in the United States and Rutter (1967, 1968) in the United Kingdom. They both pointed to the importance of more precise diagnosis and logical classification rather than the grouping of disparate conditions under one broad heading. Eisenberg (1966), in fact, suggested a distinction by the presence or absence of organic dysfunction. Another most important contribution was the distinction by Anthony (1958, 1962) of the childhood psychoses by age of onset. His reconceptualisation, in essence, consists of combining eminent names with syndromes in relation to age. He proposed:

Group I, with an early onset and a slow chronic course. Included are Kanner's syndrome, Bender's 'pseudodefective' type, and Despert's 'no-onset' type.

Group II, with onset at three to five years and an acute course followed by regression. Included are Heller's disease, de Sanctis and Weygandt's dementias, Bender's 'pseudoneurotic' type, Despert's 'acute onset' type, and Mahler's 'symbiotic psychosis'.

Group III, with a late onset and a fluctuating, subacute course. Included is Bender's 'pseudopsychopathic' type.

The third contribution was the systematic empirical validation of this classification by the Oxford and Newcastle group (Kolvin et al, 1971—I to VI). They divided their psychotic children into three groups according to age of onset—under 3, 3–5, and over 5 years. They focused on the under 3-year-old group (infantile psychotics) and the over 5-year-old group (late onset psychotics) and used modern statistical techniques to provide internal validation in terms of differences of aetiological factors between the two main groups studied.

The second group, namely, with an onset between 3–5 years, has been described as 'distintegrative psychosis' (Rutter, 1972). In this group initial development is normal and this is followed by a serious deterioration of speech, language, cognition and behaviour. These children have mostly been found to be suffering from clear-cut organic disorders of varying aetiology and clinical pictures (Anthony, 1958, 1962; Rutter, 1968; Kolvin et al, 1971—I and II) and are reported to be very rare (Kolvin, 1971; Makita, 1966).

The Newcastle–Oxford research has detailed the distinction between infantile and later onset psychoses:

Firstly, in terms of symptoms: hallucinations and delusions occur frequently in late onset psychosis but never in infantile psychotics even when they are older (Rutter, 1968, Kolvin et al, 1971—II). On the other hand, gaze

avoidance, finger flicking (stereotypies), resistance to change and serious retardation of speech and language are characteristic of infantile psychosis.

Secondly, there is a significant upward social class gradient of the families of infantile psychotics (Kolvin et al, 1971—III: Rutter, Greenfield and Lockyer, 1967; Lotter, 1966).

Thirdly, the majority of infantile psychotic children have very poor intellectual development with the late onset psychotics having only moderate intellectual impairment (Kolvin et al, 1971—VI).

Fourthly, there is a very low rate of schizophrenia in the parents of the infantile psychosis group compared to a significantly high rate in the parents of the late onset group (Rutter et al, 1967; Kolvin et al, 1971—II; Kallman and Roth, 1956).

Fifthly, there is an excess of parental personality oddities in the late onset psychotic group (Kolvin et al, 1971—IV).

Finally, there is evidence of an excess of cerebral dysfunction in the infantile psychotic group (Kolvin et al, 1971—V).

These findings provide definitive evidence that infantile psychosis bears no relation to late onset psychosis. More recently, Rutter (1972) has reviewed the evidence distinguishing infantile psychosis from adult-type schizophrenia. He points out that a steady course is more typical in autism while marked remissions and relapses frequently occur in schizophrenia; that mental retardation is a common feature of autism but less often with schizophrenia; that better visuospatial skills and poorer language skills on intelligence tests are characteristic of autism but not of schizophrenia; that there is a marked male preponderance in autism but equality of sexes in adult schizophrenia; that the upper social class gradients of the families of autists are not found in schizophrenia; that there is a high frequency of perinatal factors and organic factors in autism (Kolvin, 1971) but not in schizophrenia; that there is a high genetic loading in the parents of schizophrenic adults but very low loading in the parents of autists (Rutter, 1972; Kolvin, 1971); and, finally, that there is the bipolar distribution of childhood psychosis (Kolvin, 1971) which Rutter (1972) interprets as a discontinuity between autism and schizophrenia. He sees no reason for making any distinction between late onset psychosis and adult-type schizophrenia and argues for a single disease concept to cover both of these groups. Schizophrenia may therefore begin rarely in later childhood (Kolvin et al, 1971; Rutter, 1972), but it is unusual for such symptoms to become overt before the age of seven or eight years.

So far hypotheses have been advanced, tested and verified that infantile autism (infantile psychosis) is significantly different from subnormality (Rutter, 1966, 1967; Rutter et al, 1967; DeMyer et al, 1971–1974), and from late onset psychosis (Kolvin et al, 1971—I to VI) and adult-type schizophrenia. There remains the question of the relation (and the difference) between infantile autism and specific receptive developmental language disorders

(dysphasia). While children in the latter groups were thought to differ from autistic children, a number of overlapping features have been described which have led to speculation that autism is an extreme variant of such language disorders.

More recently, this latter hypothesis has been tested by the Maudsley group (Bartak, Rutter and Cox, 1975; Cox et al, 1975). They studied autistic children of normal (non-verbal) intelligence in an attempt to ascertain, not only the range of cognitive defects present, but also the specific cognitive defects peculiar to autistic children. They were able to demonstrate that autism was associated with a language deficit which was more extensive in that it spanned several different language modalities such as impairment of inner language, an impaired understanding of written language, etc., and in terms of a severe comprehension defect. Furthermore, the language impairment of the autistic group involved *deviance* in terms of echolalia, pronominal reversal, metaphorical language and inappropriate remarks, in addition to linguistic delay. Finally, the autists used the speech they possessed poorly for social communications. On the other hand, the dysphasic children had more impaired articulatory skills, were far less behaviourally disturbed and much more socially mature. There is thus evidence that the language defect in autism is qualitatively different and quantitatively more severe than in dysphasia.

In spite of this clear differentiation between the polarised autistic and dysphasic groups, the identification of a small 'mixed group', and the fact that the two polarised conditions show a number of common features, suggest that in some ways the operative mechanisms may be similar. When background and parental characteristics were studied the one marked difference between the autistic and dysphasic group was social class of the parents—a finding in keeping with many other clinical and epidemiological studies (Rutter, 1967; Kolvin et al, 1971—III; Lotter, 1967; Treffert, 1970). They found no differences of parental attitudes, parental psychiatric disorder and no evidence of special stresses in infancy. In summary, there are differences of child characteristics in terms of pattern of language defects, behaviour and sociability but little in the way of parental differences with one exception, namely, social class.

Some Aetiological Factors

Prevalence

The work of Lotter (1967) has emphasised the rarity of the condition with a prevalence rate of 4 per 10 000 children of school age. Such epidemological rates are far greater than administrative rates (cases clinically identified in the community) and hence should be used with caution in planning services.

Social class

With few exceptions, hospital (Kolvin et al, 1971—III; Rutter et al, 1967; Creak and Ini, 1960) and epidemiological samples (Lotter, 1967) have shown

an excess of cases with professional parents which suggests that infantile psychosis is validly tied to social class. Further, epidemiological research has confirmed that the parents of autistic children do have high intellectual endowment. However, when social class is held constant there is no difference between the IQ of parents of autistic children and parents of normal controls (Allen et al, 1971).

Sex ratio

There is a high male/female ratio ranging from 3 : 1 or 4 : 1 in hospital series (Creak and Ini, 1960; Rutter et al, 1967; Kolvin et al, 1971) to 2.9 : 1 in epidemiological research (Lotter, 1967).

Nature of the Disorder

Psychogenic theory

It is a common assumption in child psychiatry that the personality and attitudes of the parents exert a fundamental influence on the developing child (Kolvin et al, 1971—IV). It is not surprising therefore that early attempts to understand the nature of the autistic disorder equated the social formality of upper social class parents (Kanner, 1943; Eisenberg and Kanner, 1956) with coldness and aloofness of personality. This led to the concept of 'refrigerator parents', having obsessive and cold personalities, with infantile autism being seen by later authors as an interactive consequence. Unfortunately this theory was considered proven without checking the validity of the basic premise. A plethora of similar theories have been advanced, stemming from clinical practice, most of which are totally unacceptable on the grounds of lack of classification and, hence, the homogeneity of the samples. Also, the samples were too small, reliable and objective techniques were not used to accumulate empirical data upon which a theory could be based (Kolvin et al, 1971—IV), and some of the theories developed were incapable of generating testable hypotheses. Some theorists did not even attend to the two axiomatic methodological steps—firstly, demonstrating a correlation between child and parent variables and, secondly, carrying out experimental or observational studies in an attempt to validate a cause–effect relationship. Furthermore, most theorists were seeking a unifactorial explanation. However, even where organic factors were ruled out, with children of normal intelligence being studied, there is good evidence of a cognitive defect and so 'it seems entirely improbable that the aetiology is entirely psychogenic' (Bartak et al, 1975). In fact, subsequent research has not confirmed the personality stereotype, whether the research has been based on (1) objective tests of thought disorder (Schopler and Loftin, 1969) or self-rating personality inventories such as the Maudsley Personality Inventory (Kolvin et al, 1971—IV); (2) assessments of parental warmth based on clinical interview (Creak and Ini, 1960); (3) parent attitude scales (Pitfield and Oppenheim, 1964);

(4) combinations of clinical assessment; or (5) objectively rated interviews (DeMyer, Pontius et al, 1972). The latter did not identify any unusual rearing or attitudinal patterns in parents of autistic children in terms of poor warmth, in nurturing, in acceptance of their infants, or in degree of general stimulation. The value of this last research is unfortunately diminished by the apparent lack of homogeneity of their child sample, but in a later study with vast numbers, DeMyer et al (1973) report that child-care practices of parents of autistic children were similar to those of the parents of matched normal children. Finally, there is the more recent study by Cox et al (1975), which used objective clinical interviews plus parental self-rating inventories (described elsewhere in this section). They found that mothers of autistic children showed somewhat less warmth to their autistic child but interpreted it as difficulty in showing warmth to an unresponsive child (Bell, 1968, 1971). The sum total of these studies provides strong refutation of a psychogenic hypothesis. Furthermore, there is suggestive evidence (Cox et al, 1975; Bell, 1968, 1971) that some of the parental social reactions may be secondary to the autism and that social isolation when present in mothers of autists appears to be consequent on the onset of the disorder (Kolvin et al, 1971—IV).

Biological theory

Current research suggests that autism might be the final common behavioural expression of a wide variety of organic-cum-developmental influences. The evidence for this is impressively extensive. Firstly, in about half of the cases in the two major hospital series there is evidence of cerebral dysfunction and, secondly, in the course of time, autists develop fits far more frequently than might be expected by chance (Rutter et al, 1967; Kolvin et al, 1971—V). Other evidence of neurological involvement comes from DeMyer, Alpern et al (1972b) who report lowered alertness in infancy and more overt signs of brain damage. So far we have little idea what the specific brain dysfunction comprises; however, the diversity of EEG and seizure patterns which range from focal epilepsy to the widespread disorganisation of hypsarrhythmia (Rutter et al, 1967; Kolvin et al, 1971—V; Taft and Cohen, 1971) argues against a single underlying homogeneous pathological mechanism. There remains, therefore, the question of how such different types of structural disorganisation can lead to a homogeneous functional aberration. One view is that multiple neurological deficits do not necessarily imply multiple aetiologies but are dependent on the abnormality impinging on a relevant brain centre or centres. This is the most plausible explanation, which could account for the multiple handicaps or impairments of language, perception, motor ability and behaviour described by Wing and Wing (1971)—'a number of different brain functions could be affected by, for example, a single genetic or biochemical abnormality, or anatomical proximity could make different brain centres vulnerable to the same lesion'. Hence they assert that any condition which produces abnormality or delayed maturation of

relevant brain areas could theoretically lead to the impairments of infantile autism.

Rutter points out that while autists do relatively well on tests of visuospatial function or memory, they do poorly on tests involving sequencing or language skills. This suggests a specific cognitive defect involving language in terms not only of comprehension but also of conceptual skills in thinking (Rutter, 1968, 1974; Rutter, Bartak and Newman, 1971). Furthermore, Rutter (1972) points out that not only is the autistic child retarded in language but his pattern of linguistic abilities is significantly different to that of normal or mentally retarded children. In brief, the earliest signs of language, namely, babbling, are deficient (Ricks, 1972), and other impairments are of comprehension and production of language and language modalities—such as gesture (Tubbs, 1966). The experimental evidence implicates an impaired ability to conceptualise and symbolise and to process meaningful and temporally patterned stimuli (Hermelin and O'Connor, 1970; Frith,1971). It has been postulated that such defects could impair social interactions (Churchill, 1972) and Rutter (1974) argues cogently in favour of such a view. In fact, in a recent review, Rutter (1974) concludes that, 'given an ordinary environment, a cognitive deficit is probably sufficient as well as necessary for the development of the basic symptoms of autism'. The weight of evidence in favour of a specific cognitive deficit has given rise to hope of discovering the location of the lesion or the relevant brain centre. However, it is still unclear whether the disorder is one of language or whether the language arises from a more widespread cognitive deficit (Rutter, 1974).

Another related and plausible theory which provides clues as to a possible relevant brain location is that, whatever the pathophysiology, the mechanism is via a learning disorder (DeMyer et al, 1973) which hinders the acquisition of language and hence the presence of a language disorder as described by various authors (Rutter, 1965b, 1968; Hermelin, 1968; Wing, 1971). The theory suggests that the learning disorder also hinders the acquisition of certain visuomotor acts such as the imitation of body movements. These disabilities in turn (Churchill, 1972) impair the child's ability to establish social relationships with others. Indeed, Churchill (1972) takes this explanation one stage further by specifically implicating perceptual and sensorimotor anomalies. He suggests that autistic children share with non-psychotic brain-damaged children various perceptual-motor deficits, but the essence of the psychotic condition is a central language deficit allied to, but more severe than that found in children with dysphasic disorders. However, Rutter (1965b) quite rightly points out that developmental dysphasia is not a sufficient explanation for the other behaviour abnormalities displayed by autistic children.

It has also been postulated that deficiencies in such language modalities make the natural habitat of the child too complex to allow them to predict or control (DeMyer, Alpern et al, 1972b; Churchill, 1971) and such failure to

master the environment leads to negativism, withdrawal, etc. It is fascinating to consider Churchill's (1972) argument that the theory of an underlying language deficit receives indirect support from the concept of linguistic structure advanced by Chomsky (1957, 1965). Many autistic children can be taught language 'performance' but not language 'competence'. Churchill (1972) goes on to point out that a profound language deficit could account for the poor use of substitute channels for communication (DeMyer, Alpern et al, 1972a, b) such as gesture or hand-signs so that they are poor at body imitation and show a lack of combinational use of objects (Tilton and Ottinger, 1964) The Indianapolis group sees the impairment of interpersonal relationships as the likely sequel of such deficiencies. This group, therefore, hypothesises a primarily static organic disorder, with language and perceptuo-motor deficits as major components, with the neurological lesion or deficiency often located in the pathways mediating such functions (DeMyer, Alpern et al, 1972a, b; DeMyer et al, 1973). On the basis of current knowledge, Rutter (1974), on the other hand, finds it impossible to localise the lesion and at present favours the alternative hypothesis of a non-specific syndrome of biological impairment.

However, there remain those autists with higher IQs with little or no evidence of neurological dysfunction, and less in the way of cognitive deficits, whose disorder cannot easily be accounted for by the above hypotheses. The Maudsley group (Rutter et al, 1971) have in the past speculated that, in these cases, autism may be due to a type of maturational delay associated with a physiological developmental language disorder. Such views receive support from the Oxford–Newcastle study (Kolvin et al, 1971—V) where it was shown that less than one-third of cases falling into social class I and II had reasonably clearcut evidence of cerebral dysfunction while more than two thirds of those falling into social class III, IV and V had such evidence. This supports the hypothesis that organic impairments are more likely to play a major part in the aetiology of autism in the lower social classes and maturational delay in the upper social classes. However, despite its attraction, this view is not supported by the fact that very few autistic children ever recover completely (Rutter et al, 1971).

Treatment

The large number and diversity of treatments which have been used in autism are an index of the poor success of most of them. As is usual in such an intractable condition, extravagant claims have been made for most treatments but such claims have, in the main, been based on clinical impressions rather than controlled studies and in the course of time have tended to be discarded. Such treatments include electroconvulsive therapy, intensive psychotherapy of the parents and/or the child and, to a certain extent, pharmacotherapy falls into this category.

Not only has intensive psychoanalytical psychotherapy not worked, but

in the views of some authors it has been counter-productive in terms of generating a sense of guilt in parents concerning the role of parental personality in the causation of their child's autism. This does not, of course, imply that mothers who are under stress are not in need of supportive treatment, but rather that the treatment should not carry with it the implication that it will effectively improve the autistic state. Indeed, it has been pointed out that social isolation, when present in the mothers and families of the child with infantile psychosis, often appears to be consequent on the onset of disorder—almost as if the presence of a damaged child sometimes results in family retreat from social relationship. Where appropriate intervention is undertaken, a diminution in the level of social isolation occurs (Kolvin et al, 1971—III). It is also important and helpful for the parents to know that there does not appear to be a major genetic component or that autism is, in any way, related to schizophrenia. This should help to dissipate anxiety about a genetic predisposition to developing schizophrenia. Another important contribution of social work consists of practical advice and support about the day-to-day management of the child, and guidance and direction about management and education.

More recent reviews (Campbell, 1973) reinforce the view that pharmacotherapy cannot modify the course or the severity of the disorder. Nevertheless, anticonvulsants are useful where seizure disorders co-exist; sedatives and tranquillisers may be useful for specific symptoms such as over-activity or aggressiveness (Wing, 1970b). Unfortunately, the response to drugs tends to be idiosyncratic and their dosage has to be tailored to the individual child (Kolvin, 1972a).

The focus of treatment has now moved to those educational and operant conditioning measures geared to help the child overcome his socialisation, behavioural and educational difficulties. Optimism engendered by the introduction of operant conditioning has been tempered by experience with evaluative research (Lovaas et al, 1973). As is usual with new techniques, its usefulness has been exaggerated, as any improvement may often be circumscribed, specific to particular situations and sometimes transient. The view of the current authors is that the techniques work best in conjunction with educational measures as part of a general training approach, in a developmental context, aimed at helping these children overcome their handicap (Wing, 1970b; Lovaas et al, 1973). A variant of the operant conditioning approach has been developed by Schopler and Reichler (1971a) who utilise the parents' high motivation to help children with learning and the acquisition of practical and social skills. This has been expanded by the Maudsley group (Rutter and Sussenwein, 1971; Howlin et al, 1973) in terms of a home-based approach. They use a type of multiple impact therapy adapted to the needs of the individual child in the home circumstances, focusing on social and linguistic development and the removal of maladaptive behaviours, using a range of behavioural and operant techniques together with appropriate

parental counselling. In both of these treatments the parents are helped either to participate in treatment or to be the main vehicle for carrying this out. Treatment using operant conditioning is discussed in detail on page 331.

Finally, in treating these children, patience and dedication are of the essence as improvement tends to occur at a very slow rate.

The value of education has been well demonstrated even for autistic children. Recent work by the Maudsley group constitutes a landmark in the evaluation of special educational treatment of autistic children (Bartak and Rutter, 1973; Rutter and Bartak, 1973). Even with the most marked behavioural disturbance they report considerable social, behavioural and scholastic gains (Rutter and Bartak, 1973). Furthermore, it would appear that greater educational benefits derive from specific teaching in a well-controlled (Rutter and Bartak, 1973) or somewhat more structured classroom situation (Schopler et al, 1971). However, this was not necessarily true of behaviour and social responsiveness in the school situation. Unfortunately, the autists' understanding of what they learnt, and their comprehension, lagged behind the mechanical skills that they achieved. This has implications for the curriculum in terms of emphasis on language comprehension, social skills and associated relevant classroom activities. It is especially important in the educational context to have high staff–child ratios to allow essential child–staff interactions and intrusions which have demonstrated effectiveness in reducing stereotyped or disruptive behaviour. However, improvement in school or hospital units does not necessarily generalise to the home environment (Rutter and Bartak, 1973; Lovaas et al, 1973) unless effective reinforcement at a parental level is available. Indeed, recent work emphasises the importance of extensive parental involvement, so as to allow parents to maintain or enhance their skills, and consequently de-emphasises residential management (Lovaas et al, 1973; Schopler and Reichler, 1971a; Rutter and Bartak, 1973).

We are then left with the important question of whether the autist who is seriously retarded merits any different treatment from the retarded child without autism. Menolascino (1973) argues for a specific ward or milieu setting for relational contacts, behaviour modification, pharmacological treatment, appropriate education and speech training. Rutter and Bartak (1973) point out that autistic children (at least when young) are dependent on the active intervention of adults for social interaction and other progress and mixing with non-autistic children at this age is of no benefit to the autist. Nevertheless, below an IQ of 40, the educational benefits are minimal despite the best available schooling. Furthermore, most handicapped children can derive benefit from attempts to educate them (Eisenberg, 1971; Bartak and Rutter, 1971; Lotter, 1974b) and hence on humanitarian grounds all children, no matter the degree of handicap, merit educational help. We must therefore concur with Lotter (1974b) that advocacy on behalf of the autist who is severely subnormal becomes advocacy on behalf of all mentally handicapped

children. Provided the facilities therefore are reasonable, there does not at present appear to be a case for separation of children with different psychiatric diagnoses but an associated severe degree of subnormality. The only qualifications are that there should be provision of more structured schooling, and specific help with problems of communication and socialisation.

Outcome

In spite of the modern methods of treatment, the outcome in adolescence and adulthood is mostly poor in terms of intellectual development, overall adjustment and, additionally, work potential in adulthood. Further, whether the sample is hospital-based or epidemiologically based, the outcome is the same (hospital—Rutter et al, 1967; DeMyer et al, 1973; Kanner, 1971; epidemiological—Lotter, 1974a). While some two-thirds remain severely handicapped, just over 10 per cent (Kanner, 1971) develop adequately in terms of intellect and social adjustment and are able to survive in an unsheltered work situation (Rutter et al, 1967; DeMyer et al, 1973).

The most important prognostic factor is the testable level of intelligence (Rutter et al, 1967). DeMyer and her colleagues have demonstrated that children remain in the same school/work category as rated initially rather than improving over the years. While the mean IQ remains stable over time there is an important finding that autists who are rated as having the best potential at initial assessment show considerable verbal IQ gains over the course of time (DeMyer et al, 1973).

The question of the effects of treatment in relation to IQ has been studied by DeMyer et al (1974). While children with initial IQs above 50 showed a greater increase in IQ than untreated autists in the same IQ range, those with IQs below 40 showed no differential effect. Furthermore, after treatment, verbal IQ gains achieved during treatment tended to be maintained in the autists with high initial IQs but stagnated or were even lost in those in the lower IQ groups. Unfortunately, these researchers do not specify what the treatment consisted of and hence the value of these important findings cannot be adequately assessed. Perhaps an oversimplification is that outcome is closely tied to evidence of the degree of associated subnormality.

The next set of important prognosticators is in the area of communication. It is well known that an improved prognosis is associated with the development of useful speech by the age of five years. The more communicative the child or the better developed the speech or language at initial assessment, the better the development of conversational speech later (DeMyer et al, 1973). Muteness has a particularly poor prognosis. Even where speech improves considerably there are residual difficulties with speech rhythm, or repetitiveness, and with abstract concepts (Rutter et al, 1967; DeMyer et al, 1973). A poor prognosis is also associated with the severity of the illness (DeMyer et al, 1973), a slow rate of losing the more florid autistic symptoms

(Kolvin, 1972a) and the greater the evidence of neurological dysfunction. If substantial improvement is to occur it will usually show itself by the age of seven years (Rutter, 1967). The child with a good prognosis is one with a good IQ, mild symptomatology which he rapidly loses, and who is given adequate schooling.

While Rutter et al (1967) suggest that the poor work record can be accounted for by such features as inertia, inactivity and poor concentration as well as by poor cognitive development, Lotter (1974b), on the other hand, emphasises poor socialisation or poor appreciation of social situations in the work setting.

ENURESIS

Bed wetting is one of the commonest afflictions which through the annals of history has troubled parents and embarrassed children. The distress engendered and the medical curiosity generated bear a direct relationship to the persistence of the symptom. In spite of this concern and the frequency of the symptom, more systematic approaches to the study of the condition have only been a feature of the last two decades (Kolvin, 1975) of medical and psychological research. In this section we turn our attention to definitions and types, current theories and more recent approaches to treatment.

Definitions and Types

There is much confusion as to the age at which the bedwetter becomes enuretic. While at one age bedwetting is indubitably normal or physiological, at another it is abnormal or pathological, but the question is one of when precisely it does become abnormal. A series of criteria of abnormality have been advanced but all are essentially arbitrary. There is the age/statistical criterion, but as the age-prevalence curve shows a smooth decline (Kolvin, 1975; Werry, 1965), it is difficult to select an appropriate cut-off. A practical solution adopted by Poussaint and Ditman (1965) is to define nocturnal enuresis as nocturnal bedwetting in a child in whom the act of voiding otherwise occurs in the normal way. This avoids the necessity of considering the minimum age or frequency of the act. Such a definition contains both the implication that urinary incontinence must be excluded and that the child voids normally at other times, e.g. during the day. But what about diurnal enuresis, where the latter condition is not met, especially if the child wets both during the day and night? The practical definition used by Werry (1967) avoids even such problems by defining it as wetting in the school age period—firstly, because prevalence is low at this age; secondly, because spontaneous remission is at its minimum, and additionally because the school child is more likely to be concerned by the nature and social repercussions of the symptom.

There remains the problem of the frequency with which the child has to

wet to be considered enuretic. The operational definition of once a month (Hallgren, 1956) is the one most widely used.

There are several forms of enuresis and the presence of one does not preclude the presence of another. The *primary* (or continuous) enuretic has never been dry and the *secondary* (or onset) enuretic has been reliably dry for at least a year and then starts wetting again. *Nocturnal* enuresis refers to night and *diurnal* to day wetting. A further subcategorisation into the stable or *adjusted* and psychologically disturbed or *maladjusted* enuretic, is suggested by some authors (Kolvin and Taunch, 1973).

Epidemiology

The age prevalence curve for bedwetting shows an almost smooth half-bell shape which represents a characteristic decrease of the rate of wetting with increasing age, no matter the source of the data (de Jonge, 1973). In other words, maximal spontaneous emergence of dryness occurs from $1\frac{1}{2}$ to $4\frac{1}{2}$ years. The prevalence rate at different ages depends on several factors, the most important of which are:

(a) The definition employed (Werry, 1965; Hallgren, 1956; Kolvin and Taunch, 1973);
(b) The geographical source of the data, e.g. Miller (1973) in the north-east of England—17 per cent at five years and Hallgren (1956) in Stockholm—10 per cent at five years.
(c) Social factors, e.g. most studies report that bedwetters tend to come from families with high loadings of social handicap (Hallgren, 1956, 1957; Oppel, Harper and Rider, 1968; Kolvin et al, 1972; Miller, 1973). An important exception is the Isle of Wight study (Rutter, Yule and Graham, 1973) where a weak and inconsistent association with social factors is reported.
(d) Ethnic factors, which are likley to reflect sociocultural factors as well, e.g. Oppel et al (1968), in Baltimore, report a rate of 20 per cent at five years in Caucasian children and 32 per cent in Negroes.
(e) And, of course, sex, i.e. at each age the wetting prevalence rates tend to be higher for boys than girls.

Aetiological Theories

A wide variety of aetiological theories has been advanced as an explanation for enuresis. While exponents of single-factor theories tend to be persuasive, it is more than likely that multiple factors or groups of factors will eventually prove to play a significant part in the determination of different types of enuresis. Such aetiological theories can be divided into three—those having a physical or physiological basis, a learning theory basis and, finally, a psychodynamic basis. Many of the theories (especially the psychodynamic ones)

were rather speculative, having little empirical support, and often being incapable of generating testable hypotheses. However, the more recent theories are better supported by hard facts (Kolvin, 1975; Werry, 1972). Following the schema used by Kolvin (1975) we offer a summary of the major theories of enuresis or those which have implications for clinical practice.

Physical or physiological explanations

A SENSITIVE PERIOD FOR THE EMERGENCE OF DRYNESS

It has been noted that the emergence of dryness between the ages of 18 months and 54 months is particularly common, but less common before or after this period. Some 30 to 40 per cent of wet children become dry each year in this period (MacKeith, 1973), but thereafter it reduces to 13.5 per cent per year (de Jonge, 1969). MacKeith (1968) explains this phenomenon by postulating that there is a 'sensitive period,' but not a 'critical one,' for acquiring bladder control. One can then postulate that any interference, even of a transient nature, with the acquisition of control or any negative influences during this period may leave the child without control for a number of years, during which the acquisition of control will apparently be more difficult (Kolvin and Taunch, 1973).

GENETIC FACTORS

The well-known family incidence (Kolvin et al, 1972; Bakwin, 1973) of enuresis has been explained by some as a pattern determined by family custom or expectation. Support for a genetic rather than an environmental explanation derives from Bakwin's (1973) twin survey, which demonstrates that monozygotic twins are twice as concordant for enuresis as are dizygotic twins.

FUNCTIONAL BLADDER CAPACITY

Another physiological factor which has received much attention is the suggestion (Muellner, 1960) that some enuretics have bladders with lower functional but not structural capacities (Zaleski, Gerrard and Schokeir, 1973; Troup and Hodgson, 1971). Muellner (1960) postulates that an ability to hold urine for increasingly long periods is associated with increasing tolerance for higher bladder volumes which gradually extends from the waking to the sleeping state. While recent evidence (Zaleski et al, 1973) has shown this to be true for certain nocturnal enuretics and to be particularly pronounced in diurnal enuretics, the support for this as a general explanation is weakened by the single fact that children with reduced day-time bladder capacities do not necessarily wet the bed (Bakwin, 1961). Furthermore, exponents of this theory do not consider the possibility that the lower bladder capacity could be due to the increased frequency found in enuretics (Kolvin and Taunch, 1973) or to enuresis per se (Hallman, 1950; Bakwin, 1961). Nevertheless, two basic mechanisms in becoming dry at night appear to be the child's increasing

ability to hold urine for longer and longer periods during the day, and an extension of this to the sleeping state.

DEEP SLEEP PATTERNS

A popular theory was that enuresis was due to the child's lack of response to bodily stimuli because of unusually deep sleep patterns with a disturbance of arousal mechanisms (Broughton, 1968). In contrast to clinical impressions (Kolvin and Taunch, 1973) this theory has received little support from EEG studies (Graham, 1973) which have shown that wetting occurs during all physiological stages of sleep except rapid eye movement (REM) sleep. However, there is evidence that Stages III and IV are the most vulnerable in adults (Evans, 1971). As yet, no work has been undertaken to ascertain whether children who wet the bed at one stage of sleep differ from those who wet at another (Graham, 1973).

NOCTURNAL ENURESIS AS A DEVELOPMENT DELAY

One important neurophysiological theory is that there is an immaturity of structures subserving bladder control (Kolvin and Taunch, 1973) in one group of enuretics. This is considered analogous to the 'isolated' milestone delay in the so-called developmental speech disorder syndrome. Several factors support a theory of a mild developmental disorder as documented by Kolvin and Taunch (1973):

(a) The half-bell shaped appearance (Barbour et al, 1963; de Jonge, 1969) of the age-prevalence curve (Werry, 1965; de Jonge, 1969) and hence the known tendency to spontaneous improvement (Bakwin, 1961; Barbour et al, 1963).

(b) Evidence of the importance of poor or uneven maturation as a contributory factor to the genesis of enuresis—e.g. reports of higher incidence of enuresis in low birth weight children (Oppel et al, 1968; Kolvin et al, 1975); poorer physical development in terms of speech, and, in older boys, of infantile secondary sexual characteristics (Douglas, 1973); poorer physical growth (Miller, 1973); and reports of significant immaturity of the EEG (Gunnarson and Melin, 1951; Salmon, Taylor and Lee, 1973).

(c) Reports indicating some emotional immaturity (MacFarlane, Allen and Honzik, 1954; Hallgren, 1957).

(d) Gender differences in terms of an excess of boys (Hallgren, 1957; Bakwin, 1961; de Jonge, 1969) which is a frequent finding in other developmental disorders (Rutter et al, 1970; Rutter, Yule and Graham, 1973).

Additional supporting evidence is derived from the fact that most bedwetters appear to be otherwise normal (Kolvin et al, 1972; Shaffer, Costello and Hill, 1968; Shaffer, 1973); from the known tendency towards spontaneous improvement (Bakwin, 1961; de Jonge, 1973) and the fact of a more frequent family history in nocturnal enuretics (which is suggestive of a genetic determination of the delay). MacKeith (1973), however, argues against maturational delay being an acceptable explanation for bedwetting beyond the age of five.

PHYSICAL FACTORS

Urinary-tract defects have been viewed in the past as being responsible for enuresis, but, more recently, doubt has been cast on their frequency of presence and even on their significance when present (Barbour et al, 1963; Angell, 1969; Meadow, 1970). Another view (e.g. Kolvin and Taunch, 1973) is that physical defects may hamper rather than prevent learning. A relatively common factor in enuresis, especially in schoolgirls, is urinary infection, occurring in 10 per cent of those girls who wet nightly (Stansfeld, 1973). Secondary enuretics are also more prone to suffer from urinary infection.

Learning theory explanations

ENURESIS AS A DISORDER OF LEARNING

The major learning theory explanation (Lovibond and Coote, 1970; Turner, 1973) places emphasis on the development of a complex series of conditioned reflexes in the process of learning bladder control. However, there is no general agreement among learning theorists as to precisely how nocturnal continence is learned. If learning plays a part, it must involve complex neurophysiological processes and somehow mechanisms associated with diurnal bladder control must be extended to the sleeping state. An alternative view is that enuresis is determined by poor or deficient learning of a habit pattern with quite separate mechanisms being the basis of day and night time bladder control. It is more likely, however, that neurophysiological maturation of the physical equipment and learning are complementary components in the natural process of achieving nocturnal continence (Werry, 1965; Kolvin and Taunch, 1973) with an extreme variation in maturation leading to the delay in readiness of the child to acquire a new skill (Kolvin and Taunch, 1973). Further elaboration of possible learning mechanisms associated with the development of nocturnal continence is given in the section on behaviour modification (page 322).

FACTORS LIKELY TO INHIBIT OR PROMOTE LEARNING OF BLADDER CONTROL

These are of particular importance during the so-called 'sensitive period' but also at later ages. Learning theory predicts that the acquisition of bladder control will be facilitated by the presence of optimum conditions for learning (Turner, 1973) and interfered with by adverse conditions. Although such conditions have been given much consideration (MacKeith, 1973; Werry, 1967; Turner, 1973) they have yet to be adequately defined.

In some cases, other factors which appear to be associated with bedwetting include poor home conditions where even elementary toilet-training measures have not been applied—hence the concept of the 'under-trained wetter' (Kolvin and Taunch, 1973). In addition, Douglas (1973) has reported on how a series of adverse experiences at the age of three is associated with a higher incidence of bedwetting at later ages. On the other hand, while clinical

experience with individual cases may suggest that early toilet training hampers the learning process, research workers have found a correlation between early 'potting' and early bladder control (Blomfield and Douglas, 1956; Young, 1964). This suggests that clinical hypotheses require empirical verification before being advanced as widely based explanatory theories, but clinical explanations at an individual level are not thereby excluded. Finally, any adverse experience at the 'sensitive' stage of development may have a two-fold influence: firstly, by interfering with learning at the 'sensitive period' and, secondly, by further affecting a coexisting maturational lag. This has been explained as follows:

The delay may be exaggerated 'by errors of learning at the toilet training era, by inhibition of learning by transient emotional factors' (MacKeith, 1968), or 'by the presence of minor anatomical abnormalities creating increased difficulties in learning' (Kolvin et al, 1972).

Psychodynamic explanations

There is ample evidence that the incidence of psychological disturbance at all ages is higher in enuretics than in the general population, especially in girls (Shaffer, 1973). As yet, however, no characteristic association has been found between enuresis and a specific psychiatric syndrome (Werry and Cohrssen, 1965; Rutter et al, 1970; Shaffer, 1973) and the vast bulk of enuretics (about 70 per cent) have proved to be psychiatrically normal (Kolvin et al, 1972; Shaffer et al, 1968). Other authors have claimed that there is a more evident psychogenic basis for secondary enuresis. However, precipitant stresses so far identified in secondary enuretics have proved non-specific, occurring in only 50 per cent of these children (de Jonge, 1969). Nevertheless, such children often have a pre-existing emotional disorder which may be a factor in the genesis of enuresis (Rutter et al, 1970). As to mechanisms, Werry (1967) suggests that anxiety provoked by environmental changes can lead to bladder irritability and hence have a major disruptive effect on the learning of bladder control in those children constitutionally predisposed towards enuresis. Nevertheless, the search for antecedent or coincident specific stresses has met with conspicuously little success (de Jonge, 1969). Furthermore, Shaffer (1973) advances evidence to support a hypothesis that the observed association between enuresis and psychiatric disorders may have a basis in common stress factors in early childhood, although acting independently.

Whilst psychoanalytical explanations have now been widely rejected as a common basis for primary enuresis, a more modern and credible psychogenic theory has been advanced by MacKeith (1968). He makes a distinction between earlier and often transient adverse early life experiences which may have prevented the emergence of bladder control at the 'sensitive period of learning' already described, and current stresses which may be perpetuating the enuresis. In fact, the epidemiological research of Douglas (1973) supports

MacKeith's view by providing evidence of an excess of stress during the third year of life.

Varieties of Enuresis

While the circumstantial evidence so far presented strongly supports the notion that enuresis is probably multifactorially determined, the Newcastle group of workers (Kolvin and Taunch, 1973), from a review of the literature, have advanced the theory that there are broadly two varieties of enuresis. They suggest that primary (or continuous) enuresis has a mainly biological basis especially in terms of a disorder of neurophysiological maturation of structures subserving bladder control while secondary (or onset) enuresis has, in the main, a psychogenic basis. They advance much evidence in support of the theory but admit that these two enuretic populations overlap somewhat, and have concluded that a simple theory can do no more than explain some of the major facts and hence can have only moderate validity. The Maudsley group (Rutter, Yule and Graham, 1973), on the other hand, suggest a different subclassification—of nocturnal enuresis which is more common in boys and less frequently associated with psychiatric disorder, possibly constituting a developmental disorder with important biological components; and *diurnal enuresis* which is more frequent in girls and is often associated with behavioural disturbance.

Treatment

This review supports the view that enuretics are in the main healthy children with few having any neurological or genito-urinary complications or significant psychological problems. These can usually be easily excluded by careful clinical history and routine urinary examination. Where queries exist, appropriate investigation or specialist referral can be undertaken. With the exclusion of rare physical factors treatment can be grouped under the following headings:

Prevention

Mention must be made of Brazelton's (1962, 1973) preventive approach which could readily be used by the paediatrician or general practitioner. It consists of supporting anxious parents, guiding them in child rearing and management and dealing with any intercurrent stresses in the preschool years, especially those occurring in the so-called 'sensitive period'. These techniques in essence seek to reduce the child's anxiety by optimising his psychological environment over the toilet training era. In his Boston setting, he claims this leads to over 98 per cent of children being dry by the age of five as against only 82 per cent reported in the north-east of England by Miller (1973).

The opposite view is that the importance (Kolvin, 1975) of coercive toilet training has been exaggerated and, indeed, as already described, there is evidence to support this contradiction (Blomfield and Douglas, 1956; Young, 1964). Because of the confusion which such contradictory findings are likely to engender, Kolvin advises an essentially pragmatic approach of using one's clinical judgment about advice. He suggests a watching brief only, where there is an uncomplicated, relaxed mother/child relationship, even though she is 'potting' early, as it is unlikely to have adverse effects. However, where mothers are obsessive or fussy, or where the relationship is complex, it may be wiser to follow a Brazelton type of approach.

Simple intervention

Simple interventive measures are indicated for the preschool child who is bedwetting (but not yet considered enuretic) only if there are significant intercurrent stresses, excesses of parental concern and/or evidence of child distress or psychological disturbance. They are also indicated for the older bedwetter who is considered to be enuretic and who presents for the first time.

Supportive psychotherapy constitutes the cornerstone of prevention and is outlined in detail elsewhere (Kolvin, 1975). Parental attitudes are crucial. An overcritical parental attitude, scolding or punishment often increase anxiety and as such are more likely to lead to perpetuation of the disorder. On the other hand, all kinds of approval for dry nights, including the use of stars or similar rewards, and ignoring a wet night tends to have beneficial effects on parent–child relationships even if it does not immediately lead to dryness. However, what is to be avoided is investing the exercise with such importance that when it does not work it generates a sense of failure. Another measure which has been frequently used is 'lifting' combined with sensible fluid restriction in the evening. The technique consists of ensuring that the child empties his bladder before going to bed, and lifting him two to three hours later. Kolvin is of the view that this is more likely to be helpful to the child who is already on the verge of dryness but makes little impact on other enuretics. However, the value of fluid restriction has been denied (Meadow, 1973).

Some authors attribute most of the response to the measures described above to a placebo effect (Werry, 1972), and Werry and Cohrssen (1965) have pointed out that there is much evidence to show that enuresis often responds to a wide variety of non-specific procedures. It is difficult to know just how much of this is due to a true placebo response and how much to natural spontaneous improvement (de Jonge, 1969).

Psychotherapy

Psychotherapy of any intensity should be reserved for those cases in which enuresis is just one symptom of a more widespread emotional disorder. Research to assess the effects of psychotherapy in an undifferentiated group

of enuretics has produced negative findings (Werry and Cohrssen, 1965; De Leon and Mandell, 1966). This is not surprising as neither were the cases differentiated as to type, nor the children as to presence of emotional disorder. The only study of psychotherapy where the cases were divided into primary and secondary is that of Novick (1966) who found that secondary enuretics showed a more favourable response to psychotherapy than did the primary enuretics. While Kolvin et al (1973) found that primary enuretics tend to respond somewhat better than secondary enuretics to the 'buzzer', Sacks and De Leon (1973) reported equivalent cure rates. Hence, in view of the demonstrated success of the 'buzzer', there would appear to be no good reason to treat even secondary enuretics with psychotherapy unless there is evidence of associated emotional disorder (as was likely to be the case in Novick's secondary enuretics).

The use of psychotherapy does not preclude symptomatic treatment. On the contrary, the two treatments are often complementary because the distress or embarrassment engendered in either the parents or the child by the symptom can seriously hamper psychotherapy. Finally, one's clinical impression is that prognosis in the psychologically disturbed enuretic is not as good as it is for the psychologically normal child, mainly because of the less tractable nature of a multisymptomatic disorder. This impression has some support from one piece of research (Kolvin et al, 1973) which has demonstrated that there is a significant correlation between improvement in enuresis and absence of other bodily symptoms (e.g. headache, abdominal pains) irrespective of whether the child is treated with drugs (e.g. imipramine) or by behaviour modification (e.g. the 'buzzer'—see page 330).

Drug treatment

While a wide variety of pharmacological agents have been used in enuresis, from pituitary extract to amphetamines, only the anxiolytics and the antidepressants continue to have a significant role in treatment,in spite of the fact that they produce less beneficial results than does the 'buzzer'. With their simplicity and convenience and rapidity of action, the antidepressants are widely used when one is seeking an uncomplicated method, when there is parental resistance to the use of the buzzer, or when the child is sharing a room or bed. The mechanisms of action of these antidepressants in enuresis is ill understood but is likely to be via their anticholinergic effects (Blackwell and Currah, 1973). When these agents are beneficial they begin to work in the first two weeks. Unfortunately, the benefits often cease almost immediately after treatment is stopped and long-term follow-up indicates that full remission only occurs in a small number of cases (Kolvin, 1975). Relapse tends to occur immediately after withdrawal. Furthermore, as they are powerful agents with unpleasant side effects and are potentially toxic (Parkin and Fraser, 1972), they need to be handled with care. While some authorities recommend flexible dosage regimens in research, most clinicians wisely

continue to use medium-sized doses rather than the heavier doses recommended by psychopharmacologists 'to secure added improvement in individual cases'. (Blackwell and Currah, 1973). Most agree that drugs should be used for at least one month and if there is no effect at the end of this period, they should be stopped. In any event, they should not be used for longer than three months at a time. If there is a relapse, another course can be tried after an interval of one or two months.

Most of the other drugs used in the past have now been abandoned and Meadow (1970) comments that amphetamine-like agents 'produce more bad tempers than dry beds'. Nevertheless, particularly in children with high levels of 'free floating anxiety', the use of anxiolytics such as chlordiazepoxide (Librium) during the day can be tried (Salmon, 1973; Kolvin, 1975).

Finally, there is some evidence of a better response to imipramine in those with secondary enuresis (Shaffer et al, 1968; Kolvin et al, 1973) and in those enuretics who do not have a family history of enuresis and in whom there is a history of early achievement of other milestones. Enuretic children without psychological symptoms appear to have a better outcome than those with symptoms, irrespective of the treatment used (Kolvin et al, 1973). It should be noted that in comparison with imipramine, the response to 'buzzer' conditioning is less immediate but more persistent after the end of treatment (Kolvin et al, 1972).

For the future it is likely that there will be much exploration of multiple treatments such as combinations of drugs used simultaneously, or in sequence, and the use of drugs as facilitators in 'buzzer' treatment.

BEHAVIOUR MODIFICATION WITH CHILDREN

General Considerations

The behaviour modification approach, with its basis in principles of learning, has often been justified by an assumption that abnormal behaviour has been learned, with the implication that learning principles may accordingly be applied in its remediation. It has been pointed out, however, that 'knowledge about how to change a phenomenon is not tantamount to knowing how it originated' (Davison, 1969). It is not only illogical to infer aetiology from methods employed to achieve change, but speculations as to a learning basis are also without empirical validation, and are not a necessary premise when applying learning principles in therapy. A major contribution of such aetiological theories, on the other hand, has been in the generation of testable hypotheses, and the capacity of the learning-based approach to do this is one of its greatest strengths.

The techniques employed to aid the acquisition of desirable behaviour and to reduce or eliminate undesirable behaviour may be guided by principles of respondent or operant conditioning, or by observational learning. Comprehensive discussion of these principles is available elsewhere (Bandura, 1969;

Kanfer and Phillips, 1970) and, for present purposes, a brief summary must suffice, with some mention of the important characteristics and constituents of a behavioural approach.

In the case of *respondent conditioning*, it is hypothesised that one stimulus (the conditioned stimulus—CS), by virtue of its association with another stimulus (the unconditioned stimulus—UCS), comes to elicit a conditioned response (CR) similar to the response previously evoked (naturally) only by the unconditioned stimulus. Thus, in the case of a child who has been painfully bitten by a dog, the painful attack (UCS) produces fear and on subsequent occasions, the approach of a dog (CS) is alone sufficient to produce fear (CR). A frequently employed treatment method that derives from such a model requires the counter-conditioning of responses to the conditioned stimulus that are incompatible with the maladaptive response, e.g. training the child to relax when the stimulus of a dog is presented, either in real life or in imagination. This is a strategy widely employed with anxiety-related responses and is exemplified in Wolpe's (1958) reciprocal inhibition and systematic desensitisation techniques.

In *operant conditioning*, the theoretical basis of which is also discussed by Crowe on page 170, on the other hand, the emphasis is not on *eliciting* stimuli but on stimuli which *follow* a piece of behaviour, since it is assumed to be the consequences *following* behaviour which help to maintain it. Therapeutic interventions following this model are geared to reprogramme environmental consequences to provide rewarding consequences (e.g. praise, attention, sweets) for behaviours that are to be developed and encouraged, while removing rewarding consequences for undesirable behaviour or substituting negative or punishing consequences. Finally, in *modelling* paradigms, a child learns a piece of behaviour by first observing others perform the particular responses in question.

It is readily apparent that the various forms of learning may be operative in a therapeutic situation, and probably what differentiates therapies is the focus of the therapist (Zubin et al, 1975) rather than the learning framework espoused. Nevertheless, most of the treatment procedures employed with children have predominantly operant components. Why is this so? Ashem and Poser (1973) suggest that children present more frequently than adults with overt manifestations of disturbed behaviour, making the programming of consequences to control such behaviour relatively easy. Also, the operant model is closely akin to customary parent–child control relationships of reward and punishment which obviously facilitates their extension into systematic therapeutic interventions. Indeed, one of the most significant advances in behaviour modification in recent years has been the growing application of behavioural technology by significant figures in the child's natural environment, such as parents and teachers, in everyday settings, rather than by psychologists and psychiatrists in limited and artificial treatment situations.

Features of the behaviour modification model

There are several important features which characterise the behaviour modification model and, in conjunction, differentiate it from other treatment models. These are described in more detail elsewhere (Macmillan, 1974; Kanfer, 1973), and the most important ones, which may be mentioned here are: an emphasis on observable child behaviour rather than intrapsychic variables in the analysis of presenting problems, in conducting therapy and in establishing treatment goals; functional analysis, i.e. relating behaviour to current environmental stimuli, and a stress on measurement and quantification of data at *all* stages of therapeutic involvement.

Several operations of behavioural influence may be observed. *Positive reinforcement* is the term applied to a consequence that is found empirically to increase the frequency of a piece of behaviour which it follows. It cannot be assumed that a particular consequence will function as a positive reinforcer prior to its application. This is important, since there are wide interindividual differences concerning the effects of presumed reinforcers, and also intra-individual variations, due to habituation and satiation effects. *Negative reinforcement* refers to a contingency between the cessation of an aversive event and a behaviour which leads to an increased frequency of that behaviour. An example of this would be a child learning to comply with requests since this stops endless nagging by his mother. The operation of *punishment* refers to any consequence which is observed to decrease the frequency of the behaviour it follows. Such a definition need not imply a highly aversive process: again, the definition is an empirical one and refers purely to observed effects on behaviour (Becker, 1973). If a piece of behaviour is observed to be maintained by positive reinforcement, its frequency may be decreased by withdrawing that reinforcement. This is the process of *extinction*.

A whole array of reinforcers may be used in therapeutic interventions: they may take the form of food or drink, or tangible, material rewards; they could be social reinforcers such as attention, praise and approval, or they may take the form of access to preferred activities. Material and activity rewards are often mediated by tokens, which are accumulated over a period of time and then exchanged for the reward, referred to as a 'back-up reinforcer'. Token reinforcement is a most useful tool for behaviour influence since it permits the reinforcing value of one highly prized material reward or activity to influence numerous instances of required behaviour and facilitates the contingent delivery of rewards (e.g. a football or a trip to the zoo) which otherwise would be awkward or unmanageable. In the management of such a system, an attempt is typically made to apply social reinforcement in conjunction with tokens, with the latter being gradually phased out in favour of social rewards, since it is these consequences, and not tokens, which tend to reinforce the child's activities in the natural environment.

Excess and deficient behaviours

A simple division of treatment approaches may be made between those that aim to encourage the child's acquisition of behaviours and skills which society considers desirable and those that aim to decrease behaviours which occur in excess of the limits which are tolerable or acceptable to society. Treatment can accordingly be seen as attempts to tackle problems of either deficient, or excess behaviour, although it is readily apparent (Ross, 1974; Gelfand and Hartman, 1968) that such a division is an oversimplification. It needs to be appreciated that many interventions involve not only deceleration of undesirable behaviours but also acceleration of prosocial responses. With an aggressive child, for example, it is not sufficient simply to eliminate a range of antisocial behaviours from his repertoire. An adequate outcome may be attained only by the child's acquisition of adaptive, prosocial responses through which he can gain the social reinforcement formerly sought through a series of obnoxious behaviours.

Accordingly, while such multiple approaches will be acknowledged in this review where they occur, categorisation of behaviours will be guided by what is considered to be the principal aim of the intervention, namely, acceleration of deficient behaviours or deceleration of excess behaviours.

Problems of Excess Behaviour

Disruptive behaviour in the educational setting

This section will confine itself to important developments and trends, as excellent reviews and overviews of the vast literature on this theme are available elsewhere (e.g. O'Leary and O'Leary, 1972; O'Leary and Drabman, 1971; Becker, 1973).

Classroom research has concentrated to a great extent on methods of reducing and eliminating disruptive behaviour, as opposed to tackling the problems of the withdrawn and neurotic child. This can be partially justified by the greater predictiveness of anti-social behaviour for later disturbance (Kohlberg, Lacrosse and Ricks, 1972), and by the serious educational repercussions for other children and teaching staff. Nevertheless, some recent research has begun to redress the balance in relation to the withdrawn child (Macmillan and Kolvin, 1975a).

Several different kinds of reinforcement have been employed in attempts to reduce disruptive behaviour. These may involve teacher or peer social reinforcement, or a whole range of material or activity rewards mediated by token or point systems: some workers have espoused punishment and time-out procedures (removal and isolation from a potentially rewarding social situation). Others have mostly avoided these both because of their unpleasant connotations and their possible covert reinforcement effects. It needs to be noted that punishment, in this context, bears little resemblance to everyday conceptions of the term (Becker, 1973).

The work of Madsen, Becker and Thomas, (1968) exemplifies the combined or multiple approach to decreasing inappropriate behaviour and has led to a proliferation of similar studies. They examined the separate effects of teacher-administered rules, ignoring of inappropriate behaviour and praise for desired behaviour. Only combined praise and ignoring were found to achieve effective control. An important factor in this and other similar work was the praising of behaviour that was incompatible with inappropriate behaviour. This may involve not merely reinforcing task attention but also academic achievement (Ayllon and Roberts, 1974). The ability to ignore minor disruptive behaviour appears to be of crucial importance: it has been shown that critical comments may actually reinforce and unintentionally increase the disruptive behaviour they are designed to reduce (Madsen et al, 1968). Where reprimands are employed, soft comments may be more effective than loud criticisms which focus the attention of the rest of the class on the individual (O'Leary et al, 1970). A conclusion from such studies is that the important factor is the ratio of approval to disapproval; e.g. Madsen et al (1970) suggest that a 4 : 1 ratio represents the optimum. However, teachers tend to allege that they follow such principles anyway, but in practice this is not the case. For instance, Madsen and Madsen (1973), in a large-scale observational study, found that less than 5 per cent of teachers dispensed more approval for appropriate than disapproval for inappropriate social behaviour. It needs to be appreciated that considerable persistence and skill is required for a teacher to acquire effective control by social reinforcement techniques. Teachers are also reinforced by their pupils, and since the use of criticism may be successful in the immediate short term (i.e. it is reinforced) but not in the long term (Madsen et al, 1968), a teacher accustomed to this mode of response may find the cycle very difficult to break.

One problem is that teacher-administered praise and approval for appropriate behaviour may not be very effective because of competing reinforcement of deviant behaviour by the child's peers (Macmillan, 1974). One way of tackling this problem is to reward the whole group if either the whole group or individuals within it produce desirable behaviour (e.g. Graubard, 1969; Patterson et al, 1972). This sets up pressures within the group to decrease reinforcement of deviant behaviour in favour of reinforcement of behaviours perceived by the teacher as desirable. In an interesting variation of the peer-reinforcement method, Solomon and Wahler (1973), enlisted the aid of pupils with high peer social standing with the brief of ignoring disruptive behaviour of selected target children and responding positively to their task-related behaviour. These 'therapists' proved able to modify their own behaviour in the manner recommended and the level of disruptive behaviour in the target children was considerably reduced. The peer-therapist approach could have interesting applications in dealing with problems such as truancy, which occur in settings where adult intervention is unlikely or difficult to arrange.

may be partially successful in helping to maintain teacher behaviour, but frequently this is not sufficient. Other ways of providing reinforcements for teachers consist of the use of incentives such as joint authorships in publications, trips to meetings, etc., in research settings (O'Leary and Kent, 1973), but such incentives are not so readily available in everyday educational settings.

These methods of obtaining persistence of behaviour change all involve reinforcement by external agents. An alternative, or preferably, a supplementary approach, is one of teaching children self-control procedures (O'Leary and O'Leary, 1972), so that reinforcement is not dependent upon others. Current work in this area, in the context of a token reinforcement programme, is showing promising results in terms of maintenance in time and generalisation of improved behaviour (Drabman, Spitalnik and O'Leary, 1973).

Fears and phobias

Systematic desensitisation, described by Wolpe (1958) as reciprocal inhibition, has often proved highly effective with adults who present with phobias and anxieties, but its application with children is relatively more complicated. This technique typically involves the pairing of muscular relaxation with the graded imagination of a hierarchy of progressively more fear-arousing items relating to the feared situation. Although there are instances of successful application of systematic desensitisation with phobic children (Miller, P. M., 1972; Miller et al, 1972; Lazarus, 1960), it is suggested by some researchers that particular difficulties may be encountered because of lack of motivation, poor ability to participate in the establishment of hierarchies, inability at times to produce the required images on demand or to maintain them conscientiously, and difficulty in achieving relaxation (e.g. Franks and Wilson, 1973; Miller et al, 1974). Accordingly, some workers have turned to the use of real-life items instead of imagined ones, such as loud noises (Tasto, 1969) and feared animals in a modelling context (Bandura, Grusec and Menlove, 1967; Ritter, 1968). In one study where little use was made of real-life exposure, systematic desensitisation was found to be no more effective than psychotherapy (Miller et al, 1972).

Circumscribed, severe, specific phobias are rare in clinical practice (compared with mild and spontaneously remitting ones) and, as such, techniques employed in relation to such specific problems, though interesting and important, have limited clinical application. Of wider value are explorations with variations of desensitisation techniques with children suffering from common disorders, such as a psychological reluctance to attend school. For instance, Garvey and Hegrenes (1966) employed a graded approach to the school, initially in the company of a supportive figure (the least anxiety-provoking situation) working towards a full return to school (the most anxiety-provoking situation). Although formulated in a respondent conditioning paradigm, this treatment clearly had operant components (praise

and approval for each step) but other workers have employed a more explicit and systematic operant framework (Patterson, 1965; Ayllon, Smith and Rogers, 1970). The rapid-treatment approach of 'school phobia' by Kennedy (1965) includes selective reinforcement of positive behaviour and extinction of inappropriate behaviour by parents, de-emphasis of somatic complaints, forced school attendance and after-school interviews and follow-up. Kennedy differentiates between 'school phobics' coming from relatively stable and harmonious families, with whom he reports complete success, and those coming from families with wider personal and social disturbance, who are likely to prove more resistant to treatment. In the absence of a comparison group of the second type, or a no-treatment control group which would provide evidence about spontaneous remission rates, the results are difficult to evaluate, especially as his treatment cases tended to have an acute onset.

It is generally accepted that much of a child's learning stems from his imitation of the behaviour of peers and significant adults in his environment (Bandura, 1969) and the behaviour change strategy of modelling is specifically geared towards this tendency to imitate, and seeks to facilitate and encourage it. For instance, the child may observe a model who, in progressive stages, fearlessly approaches the phobic object, as in the treatment of a dog phobic (Bandura et al, 1967). It is suggested that to obtain the best results, the desired behaviour should be repeatedly modelled, preferably by multiple models, with provision of necessary guidance and opportunities for enacting the modelled behaviours at each step, and arrangements of appropriate reinforcement to maintain matching behaviour (Bandura, 1971). The earlier notion of the need for model similarity (Bandura and Barab, 1973) has not been clearly borne out. Bandura and Menlove (1968) also obtained enduring fear reduction of dogs when presenting models on film, and Ritter (1968) reported a successful group application. While modelling procedures represent a promising development, not least in the prospect of offering more rapid and economical methods of treatment as compared with shaping procedures, several workers (e.g. Yates, 1970; Heller and Marlatt, 1969) have commented on the failure of behaviour modifiers to extend its applications, particularly to natural settings.

In conclusion, it is to be hoped that the systematic analysis of the functional components of fear reduction techniques which has been extensively carried out with adults (Bandura and Barab 1973; Franks and Wilson, 1973) will also be extended to work with children, if these techniques are to be applied with their maximum effectiveness and sensitivity.

Problems of Deficient Behaviour

Enuresis and encopresis

Although conditioning approaches have been shown to be more effective in controlled trials than psychotherapy (Werry and Cohrssen, 1965; De Leon and Mandell, 1966) and treatment by drugs (Forrester, Stein and Susser, 1964;

Young, 1965; Kolvin et al, 1972) the type of conditioning and the effective components in the conditioning process are still disputed (Lovibond and Coote, 1970; Azrin, Sneed and Foxx, 1974).

In the commonly used bell and pad (buzzer) method, the child is wakened at the onset of micturition when urine completes an electrical circuit in a pad located beneath the child and triggers an auditory stimulus. The original formulation of this process, in classical conditioning terms, suggested that, with repeated association with the auditory arousing stimulus, bladder tension became a conditioned stimulus, eliciting waking and inhibition of micturition. Lovibond (1964) advances the hypothesis that the process is one of avoidance learning, with sphincter contraction being the response that avoids the aversive auditory stimulus, but more recent work (Turner, Young and Rachman, 1970) offered no support for this hypothesis. The other main learning theory formulation is that of Azrin et al (1974), who view the process within an operant or social learning framework.

In assessing the success of conditioning methods, one is concerned firstly with arrest rate, and, secondly, with maintenance of the cure. Arrest rates are very encouraging: Turner et al (1970) report a figure of 81.4 per cent; Lovibond and Coote (1970) suggest that a reasonable expectation of success for an unselected group of enuretics is at least 90 per cent, which compares favourably with the estimated spontaneous remission rate. The nature of the groups for which such findings are reported is of critical importance. In the Turner et al (1970) study, for example, there was a drop-out rate of about 50 per cent. This does not necessarily imply that the remainder were more highly motivated and hence better prospects for cure, since there are data available elsewhere suggesting that drop-outs may be less severely enuretic than those who continue, and may even be dry (Young and Morgan, 1972a). It is therefore incumbent upon investigators to supply more extensive information concerning both treated children and those who withdraw.

The maintenance of arrests constitutes a difficult problem. Caution is required in interpretation of success rates, since the length of follow-up varies considerably, not only between studies but also for different subjects within the same study (e.g. Davidson and Douglas, 1950). It is apparent that the longer the follow-up, the higher the relapse rate (Lovibond and Coote, 1970). Over a period of 40 to 63 months, Turner and Young (1966), for example, report that 39 per cent of 41 successfully treated cases had relapsed.

This problem suggests that some elaboration of the basic respondent conditioning process is necessary. As with the learning of any response in a conditioning paradigm, there seems to be good evidence for making provision for subsequent reinforcement after the initial training period. This may be done by arranging further conditioning (Lovibond and Coote, 1970) or by encouraging parents to provide contingent reinforcement for appropriate responses, not only during treatment but afterwards as well (Azrin et al, 1974). Overlearning has also been presented as an effective approach to the

problem of relapse. Here, after dryness has been acquired, the child is encouraged, at bedtime, to drink considerable quantities of fluid so that, with the increased production of urine, further opportunities for learning can occur. In a sample of 126 cases randomly allocated to such a regime, from a series of 344 cases discharged as 'cures', Young and Morgan (1972b) report a relapse rate of 10.3 per cent, as compared with 28.9 per cent of those not so treated, with a maximum of a 2 year 5 month follow-up. Other workers have employed a multi-faceted approach (Azrin et al, 1974) which, although initial findings appear promising, requires much further evaluation especially with regard to the specific operative mechanisms. Finally, intermittent reinforcement has been employed as a further method of tackling the problem of relapse. This has tended to reduce the relapse rate, but not, in comparison with those undergoing continuous reinforcement, to a statistically significant extent (Turner, 1973).

Operant techniques now have an established role in the treatment of encopresis. In some cases, operant measures alone may be sufficient, but in others they may be complemented by other techniques. In earlier work, the techniques were employed in hospital situations, but more recently, parents have been increasingly involved. Thus, in case studies such as those reported by Edelman (1971) and Sluckin (1975), mothers were instructed to systematically reinforce successful performance on the toilet, with rewards like praise and stars. In the latter study, a social worker acted as adviser for the parents, and Sluckin comments on the generally favourable changes that may emerge in parent–child relationships once the amount of attention paid to soiling is decreased and parents have begun to record and give approval for successes. In spite of these successes, only future research will give clearer indications of when, for whom, and in what circumstances, the techniques work best.

Speech and social skills

The treatment of deficient speech and social skills will be discussed here almost exclusively in relation to autistic children. For this group of children, the crucial importance of speech and language as general prognostic factors in relation to specific educational treatment and the development of social relationships has already been touched upon. It would be unrealistic, however, to view these factors in isolation, since an adequately comprehensive treatment programme for autistic children must pay attention to wider aspects of behavioural functioning and educational development.

Several different orientations may be discerned in this area. Inadequacies of speech and basic social skills may be given prime importance in a treatment strategy, on the premise that behavioural techniques can have an impact on primitive communication and, subsequently, on social relationships (e.g. Hamblin et al, 1971; Lovaas et al, 1973). It may, nevertheless, be necessary to give priority to the reduction of the most severe and incapacitating behaviours

before encouragement of positive behaviours can begin. Again, therapeutic efforts may be focused on specific problems, or sequences of problems, within an overall framework of behaviour modification techniques (as practised in the Nuffield Psychiatric Unit, Newcastle upon Tyne); or within the context of multiple impact therapy, where behavioural techniques comprise only a segment of the total model and are selected for application to particular problems (Rutter and Sussenwein, 1971; Schopler, 1974).

While there have been a number of theoretical accounts of behavioural techniques in relation to speech (Evans, 1971) the work of Lovaas and his colleagues probably represents the most detailed and systematic applications to the problems of the autistic child. They make no attempt to isolate and modify a 'pivotal' or central response or a core autistic 'process' as a means of effecting a sweeping cure. Instead, particular behaviours are selected, one at a time, and reinforcement contingencies are evolved for modifying these.

It has been apparent clinically, and has been demonstrated experimentally (Lovaas, Litrownik and Mann, 1971; Koegel and Covert, 1972) that the self-stimulatory behaviour commonly found in these children impedes learning, and, along with more serious self-destructive behaviours, often needs to be eliminated if optimal learning conditions are to be created. Lovaas and Simmons (1969) employed extinction procedures successfully, if laboriously, to reduce such self-destructive behaviour by withdrawing all social reinforcement for such behaviour. The length of treatment and the lack of generalisation led them in a few cases to employ aversive stimulation to inhibit self-mutilating behaviour. They appear to work on the assumption that before elements of speech and language can be taught, rudimentary social responsiveness may need to be established. Eye contact, for example, may have to be gradually shaped (McConnell, 1967) and it may be necessary to develop verbal and general social approval as reinforcers by their repeated pairing with food rewards (Hamblin et al, 1971; Risley and Wolf, 1967).

A detailed account of the application of operant conditioning and speech therapy principles is provided by Nelson and Evans (1968) in the UK. In the United States, Lovaas and Koegel (1973) have developed techniques for teaching speech to autistic children with even a minimum of vocalisation. Imitative training is first of all attempted, with the goal of successful imitation being regarded as a response which resembles its stimulus. Several successive steps are involved. Reinforcement is initially made available for any vocalisation, then for vocalisation in response to the therapist's speech, and subsequently for successively closer approximations to the provided cues with increasingly fine discriminations. The use of small discrete steps and precise control of contingent reinforcement are of critical importance in exercises of this nature.

Once the child reaches the level of responding to verbal cues, he is essentially echoing words, phrases, or sentences, and thus imitating speech without

knowing its meaning. At this level, at least, there exists a potential basis for further development (Risley and Wolf, 1967) and the essential question is whether the child can learn meaningful speech and language so that he can proceed beyond this stage of empty parroting. This involves providing a 'context' for his speech, prompting responses in the presence of various objects and activities, by instruction, modelling or physical direction, so that his speech becomes linked with a range of environmental and social cues. Lovaas and Koegel (1973) assert that both expressive and receptive speech may be taught in this manner. The more complex applications of language, with use of abstract terms, tenses, story-telling, etc., are apparently achieved only by those children with initially good prognosis (DeMyer et al, 1973).

In view of the great importance of imitative behaviour in socialisation (Bandura, 1969) considerable attention has been devoted to its development with autistic children, with encouraging results (Metz, 1965; Hingten, Coulter and Churchill, 1967). Lovaas et al (1967) have also demonstrated, to their satisfaction, that spontaneous generalisation of imitative behaviour can occur, and that new behaviours can become extremely resistant to extinction where control can be transferred from non-verbal to verbal and then to self-control. Imitative training formed the basis for successful establishment of skills involved in personal hygiene, playing games and appropriate sex-role behaviour, and have been employed by other workers to increase peer interaction and cooperative behaviour (Hingten, Sanders and DeMyer, 1965; Hingten and Trost, 1966; Jensen and Womack, 1967).

In a recent analysis of stimulus and response generalisation (across settings and across behaviours) and the durability of improvements for 20 autistic children, Lovaas et al (1973) report significant decrements in the inappropriate behaviours which interfered with learning, while speech, play and social non-verbal skills all increased, as did the spontaneous use of language. IQ ratings and social quotients showed some improvement, and while some children improved more than others, *all* the children displayed some improvement. As regards durability of improvement, it was evident that those children who were institutionalised after treatment lost all their gains, while the others, whose parents had been trained in the use of reinforcement principles, maintained their improvement. This study shares with others several methodological shortcomings. The inability to randomly allocate to institution or home-based treatment following the initial intervention complicates interpretation of maintenance effects, although few workers would question the value of parents in a therapist role. Also, without an untreated control group, the contribution of spontaneous improvement to observed effects, especially in those autists with higher measurable IQs, cannot be clarified.

Apart from the need for incorporating control groups in research designs, it is hoped that future behaviour modification work will begin to control for the initial developmental levels and, hence, take account of prognostic factors. In view of the possibly limited generalisation that autistic children demonstrate

in their behaviour change, the wider the treatment front, the better. Accordingly, the engagement of parents in therapy is crucial and, in view of the undoubted emotional stresses that they undergo, it is encouraging that current work with parents attempts not merely to be supportive but also to be systematic and directive in methods of counselling (e.g. Rutter and Sussenwein, 1971; Schopler, 1974). From a review of the literature, we would suggest that the most beneficial results are likely to be achieved with home-based operant programmes, with parents participating as therapists. For any permanence of results, with institution-based programmes, parents need to be actively involved. Finally, there is a need for researchers, in this field, both to clearly describe their techniques and to give comprehensive details of the characteristics of their sample of cases: with disorders that have proved so intractable, clinicians need as much help as they can get from experimental studies, and fellow-researchers are all too frequently confounded by problems of comparability and replicability.

Elective mutism

In the preceding section, we have been concerned with the problem of establishing speech or increasing its frequency from low baseline levels. In the case of elective mutism, adequate speech has been learnt, but is elicited only by a restricted range of persons. Accordingly, most of the approaches to the problem have attempted to increase the number of people to whom the child will talk by a combination of positive reinforcement and stimulus fading techniques (e.g. Reid et al, 1967; Nolan and Pence, 1970). Stimulus fading is well illustrated in an experiment by Wulbert et al (1973). The child was engaged in a number of scheduled tasks with the mother, to whom the child talked freely. A stranger slowly insinuated himself into the room and gradually assumed the role of the mother in administering the task items, while mother gradually left the room. This procedure was then widened with the entry of further adult strangers and finally, some children from the child's own school class.

Preacademic skills

If children are to function effectively in a formal educational setting, there must exist a form of 'readiness' which will enable them to benefit from instruction. This does not refer to a state of cognitive readiness but to a number of basic 'preacademic' skills, such as adequate span of attention and concentration, whose presence will facilitate learning. We encounter efforts to encourage such abilities with a number of subgroups of problem children.

We have already seen with autistic children, for example, how basic social responsiveness could be shaped, by the production of eye-contact and simple attention to social cues. Having taught a group of autistic children, in a one-to-one setting, some basic behaviours assumed to be necessary for later learning to take place in a classroom, Koegel and Rincover (1974) examined

the question of transfer to a classroom environment. These behaviours did not transfer even on repeated exposure to the classroom, or to a group as small as two children and one teacher. No success was obtained until classroom features were slowly and gradually 'faded' in by a process of successive approximation.

A fundamental aspect of the work of Hewett and his colleagues with emotionally disturbed and educable mentally retarded children is the stress on developing readiness for learning in terms of a hierarchy of postulated requirements arranged in a developmental sequence of educational goals (Hewett et al, 1968, 1969). At each developmental level of attention, response, order, exploration, etc., these workers have developed a system of tasks and rewards and have suggested what they consider should be the optimum environmental structure for their administration in an 'engineered classroom' with the use of token reinforcement procedures. In more recent work, a similar systematic approach has been developed to prepare the child in a special class setting for integration in the regular school programme (Hewett and Blake, 1973).

The implicit desirability of the goals of much behaviour modification work of this nature has not gone unchallenged. Winett and Winkler (1972) have criticised what they see as a preoccupation with order and control, and with approaches which require children to 'be still, be quiet, be docile'. However, data do exist which suggest that the presence of certain behaviours, such as attention, compliance and volunteering is predictive of academic achievement (Cobb, 1970; Hops and Cobb, 1973). Moreover, these are behaviours which are potentially under teachers' control and such data therefore have clear implications for methods of modifying academic achievement. Another aspect of Winett and Winkler's criticisms is that behaviour modification has frequently merely maintained the status quo by encouraging conformist behaviour within authoritarian educational systems, with the suggestion that more informal settings, characterised by relaxed discipline, might be more beneficial. While rebutting this criticism, O'Leary (1972) also points out that a great number of problem children would probably make more rapid educational progress in relatively structured environments. Certainly, this seems to be true of educationally disadvantaged (Spicker, 1971) and autistic children (Rutter and Bartak, 1973). However, any firm conclusions as to optimum educational structure and its relation to preacademic behaviours will need to consider the individual requirements of children with different disorders. This is an area of considerable theoretical and practical importance, to which much research should be addressed in the future.

The Use of Non-professionals in Behaviour Modification

Several reasons may be advanced for the involvement of people such as parents, teachers and ward attendants in child behaviour modification programmes:

1. If one holds a view that stresses the importance of environmental consequences, with behaviour being continually open to potential influence and change, then it seems eminently sensible to involve significant people in the child's natural environment in a treatment role so that the therapeutic effort can pervade more of the child's everyday life.
2. Where parents are implicated, there is the potential of obtaining generalisation and maintenance of behaviour change in cases where the major treatment intervention takes place elsewhere, for example, in the school.
3. By providing parents with techniques and skills which may help them to cope with future problems, steps are being made towards a much-needed preventive model (Berkowitz and Graziano, 1972).
4. It helps to relieve the pressures caused by professional manpower shortage in the face of the vast number of children who need help (Hulbert, Wolstenholme and Kolvin, 1975).
5. By lessening the time spent by professionals in treatment, a not unimportant consideration is the reduction in cost.

Several recent reviews covering parental involvement are now available (Berkowitz and Graziano, 1972; Johnson and Katz, 1973; O'Dell, 1974) which indicate the wide range of problem behaviours successfully modified in a variety of populations by means of a diversity of behavioural techniques, e.g. toilet-training of a psychotic child with positive reinforcement procedures (Graziano, 1971), desensitisation of fears by reciprocal inhibition (Clement, 1970), and elimination of dangerous climbing behaviour in a brain-damaged child by multiple operant techniques (Risley, 1968).

There are other groups of potential behaviour change agents who are more obviously part of the mental health team and well placed to act as behaviour modifiers, namely, nurses and ward attendants in the hospital or clinic setting (Martin, 1972; Kolvin, 1973; Epling, Walsh and Gathercole, 1975), and in the community, social workers and health visitors (Tharp and Wetzel, 1969; Jehu et al, 1972).

The use of non-professionals as behaviour modifiers entails numerous problems as well as benefits. There are inevitable theoretical and practical difficulties when working in the relatively less easily controlled natural environment and also in handling other issues such as the training of change agents and the maintenance of their behaviour. It should be evident that reinforcement principles are as relevant to issues such as these as to the management of the children who are the focus of treatment.

A variety of training methods have been employed (O'Dell, 1974), such as didactic instruction with individuals (e.g. Barrett, 1969; Conger, 1970, Macmillan and Kolvin, 1975b), educational groups (e.g. Hall et al, 1972; Cohen, 1970) and by the establishment of controlled but artificial environments where a change agent's behaviours are shaped and reinforced as an ongoing process (e.g. Wimberger and Kogan, 1974; Ora, 1971). While a

lecture or discussion may effectively transmit knowledge of behaviour modification principles, it does not necessarily lead to their effective *application* (Gardner, 1972; Lindsley, 1970). In the same way that it might be more effective to try to change a problem child's behaviours by shaping and use of reinforcement techniques than by *telling* him what to do, it might be more productive to supplement didactic instruction with methods such as cueing and feedback devices during treatment interactions (Bernal et al, 1972), behavioural shaping (MacDonald, 1973), modelling (Johnson and Brown, 1969) or behavioural role playing (Johnson, 1971) in a reinforcement context. As we have already seen, the maintenance of interest and motivation in change agents, during and after training, poses considerable problems. Morrey (1970), for example, reports starting with a group of twenty families and ending with six.

Along with the more conventional use of praise for therapeutic success (e.g. Rose, 1969), some methods for maintaining motivation in parents have been reimbursement of registration fee contingent upon attendance at training sessions (Hirsch and Walder, 1969), making clinic sessions dependent on the keeping of records of children's behaviour (Mira, 1970), and telephone contacts (Patterson, Cobb and Ray, 1972). In the hospital setting, Martin (1972) has suggested the need to modify the administrative structure to facilitate the development of reinforcing contingencies for nurses.

While impressive results have been obtained with the use of non-professionals (Johnson and Katz, 1973; Patterson, Cobb and Ray, 1972), it is important that applications do not proceed apace at the expense of scientific evaluation, which is no less necessary here, if more difficult to obtain, than in areas more amenable to scientific assessment.

Concluding Comments

Numerous studies are now available which demonstrate the value of behaviour modification with a wide variety of problems presented by children. Perhaps the main strength of the approach lies in its empirical basis and the readiness with which it enables successive hypotheses to be generated and tested. Nevertheless, a survey of research published to date shows that there is no room for dogmatism and much room for improvement. In a review of the scientific adequacy of 51 studies, MacDonough and McNamara (1973) report that while 80 per cent of the studies appropriately incorporated the criteria of control group and of baseline and systematic variation of treatment into their designs, only 46 per cent satisfied the criteria of unbiased observers and follow-up. Such findings point to the need for stricter controls; it would be indeed regrettable if the stick of 'scientific respectability' used by behaviour therapists to belabour the traditional therapists were to be conveniently laid aside when they themselves enter into the research arena.

The growing amount of work in the areas of maintenance and generalisation

of behaviour change, to some extent bears out Rachman's (1962) prediction that producing generality of effects would become a focal point in child treatment. The move away from exclusively child-centred treatment models, with involvement of agents in the natural environment is an important facet of this wider perspective. A further extension of this trend might be towards the development of planned total behaviour modification environments (Krasner and Ullmann, 1973) in such settings as schools and hospitals. Such approaches do not imply an exclusive concern with total external control, and work on self-control techniques has assumed considerable importance in this field (Gottman and McFall, 1972; Lovitt and Curtiss, 1969).

As far as the impact of behaviour modification on society is concerned, some aspects of current research designs assume major importance. Many of the operant studies mentioned in this section have been within-subject ($n=1$), i.e. using the subject as his own control, or within-group designs employing relatively small numbers of subjects, seeking to demonstrate a relationship between environmental stimuli and particular classes of behaviour. The advantages and disadvantages of such methods have been well described elsewhere (e.g. Kazdin, 1973; Jones, 1974) but in the current context, some drawbacks may be mentioned which suggest a need for alternative designs. While such designs represent a powerful tool in the analysis of behaviour, they cannot, without a control group, allow for change in behaviours with age (e.g. Miller, L. C., 1972)—an important consideration in research with children—nor do they allow for comparisons between different treatments (Paul, 1969).

Furthermore, political and social administrators are not impressed by even an accumulation of single case successes (O'Leary and Kent, 1973), and if behaviour modification research is to have adequate social impact, then group designs which incorporate adequate numbers of subjects and allow comparison between different treatments, not only in terms of differential effectiveness with particular disorders, but also with respect to matters like cost, duration and so on, should become important considerations. Some current work with maladjusted children in schools has been designed in the light of these requirements (Macmillan and Kolvin, 1975c).

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