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THE NEWCASTLE CHILD DEPRESSION PROJECT. SOME ISSUES IN DIAGNOSIS AND CLASSIFICATION

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Some consider it possible to diagnose major depression in childhood using criteria identical to those used in adults (Spitzer et al 1978; Puig-Antich (1980). This is reflected in alternative diagnostic schemas, three of which are those devised by Puig-Antich and Chambers (1978), by Weinberg et al (1973) in the United States of America and by Kolvin et al (1984)in Newcastle. How valid are each of these in the diagnosis of depression.

Another issue of major importance is how depression in childhood should be classified. In adult psychiatry this is a notoriously complex area, and even if childhood depression were similar, classification problems would be compounded by issues of child development. For these reasons, and particularly for clinical purposes, at this point in time many consider it better to describe disorders in a systematic way rather than to attempt any sophisticated sub-classification. This can be achieved by documenting any specific disorders associated with depression. The wisdom of this approach is underlined by the fact that it is not yet certain whether depression in children is a homogeneous or a heterogeneous condition. If the latter, is depression missed because of concealment by other symptoms and, if so, what is the nature and extent of the association?

AIMS

The Newcastle Depression project was set up to examine these and other issues. The aims of this part of the study were twofold: to check the validity of the various systems for diagnosing major depression in childhood: allied to this is to assess agreement between the three different schemas used for diagnosing major depression: second, to explore the extent of mixed depression in childhood with particular reference to conduct, neurotic and phobic disorders.

HOW DEPRESSION IS CLASSIFIED

It is evident that the homogeneity of our depression sample will depend on the decision and rules that are used to establish the diagnosis (Goldberg 1983). Our position is identical to that articulated by Sir Martin Roth in relation to the DSM III - he feels it pays little heed to the overlap of syndromes. Our method of checking comorbidity in relation to childhood depressive disorder involved coding for associated clinical disorders of sufficient severity for them to have been given a diagnostic label in their own right on the following three disorders based entirely on the presence of the defined symptoms and irrespective of any other coding:

(1) Neurotic Disorder, which is defined as symptoms of anxiety, sensitivity, obsessive-compulsive phenomena, somatic symptoms, hypochondriasis and hysteria. (2) Conduct Disorder, which is defined as combinations of lying, stealing, truanting, poor inter-personal relationships and various types of antisocial behaviour. (3) Phobic Disorder, defined as symptoms of irrational fears, accompanied by avoidance and handicap, and including school phobia.

METHODS

As part of the Newcastle Depression Project, 316 referrals between 8 and 16 years of age were screened for depression with the Child Depression Inventory (Kovacs and Beck 1977; Kovacs 1981). Refusals and losses are reported elsewhere (Fundudis et al 1989) and these reduced the sample to 275. As there were insufficient resources to carry out in-depth interviews on all cases, it was decided to select for interview roughly equal numbers of high scorers and low scorers. One in two of the high scorers (49 of 100) and one in four of the low scorers (44 of 175) were selected randomly. Thus the ratio of cases chosen was based on the principle of over-sampling from that proportion of the population which had the potential for an excess of childhood depression. Provided the sampling fraction for each stratum is known, it is possible to estimate back for the total population.

A commonly used and validated schedule in assessing depression in children is the Kiddie-SADS. This is essentially a modification of the Schedule for Affective Disorders and Schizophrenia for use with children between 6 and 17 years of age, and has been shown to be a reliable instrument for measuring symptoms of depression and conduct disorder (Chambers et al 1985).

Although the Kiddie-SADS was felt to be the best instrument for assessing childhood depression, an essential modification of the procedure was effected in the Newcastle Study. Independent interviewing of parant and child by different interviewers was carried out, followed by an independent decision on clinical diagnosis.

Other modifications included the addition of a small number of symptoms using a format of probes and scales similar to that in the original. However, in our study a four point scale was used. The advantage of this is that it can be converted from an ordinal scale reflecting severity, to a dichotomous one, reflecting presence or absence of disorder; this is an important point. In addition to the diagnoses based on the Kiddie-SADS interview and adult based RDC criteria (Spitzer et al 1978; Puig-Antich et al 1983), the relevant data on the extended Kiddie-SADS Schedule were subject to algorithms relating to defined symptoms listed in the Weinberg (Weinberg et al 1973) and Newcastle (Kolvin et al 1984) scales and this

allowed relevant symptomatic diagnoses to be achieved.

RELIABILITY OF PSYCHIATRIC INTERVIEW

Agreement between interviewers when using the Standard Psychiatric Interview (Goldberg et al 1970) with pre-adolescents and adolescents was examined. The Standard Psychiatric Interview (SPI - Goldberg et al 1970) is a semi-structured schedule designed to study psychiatric disorder in adults in a community setting. It has a number of precise probes as well as clear-cut definitions of symptoms and can be used to give ratings on a range of clinical disorders. An unstructured introductory interview was designed to precede the SPI. In addition, the interviewers were allowed to use phraseology and concepts appropriate to the child's cognitive level and stage of psychological development, thus accommodating the different abilities of children to give accounts about themselves. Provided the interviews were conducted with flexibility and sensitivity, little in the way of problems emerged when using the SPI with prepubertal children and adolescents. Ratings of the symptoms and disorders are based on clinical judgements on a five-point severity scale. In rating clinical disorders, especially of depression, we utilized the concepts and definitions of depression more usually geared to adults as outlined and defined in the manual of the Standard Psychiatric Interview (Goldberg et al, 1970). This allowed a clinical diagnosis of a depressive disorder.

Nine interviews were undertaken by a single interviewer (SB) observed by video-recording by two independent raters (TB and IK). Categorical diagnoses were made about the presence or absence of clinical depression and anxiety with the intention of undertaking statistical analysis for categorical data (Cohen, 1960). However, there were no discrepancies at all with regard to diagnosis, which is probably a reflection of the similar training, concepts and symptom identification of the three raters.

Such categorical agreement does not necessarily provide information about the extent of agreement as to severity on the dimensional scores of symptoms or on ratings of overall depression and anxiety. However, when the interviewer ratings were pooled an inter-observer reliability of >0.9 was found for overall severity of depression and anxiety disorder. Intraclass correlation coefficients usually proved to be of a similar order to those obtained when the Spearman-Brown formula was applied to ratings of depressive disorder and anxiety disorder (0.96 and 0.92 respectively). It was concluded that the Goldberg Clinical Interview Schedule, when administered by experienced child psychiatrists, has satisfactory reliability in the assessment of the degree of overall depression and overall anxiety.

TABLE 1

VALIDATION OF DIAGNOSTIC SCHEMAS

VALIDATION AGAINST SPI (Depression)	Kappa	Product Moment Correlation Coefficients of data rated according to severity
Puig-Antich	0.45	0.65
Weinberg	0.56	0.64
Newcastle (Kolvin et al)	0.55	0.64

TABLE 2

COMORBIDITY IN A CLINIC SAMPLE

PROPORTION OF DEPRESSION WITH OTHER DISORDERS
(Estimates of rates in a total clinic sample)

44.8% of depressed patients have neurotic disorders
18.3% of depressed patients have conduct disorders
35.5% of depressed patients have phobic disorder

TABLE 3

COMORBIDITY IN A CLINIC SAMPLE
DEPRESSION AND ASSOCIATED DISORDERS
(Estimates of rates in total clinical sample)

Associated Disorder	Total	Including Depression	Excluding Depression	Depression without specific associated disorder
	%	%	%	%
1. Phobia	17.7	11.2	6.5	24.3
2. Neurotic	49.5	15.9	33.6	19.6
3. Conduct	31.6	6.5	25.2	29.0

RESULTS

Validation of Schemas (Table 1)

For the purposes of validation, the 91 children were interviewed by a Consultant Child Psychiatrist using the Standardized Psychiatric Interview (Goldberg et al, 1970). The three diagnostic schemas following Puig-Antich, Weinberg and Newcstle, were validated against the Standardized Psychiatric Interview using the Kappa coefficient of agreement (Cohen, 1960). The three

schemas were found to be of equivalent validity provided that duration and severity of symptoms were taken into account.

Agreement between schemas

On this occasion the Kappa is not only used to measure inter-observer reliability but also agreement between schemas as to presence or absence of depression. Correlation coefficients were also undertaken on ratings of severity of depressive disorder. The levels of agreement were broadly similar to those in table 1 and these suggest there is little in the way of difference between the three diagnostic schemas. But again, there are the two provisos that duration and severity be taken into account.

Comorbidity

In all, depression was estimated to occur in 35.5 per cent of the sample although it was present on its own in 11.2 per cent only.

Our estimated rates of depression of about one-in-three are much higher than those usually reported in clinic populations (table 2). Further, one-in-six proved phobic; one-in-ten proved both depressed and phobic. One-in-three had a conduct disorder; one-in-fifteen a conduct disorder combined with depression; one-in-four a conduct disorder without depression. One-in-two had a neurotic disorder; one-in-six had a neurotic disorder combined with depression; one-in-three had a neurotic disorder without depression.

Examination of our data (table 3) suggests possible explanations which could account for the high rates of depression in our clinic population. It would seem that a simple categorisation into any major category of child psychiatric disorder merely obscures the picture. For instance, where the main diagnosis is of a conduct or phobic disorder, we may overlook a significant associated depressive disorder. For instance, we note that about one-in-six of our patient population have a phobic disorder and of these about two-thirds are depressed; an alternative perspective is that about one-third of our depressed group are phobic; and about one-tenth of our outpatient group are depressed and phobic. In contrast, one-third of our clinic population have conduct disorders but only a fifth of these are also depressed. Finally, about one-half of the outpatient population have neurotic disorders and a third of these are depressed.

DISCUSSION

Our data suggest a variety of ways in which childhood depressive syndromes overlap with other childhood syndromes. Technically, although at times we have described the different conditions that we have identified as 'disorders', it is more appropriate on the basis of the above definitions to view them as 'syndromes'. Carlson and Cantwell (1980a, b) take this one stage further by indicating that, to achieve the status of depressive disorders, such syndromes need to be distinguished from other disorders by differences in family factors, family patterns of illness, natural history, biological factors and response to treatment.

The Association of Depression with other Psychiatric Conditions

Moving on to the issue of 'pure versus mixed depression', what is the meaning of the overlap between depression and other disorders? This can be viewed in a variety of ways.

Mixed depression is a well-known phenomenon in adult psychiatry, as is the affective basis of some phobic and obsessional states. Further, in the child field, it is not uncommon for depression to be associated with other psychiatric conditions (Rutter, 1988). For instance, Puig-Antich and Gittelman (1982) report that one-third of boys fitting research diagnostic criteria for major depressive disorders also could be diagnosed as conduct disordered, using DSM III criteria; Hendren (1983) reports that more than one-half of patients with anorexia nervosa also have depression, using DSM III criteria. The above suggests a similarity of depression in children to that in older people (although the association with conduct disorder may be seen as an age-specific phenomenon. An extension of this view would be that depression underlies the other disorder with which it is associated, but that once the depression is treated, both disorders would improve. Whereas this is a common phenomenon in adults, the only evidence for this in children is Puig-Antich's study of major depression in pre-pubertal boys (Puig-Antich, 1982). In contrast, Berney et al (1981) found that school phobic children with associated depression experienced rapid relief of their depressive symptoms with treatment, but showed considerable persistent residual neurotic disturbances.

An alternative interpretation of the overlap is that mixed depression is the association of two separate disorders with distinct, although possibly related, aetiologies and outcomes. The degree of relatedness presumably varies with the type of associated disorder, being higher for neurotic/phobic disorders, and lower for conduct disorder.

Masked Depression

The notion that one disorder may mask or conceal another was hypothesized by Cytryn and McKnew (1972), Cytryn et al (1980) and Glaser (1968). It would appear that these authors were correct in suggesting that depression was often hidden, but they concluded, erroneously, that depressive symptoms manifested in a different way in childhood than in adulthood, whereas our findings suggest that depression is imply undetected because of inadequate techniques of clinical assessment and diagnosis which do not allow representation of concommittant disorders. Other workers (Carlson and Cantwell, 1980a, b) have demonstrated that children with so-called masked depressive pictures do show overt depression (Rutter, 1988).

This work underlines the importance of assessing depression accurately, regardless of the presenting complaint. All associated symptoms should be recorded and as long as the concept is not viewed as mutually incompatible with other psychiatric and behavioural difficulties, it should be easier to understand.

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