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Diagnostic Stability in Subjects

with

Multiple Admissions for Psychotic Illness

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Abstract

This study describes the demographic, admission and diagnostic characteristics of a group of 204 subjects from the Royal Edinburgh Hospital who received exit diagnoses according to the functional psychoses over the 2 year period 1993 - 1994. In total, 737 admissions were analysed using the OPCRIT computer program (McGuffin et al, 1991), and diagnoses were analysed in accordance with a number of operational criteria. The main results are summarised as follows:

1. Subjects with schizophrenia had by far the highest mean admission length per year, and almost twice the total length of admission than other subjects, and the demographic results confirmed the socially catastrophic nature of the condition.
2. The results of the diagnostic spread confirmed that considerable diagnostic differences between different sets of operational criteria are common.
3. There was an increase in the frequency of diagnosis of schizophrenia from initial episode across all admissions according to all sets of diagnostic criteria.
4. High levels of stability in the region of 80% were found for schizophrenia according to most sets of operational criteria, while the affective disorders displayed moderate stability levels which varied more widely between different sets of operational criteria. Other conditions, nonorganic psychotic disorders, delusional disorder, atypical psychosis and schizoaffective disorder displayed poor levels of stability.
5. More than 50% of subjects changed diagnosis between episodes one and five, confirming that diagnostic movement is common. According to clinical

criteria, there was regular triangular movement between the diagnoses of depression, mania and bipolar disorder, and according to all sets of criteria there was considerable movement from 'no diagnosis' to a range of other psychiatric disorder. There was very little movement away from a diagnosis of schizophrenia towards other major psychiatric disorder, but considerable early movement from other conditions towards more clearly defined diagnoses.

The results confirmed some of the limitations of operational criteria, and the implications of the findings are discussed.

DECLARATION

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Dr. Andrew Forrester

30 January 1999

INTRODUCTION

a. The Development of Syndromal Concepts in Psychiatry

Modern descriptions of the syndromes now classified according to The ICD-10 Classification of Mental and Behavioural Disorders (World Health Organization, 1992) as Schizophrenia, Schizotypal and Delusional disorders (items F20 - F29) and as Mood (affective) disorders (items F30 - F39) were apparent for the first time less than two hundred years ago. Some authors have seized on this absence of historical depth to argue that schizophrenia in particular is a syndrome of recent origin, associated with modern civilisation, and possibly with a viral aetiology (Torrey, 1980), whilst others have attempted the sifting of ancient texts for words, phrases and case histories that might give some clue to the history of major mental illness. Wilson (1967) searched Babylonian documents in the second millenium B.C. and was able to give examples of verbatim accounts from mentally disordered patients, while Moss (1967) presented quotes from the Satires of Horace (65 - 08 B.C.) and highlighted descriptions given by the fifth and sixth century physicians Caelius Aurelianus and Alexander of Tralles, claiming good evidence for references to mental illness

A number of European texts which were published during the Medieval period provide interesting evidence for descriptions of both schizophrenia and the mood disorders at the time, but one of the best was written in 1230 by Bartholomaeus Anglicus, professor of theology in Paris. His De Proprietatibus Rerum, (The Properties of Things) included a section in which he dealt with conditions of the head, and gave confident descriptions of 'frenesis', 'parafrenesi',

'amencia', and 'melancholie'. In 1305, less than a century later, Bernard de Gordon, said to be of Scottish origin, produced the book Lilium Medicinae, in which he recognised and described the following mental disorders - 'lethargia vera', 'lethargia nonvera', 'stupor', 'mania', 'melancholia', 'phrenesis' and 'incubus'.

Mental disorder came to afflict two men of high status, King Henry VI of England (1422 - 1471) and King Charles VI of France (1368 - 1422), and the resulting lengthy case histories have provided compelling documentary evidence that more convincingly approximates to our modern syndromal categories (Diethelm, 1971, Clarke, 1975). Henry VI became insane in 1453, and Richard of York was subsequently elected protector of England. Henry received state of the art treatment - purges, baths and head shaving - in keeping with the views of the time regarding insanity, and managed to recover long enough to regain power for a brief period. However, as time progressed he suffered recurring episodes of insanity with possible visual and auditory hallucinations that persisted until his murder by Richard's son, Edward, in 1471. Similarly, Charles VI of France experienced a number of breakdowns during which he reportedly lost his memory, called himself George, and exhibited overactive or obscene behaviour (it is said that on one occasion he killed four innocent people with his sword while running about wildly). Later in his life it became necessary for his attendants to use force to wash or restrain him, and ultimately his disorder became permanent.

Prior to the nineteenth century there was formal recognition of mental disorder, and society undertook containment by a variety of organised institutions such as asylums, hospices for the sick, jails and workhouses. The first steps towards

the establishment of a group of medical specialists solely dedicated to the study of psychic problems and later referred to as psychiatrists came in 1758 when William Battie, founding medical officer of St. Luke's Hospital in London, wrote his Treatise on Madness. This was the earliest publication to address the possibility that asylum care might have a therapeutic function, but Battie took his argument one stage further, postulating that mental disorder was potentially curable. More than three decades later, in 1793 and 1794, Vincenzio Chiarugi published On Insanity while working in Florence, in it echoing Battie's claim that the asylum had a role to play in healing patients, and setting out the first basic guidelines on the establishment of a therapeutic asylum. Pinel, who had earlier been credited with the removal of chains from madmen at the Bicetre hospice and the Salpetriere in Paris, published his Traite medico-philosophique sur l'alienation mentale in 1801. In it asserted that it would be possible for certain patients to return to society, in particular those who were convalescing and those who suffered from illnesses which included periods of lucidity.

In less than a century, mental disorder had taken on new meaning, and the asylum had taken on new functions. What was awaited was a system of classification that could be universally applied, but that depended upon coherent recognisable case descriptions of the major syndromes. There would not be long to wait before the first, contained within John Haslam's Treatise on Madness and Melancholy, published in 1809. His aim was to provide a general account of 'a form of insanity that occurs in young persons'. Later Esquirol (1838) published Mental Maladies: A Treatise on Insanity, a text full of beautiful descriptions of what

is now recognised as schizophrenia. However, in many ways Esquirol was a prisoner of the classification systems in operation at the time, and had grouped his descriptions under the chapters considering mania and dementia.

Although it was Bleuler's term, schizophrenia, that entered into widespread use, many authors followed Haslam and Esquirol in describing conceptually similar syndromes in the decades that intervened. The next important description which contributed to the distillation process was that of Morel in 1852. He claimed that there existed 'large numbers of young persons of both sexes who have fallen prematurely into dementia' and used the term dementia praecox to describe a progressive and degenerating condition, closely linked to his concepts of degenerance and 'hereditary degeneration'. Later Kahlbaum attempted the classification of mental illness by discarding the orthodox cross sectional approach to the study of clinical presentations, and instead concentrating on longitudinal events. Using this method, the study of the natural course of disorders, he came to the conclusion that certain psychiatric disorders had a degenerating course, while other 'relatively partial psychic disorders' did not. His work was a considerable advance, and his Katatonia, described in 1874, was highly influential. The syndrome comprised motor abnormalities and stupor, and was narrated and conceptualised as a neurological condition with attached psychiatric symptoms - melancholia, mania, confusion, stupescence and dementia. In 1871 Hecker described Hebephrenia, a disorder which closely resembled Dementia Praecox. It was rapidly progressing and deteriorating in nature with a uniformly bad prognosis, and was said to affect mainly adolescents.

Within the realm of the mood disorders, the major descriptions which act as the forebears to our current concepts were also in the nineteenth century. Although concepts of mania and melancholia had entered into most classifications of insanity for at least two thousand years, it was accounts by Falret of 'folie circulaire' and by Baillarger of 'folie a double forme' in 1845 which decidedly influenced those who were soon to follow, particularly those who moved towards separate classification systems on the basis of the presence or absence of recovery.

The mould was finally and decisively broken by Emil Kraepelin in 1896, when he described the syndromes of Dementia Praecox and Manic Depressive Insanity. His research method had been the meticulous description and follow through of individual cases of illness, but his ideas regarding these clinical entities were in a continual state of evolution and change, as each new book he wrote testified. He largely came to consider Dementia Praecox as a disorder with three subtypes - Hebephrenia, Katatonia and Dementia Paranoides. His hope and expectation was that researchers in the future would be able to confirm his classification with definite anatomical correlates or specific aetiological markers.

This binary system was Kraepelin's great success, as it allowed the division of insanity for the first time into distinct and identifiable disorders on the basis of their long term courses. Dementia praecox was a progressive condition with a course which was largely downhill, leading towards increasing disability with only partial and temporary remissions, while Manic Depressive Insanity was a relapsing and remitting condition, with full rather than partial recovery during periods of remission.

As Kraepelin's classification system began to gain widespread acceptance, Eugene Bleuler published Dementia Praecox or the Group of Schizophrenias in 1911. His Schizophrenias were a collection of psychoses with four fundamental symptoms, said to represent the splitting of psychic functions - ambivalence, loosening of associations, affective incongruity and autism. Although some considered Bleuler's works an extension of Kraepelin's, his conceptual approach to the subject was of fundamental difference.

Since the early years of the 20th century many authors have attempted comparison of the works of Bleuler and Kraepelin, but the earliest was Gruhle in 1913. He noted that Kraepelin's studies had been purely descriptive and empirical, whereas Bleuler worked on the premise that certain underlying cerebral processes of an unknown nature manifested themselves in terms of particular symptom arrays. He described the introduction of a heirarchy of symptoms by Bleuler, who attempted to separate basic symptoms, said to be closer to the core of the illness process, from facultative symptoms, which were not illness specific. Further, he observed the application of psychoanalytic ideas by Bleuler, who was in contact with Freud and Jung. Bleuler attempted the understanding of symptom content by postulating underlying unconscious processes, and then used this understanding to try to explain the very existence of the symptom and of the illness. Kraepelin, meanwhile, was scathing about these methods, which he regarded as no substitute for the hard science of sober observation.

In the years that followed, Kraepelin's binary system entered into general psychiatric parlance, and soon researchers began concentrating their efforts on one

or other of the wings of the binary system. For those who attempted the advanced study of mood disorders, the traditional schools in psychiatry pushed constantly towards further biological understanding of the newly delineated manic depressive syndrome, while the recently formed psychoanalytical school postulated inner psychic events as causative (e.g.. Freud, 1917). The two groups often found themselves at odds, both in terms of classification and treatment, yet were chiefly involved in the treatment of very different types of patients. Wealthy neurotic patients who could afford to bypass asylum care tended to find their way to fashionable psychoanalysts for treatment, whereas those with the most severe conditions remained within the sphere of traditional psychiatry for treatment, and often containment. With time, the two separate literatures became more entrenched, and the result was the general acceptance in the 1920s of the neurotic-psychotic dichotomy of depression. Lewis was one of the first to challenge this division when he presented his study of 61 patients at The Maudsley Hospital in 1934, demonstrating no clear distinction between neurotic and psychotic groupings. However, it was to be more than thirty years before Angst (1966) and Perris (1966) provided the evidence that allowed Leonhard (1957) to propose the division of Kraepelin's manic-depressive psychosis into separate bipolar and unipolar components. Attempts at definitive classification became the elusive aim of those concerned with the study of mood disorders, and although it was possible to develop pragmatic classification systems, based around recognisable core symptomatology, it remained difficult to gain widespread acceptance for a unitary system (Kendell, 1976).

Kraepelin's dichotomous classification of the functional psychoses provided order and structure for psychiatrists involved in clinical practice and research. However, in 1933 Kasanin presented 'The Acute Schizoaffective Psychoses', a 'group of 9 cases...in which there is a blending of schizophrenic and affective symptoms'. All patients were in their twenties and thirties, and suffered from a psychosis lasting a few weeks to a few months, followed by recovery. Although the relationship of these schizoaffective disorders to schizophrenia and affective illness was not clear, their existence challenged the widespread acceptance of Kraepelin's dichotomy. Although we now know much more about schizoaffective disorders in terms of prognosis and treatment (Kendell, 1993), nonetheless their nosological status remains unclear. They are, for example, included in ICD 10 as item F25, where they are described as 'episodic disorders in which both affective and schizophrenic symptoms are prominent within the same episode of illness, preferably simultaneously, but at least within a few days of each other. Their relationship to mood (affective) disorders and to schizophrenic disorders is uncertain. They are given a separate category because they are too common to be ignored'.

Meanwhile in the field of schizophrenia research, a number of authors were at work describing conceptually similar syndromes. In 1938, Langfeldt compared process schizophrenia, a chronic and insidious condition, with schizophreniform psychosis, a syndrome of acute onset and favourable outcome. Leonhard published The Classification of endogenous psychoses in 1957, juxtaposing systemic and non-systemic schizophrenia, and Stromgen described brief reactive psychosis in

1968.

Kurt Schneider was the most influential of the authors who attempted further classification , and his work represented an extension of Bleuler's ideas regarding the importance of symptom structure. His Klinische Psychopathologie was translated into English in 1959, and was highly influential, later being used as the basis for the well known 'Present State Examination' by Wing et al. in 1974. Elements of his work appear in current DSM-IV and ICD-10 classifications of schizophrenia. Schneider was a prolific writer, and his publications advanced understanding in a number of fields of psychiatry, including the personality disorders, forensic psychiatry, and most of all, the functional psychoses. He produced a list of list of symptoms which he called first rank symptoms, such as delusional perception and passivity phenomena, and used his empirical findings to argue their special importance in the diagnosis of schizophrenia. He went further, producing a list of second rank symptoms, which were held to be of less value in diagnostic determination, and emphasised that a diagnosis could possibly be made in the absence of first rank symptoms, providing that second rank symptoms were 'adequately distinct and are present in large numbers'. Although his work has been widely influential, a number of authors have been critical of his contentions for the reasons given below. The frequency of first rank symptoms in patients with a diagnosis of schizophrenia has shown wide variation within the literature, from 72 per cent (Mellor, 1970), to 28 per cent (Taylor, 1972), although the reasons for this large variation is not clear. Further, a number of authors have found that first rank symptoms are not specific to schizophrenia (eg. Pope and Lipinski, 1977, found an

occurrence of 20 per cent in psychotic depression and 40 per cent in acute mania).

Mellor (1983) on reviewing the status of first rank symptoms in 1983 concluded that Schneider's claims about first rank symptoms found only limited support from the literature. They appear to be strongly associated with schizophrenia, but have also been reported in other conditions, despite the generally accepted difficulties in consistently defining and eliciting them (Koehler, 1979). Seymour S Kety summarised the situation well in the 52nd Maudsley lecture, given in 1980 - 'Schneider established a new syndrome with features that are more easily perceived and described, and which therefore show a higher degree of inter-rater reliability, features which are economically put into check lists and fed into computers. That syndrome may be more prevalent, have a more favourable outcome, and be more responsive to a wide variety of treatments, but it is not schizophrenia.'

In the 1960s, with the advent of new pharmacological agents for the treatment of defined conditions, psychiatry began to move towards a more orthodox medical perspective. At the same time, new and adventurous moves were afoot in the name of therapy, and a number of social scientists developed new criticisms of psychiatry. Main had first used the term Therapeutic Community in 1946, and Maxwell Jones began applying the essentially psychodynamic ideas in the development of his famous Therapeutic Community at the Henderson Hospital in the 1950s and 1960s. In 1960, Szasz published 'The Myth of Mental Illness' in which he took the extreme view that illness could only be defined in terms of physical pathology. Since most mental disorders had no demonstrable pathology,

the argument followed that they were not illnesses, and therefore did not fall within the province of doctors. One year later, in 1961, Goffman published *Asylums*, which was a searing criticism of what were identified as the pathological features of the 'total institution' in which individuals were 'cut off from the wider society'. He identified features of total institutions, and described how patients were taught the 'inmate role' through a process of 'mortfication' or 'role stripping'. The famous anti-psychiatrist Laing went further, postulating a sane reaction to an insane world in 1976.

Within this wider climate, Kramer (1963, 1969) studied first admission rates for depression and schizophrenia in psychiatric hospitals in England and Wales and the United States of America, and found differences. Soon after this the US-UK Diagnostic Project was designed to investigate the reasons for these differences. Interviewers made psychiatric diagnoses using the British glossary of ICD-8 on samples of newly admitted patients in New York and London blind to their given hospital diagnoses, which were obtained later. The results confirmed regional differences in the diagnosis of schizophrenia and affective disorder - New York psychiatrists diagnosed more schizophrenia and less affective disorder than London psychiatrists, while the British trained project psychiatrists made diagnoses in proportions which were the same in both centres and similar to those of the London psychiatrists (Cooper et al, 1972, Gurland et al, 1969, Kendell et al, 1971). Subsequent studies confirmed a substantially broader concept of schizophrenia in the United States than in Britain (Kendell, 1971). Later, the authoritative International Pilot Study of Schizophrenia, published in 1973 by the World Health

Organisation, demonstrated differences in the use of diagnostic criteria - similar criteria were shown to be in operation in seven of the nine participating countries - Colombia, Czechoslovakia, Denmark, India, Nigeria, Taiwan and the United Kingdom - but broader criteria were used in the United Stated and the USSR.

In the wake of these findings, there was increasing realisation that terms of central importance in psychiatry, such as schizophrenia, should be defined by specific criteria that could be applied by clinicians from different international centres with disparate training. Wing (1973) highlighted the key importance of diagnostic comparability in psychiatry, and, referring to ICD-8, considered it 'probable that such techniques will help to decrease the amount of disagreement between psychiatrists'. Psychiatry had 'taken on a new lease of life' as, for the first time, it struggled slowly towards the scientific achievement of a good level of international comparison.

b. The Development and Use of Operational Definitions

In psychiatry, there are currently no objective investigations which can be used to definitively confirm a diagnosis of major psychiatric disorder. As a result, individual signs and symptoms are of central importance. They are the building blocks which come together in particular patterns, now familiar to researchers and clinicians, to form approximations of major syndromes, themselves forged over the years by the exhaustive tracing of individual clinical histories and their comparison one with another. The prime importance of diagnosis in psychiatry is now established (Kendell, 1975), but until the 1970s there were no widely agreed operational definitions, and consequently diagnosis depended highly upon individual style.

In 1927, the physicist Bridgman was the first to use and define the term operational definition in his book The Logic of Modern Physics. Later Hempel (1961), Professor of Philosophy at the University of Princeton, was the first to propose the use of operational definitions during the presentation of a paper to the American Psychopathological Association. For him, contemporary psychodynamic theories lacked clarity and uniformity, and went without 'definite and unequivocal ways of putting the theories to a test by applying them to concrete cases'. He believed that operational definitions would provide 'objective criteria by which any scientific investigator can decide, for any particular case, whether the term does or does not apply to that case', and he was unambiguous in his support of the use of clinical material which was 'publicly observable' rather than 'of a highly

introspective and subjective character'. He considered the need to 'meet the requirements of scientific concept formation' paramount.

Schneider (1959) anticipated the development of operational criteria for use in psychiatry by some fifteen years by producing a concise description of 'symptoms of the first rank', which were held to be diagnostic of schizophrenia in the absence of brain disease. These symptoms, which he distinguished from 'second rank' symptoms, were of crucial importance in the diagnosis of schizophrenia, although Schneider accepted that some patients with schizophrenia never exhibited 'symptoms of the first rank', and that these special symptoms were not necessarily specific to one condition. His first rank symptoms impacted forcibly on psychiatry, and by the 1970s had become an orthodox part of undergraduate and postgraduate teaching.

Hempel's suggestions were first taken up by Feighner et al (1972), who were the first to provide explicit operational criteria for psychiatric illnesses. They were described confidently as 'the most efficient currently available' and conceptualised as the essential 'common ground' which could allow the comparison of data between research centres. Their method was 'a distillation of our clinical research experience, and of the experiences of those cited in the references'. Although detailed operational criteria were produced for 14 conditions, including primary affective disorders, secondary affective disorders and schizophrenia, the authors clearly expected change and refinement with time.

Soon after this, Carpenter et al (1973) examined data derived from a group of 1121 subjects as part of the International Pilot Study of Schizophrenia (World

Health Organization, 1973). Signs and symptoms were rated using the Present State Examination (later published as Wing et al, 1974), and the authors then used analysis of variance to identify variables which could discriminate between schizophrenic and non-schizophrenic groups. Once these factors were obtained, discriminant function analysis was used to determine the discriminating power of the identified variables. The twelve most discriminating symptoms were highlighted as follows - restricted affect, poor insight, thoughts aloud, waking early, poor rapport, depressed facies, elation, widespread delusions, incoherent speech, unreliable information, bizarre delusions and nihilistic delusions. These findings, later replicated in a second patient group, were then advanced by the authors as appropriate for both clinical and research application, explicitly allowing an 'operational method for identifying patients who would be commonly considered schizophrenic in many centres'.

Tsuang and Winokur (1974) used the restrictive criteria of Feighner et al (1972) to identify a group of 260 subjects with schizophrenia. A retrospective case note study was undertaken by three staff psychiatrists, and the authors demonstrated that 92% of the selected patients remained chronically ill for the entire follow up period, and hence the success of the criteria in predicting a chronic course of schizophrenia. In addition, significant differences were demonstrated between hebephrenic and paranoid subgroups of schizophrenia. The hebephrenic group was distinguished by earlier age of onset, inappropriate or flat affect and formal thought disorder, whilst the paranoid group tended to have a later age of onset, with well organised delusions or hallucinations, no affective changes, more favourable

outcome and less familial schizophrenia. These findings were then incorporated into criteria which would allow the selection of homogeneous subtypes for future research purposes.

Taylor and Abrams (1978) designed a project which would investigate the findings of an earlier study (Taylor et al, 1974). Diagnostic criteria had been applied to a sample of 247 consecutive admissions to an inner city psychiatric treatment unit, and only 11 subjects (4.5%) met the required criteria for a diagnosis of schizophrenia. This figure was considered surprisingly low, and broader criteria were designed for the research diagnosis of schizophrenia, mania and depression, each requiring positive findings for all three of four criteria. The new criteria were then applied to 465 individual subjects - 6.7% received a diagnosis of schizophrenia and 34% received a research diagnosis of affective disorder. The authors concluded that this provided support for the idea that diagnostic habits had changed over the years, while the real prevalence of schizophrenia had not, and argued strongly for the stringent application of diagnostic methods.

The Research Diagnostic Criteria (Spitzer et al, 1978) were designed to allow researchers to employ constant sets of criteria to samples of subjects with functional psychotic illnesses in order to allow the selection of homogeneous sets which would meet specific diagnostic requirements. Although direct examination of the subject provided the major source of data, it was possible to use information from focused clinical interview or a structured interview guide and rating scale. A definition of critical terms (e.g.. formal thought disorder) was included, and clear diagnostic criteria were provided for 26 conditions, including schizophrenia,

affective disorders, personality disorders, drug use disorders, neurotic disorders and other disorders. A convenient data summary sheet was also included to allow for ease of collection of material for subsequent data processing. Spitzer et al (1978) had provided a convenient and influential method for the application of diagnostic guidelines in psychiatric research, and by this stage operational criteria had become firmly established as the future of research in psychiatry.

Crow (1980) cited evidence from neurohumoral, neuropsychiatric and neuroradiological studies for the existence of two separate schizophrenic syndromes, Type 1 and Type 2, which might be present within the same individual at the same or different times. Type 1 schizophrenia was characterised by positive symptoms, good response to neuroleptics, reversibility and absence of intellectual impairment, whilst Type 2 was characterised by negative symptoms, poor response to neuroleptics, possible absence of reversibility, and structural brain changes. Crow's syndromes became very important, and stimulated a wide range of debate and research, but his schizophrenic typology had not included specific operational criteria. These were devised later, and included in the OPCRIT diagnostic programme.

c. The International Perspective

The World Health Organisation has played a role in the diagnosis and classification of mental disorders since the 1960s. A process of wide consultation and multinational research led to the Eighth Revision of the International Classification of Diseases (ICD-8), which anticipated the explosion of interest in operational definitions. The process expanded and continued in the years that

followed, leading to the publication of the Ninth Revision (ICD-9) in 1978 and the Tenth Revision (ICD-10) in 1992. ICD-10 provides explicit diagnostic criteria for a wide range of mental disorder, including, but not limited to, the functional psychoses. The classification system is clear and authoritative, and its' use in both clinical practice and research is widespread. ICD-10 is significantly larger than previous revisions. It allows for more diagnostic categories than before, scored by an alphanumeric coding system, and parallel criteria for clinical and research use augment the system.

In 1952, the American Psychiatric Association Committee on Nomenclature and Statistics published the first edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-1). This manual, the first of its' kind to focus on clinical use, contained descriptions of a range of diagnostic categories which reflected the prominent psychobiological view that mental disorders represented reactions of the personality to psychological, social and biological factors. The second edition, DSM-II, was intentionally based closely on the eighth revision of the International Classification of Diseases, given the extent of cross collaboration, and in 1968 both DSM-II and ICD-8 were established. DSM-II moved away from Adolf Meyer's psychobiological view, and towards diagnostic terms which did not imply particular theoretical frameworks. The American Psychiatric Association appointed a Task Force on Nomenclature and Statistics in 1974 to begin work on the development of DSM-III, and its subsequent development was coordinated closely with that of ICD-9. DSM-III, published in 1980, introduced important innovations - a multiaxial system, explicit diagnostic criteria, and an approach which was descriptive rather

than bound to aetiological theories. A process of further revision and change led to the establishment of a work group to revise DSM-III in 1983, and a series of 26 advisory committees and numerous field trials were activated. DSM-IIIR, published in 1987, promoted a multiaxial system, retained a predominantly descriptive approach, and extended the provision of specific diagnostic criteria as guides for making diagnoses. A further process of refinement and change led to the recent publication of DSM-IV in 1994.

d. Difficulties with Operational Definitions

Projects which set out to investigate the levels of agreement between different sets of operational definitions have been vital to our understanding of their role in research practice. In one of the first studies of its' kind, Brockington et al (1978) compared ten definitions of Schizophrenia in two series of more than 200 subjects and found low average levels of concordance between definitions. For one series, the Camberwell series, the average level of concordance was only 0.29, the figure significantly depressed by the very low concordance of the strictest definitions (including Feighner et al, 1972). Four years later, Stephens et al (1982) examined the hospital files of 283 in-patients who had received discharge diagnoses of schizophrenia, schizoaffective schizophrenia and paranoid state according to DSM-1 criteria. Retrospective diagnoses were made in accordance with 9 diagnostic systems, and generally low levels of diagnostic agreement were found between them, except between RDC, DSM-III and St. Louis criteria. DSM-III schizophrenia was found to have the best correlation with clinical follow up. As a result of this work it became clear that, although diagnostic operational criteria

might allow for high levels of diagnostic agreement between clinicians, individual criteria often had poor levels of agreement with each other.

Since the 1970s, there has been an increasing interest in the use of operational definitions in psychiatric practice and research, and as a result there are now many very different systems in use for the study of psychotic illness. Although operational criteria have advantages clearly associated with their use, there are also a number of disadvantages. These have been dealt with by a number of authors, but most comprehensively by Farmer et al (1989 and 1992), who has considered the main points as follows:

1. The aetiology of psychotic illness remains unclear, and therefore there is no objective testing method available. Consequently, none of the methods used to define psychotic disorder has proven validity.

2. In clinical practise, a complex array of information is used in diagnostic formulation. Certain information is often available within the arena of clinical work, but is extremely difficult to operationally define (e.g. past medical and psychiatric history, response to intervention and 'clinical impression'). As a result of this, it is usually omitted, meaning that operationally derived diagnoses are the product of a more circumscribed process than are clinical diagnoses.

3. In the study of psychotic illness, there has been a historical tendency to concentrate on positive symptoms (e.g.. Schneider, 1959) as they are easier to define than negative symptoms, such as lack of motivation. This tendency has made its' way into current operational definitions.

4. Operational definitions impose a rigid system, in which symptoms and signs are required to be either present or absent. The effect is that some patients fall outside the major categories into 'atypical' or 'unspecified' groups.

5. It has not been possible to develop accepted severity ratings. In their absence the same diagnostic category can contain a wide range of disorder, from mild self-limiting illnesses to life threatening conditions. In clinical reality these conditions often do not appear the same.

6. The absence of a diagnostic hierarchy can lead to problems with disorder definition, especially in cases where there is an admixture of symptoms (e.g. if there are a mixture of depressive and psychotic symptoms a hierarchy is required to delineate schizophrenia, schizoaffective disorder and psychotic depression).

The problems which beset the use of operational definitions are not easily overcome, and they exist despite the increasing sophistication of diagnostic systems. However, Kendell (1983) suggested the adoption of a polydiagnostic approach in biological psychiatry as a possible remedy. He considered that this would make it 'possible to compare the results with a wider range of other studies' and that it might 'enable important relationships to be detected with one definition when they are missed by others'. He used the analogy that 'hunters pursuing elusive targets use shotguns instead of rifles because they know that their chances of hitting their prey with single bullets are too small', and envisaged that widespread use of this method would facilitate 'the spread of good definitions and the demise of poor ones'.

e. A Polydiagnostic Approach

The development of OPCRIT (McGuffin et al, 1991) signalled a determination to apply a polydiagnostic approach in researching biological psychiatry. The intention was to design a simple and reliable system which would allow the collection of information regarding psychotic illness, and could subsequently use that information to generate diagnoses according to multiple diagnostic criteria.

Of central importance to the whole OPCRIT system is the checklist, which consists of constituent items from a number of operational criteria which are important in the study of schizophrenia and affective illness. The use of multiple operational criteria which are composed of similar items is fraught with difficulty and can easily lead to overlap, but the authors have described attempting, wherever possible, the condensation of similar items from different operational definitions into a single item. Although the intention was to design a single coherent checklist with as little repetition of items as possible, it was also vital to maintain the integrity of each of the included sets of operational definitions. Therefore, as a result of minor variation in definitions from one set of criteria to another, certain similar items do repeat. For example, item 22 'restricted affect' and item 23 'blunted affect' are defined as follows:

> Item 22 - 'Restricted affect: Patient's emotional responses are restricted in range, and at interview there is an impression of bland indifference or 'lack of contact''.

Item 23 - 'Blunted affect: Where the patient's emotional responses are persistently flat and show a complete failure to 'resonate' to external change. The difference between restricted and blunted affect should be regarded as one of degree, with 'blunted' only being rated in extreme cases'.

The original OPCRIT checklist included a total of 74 checklist items, but the whole system has undergone a process of continual development since the outset, and the version used for this project (OPCRIT version 3.31) includes 90 items of psychopathology, pre-morbid functioning, personal and family history information. The operational definitions involved are 12 of the major classificatory and subtyping systems, and they are as follows:

DSM-III, DSM-III-R (American Psychiatric Association, 1980 and 1987).

Research Diagnostic Criteria (Spitzer et al, 1975).

St. Louis Criteria (Feighner et al, 1972).

The 'Flexible' Criteria (Carpenter et al, 1976).

Schneider's First Rank Symptoms (Schneider, 1959).

Taylor and Abrams Criteria (Taylor and Abrams, 1978).

A version of the French Criteria for Non-Affective Psychosis (Pull et al, 1987).

ICD-10 (World Health Organization, 1993)

Tsuang and Winokur, 1974.

Crow, 1980.

Farmer et al, 1983.

The authors explicitly followed the general approach used in the Present State Examination (Wing et al, 1974) and included a glossary which provides definitions of each item for reference when completing an OPCRIT checklist. The written glossary has been complemented by a 'help' menu which can display definitions on screen at request.

After the OPCRIT system was designed, the authors undertook a brief reliability assessment before recommending it for use. A group of 54 patients was selected to broadly represent the types of subjects likely to be encountered in research subjects in practise, and three raters made independent OPCRIT assessments using a combination of hospital charts, summaries and prepared case abstracts. Once data collection was complete, the authors calculated Cohen's kappa or weighted kappa for each item on the OPCRIT checklist for each pair of raters (ie. for raters 1 and 2, 1 and 3, 2 and 3). The k coefficients, or weighted k coefficients, were also calculated for each set of generated diagnoses for each pair of raters. Thus there were two levels of analysis - one at the level of the checklist, the other at the level of generated diagnostic output.

The results demonstrated good levels of reliability. A k coefficient was calculated for all 74 checklist items, and a better than chance agreement was demonstrated in 73 items. The vast majority of k values were in the range 0.4 to 1. At the level of diagnostic output all pairs of raters showed highly significant agreement for all sets of operational diagnostic criteria, and all k values were within the range 0.57 to 0.87.

After presenting this good but limited evidence of reliability, the authors advanced OPCRIT as a useful accessory to standard interviews rather than a replacement for them. They suggested the use of OPCRIT in rating particular episodes of illness as well as lifetime ever diagnosis, and called for new reliability studies between pairs of raters studying abstracts or charts and performing interviews.

One year later, Farmer et al (1992) used the OPCRIT system. Two experienced clinicians applied the checklist to the case records of 397 psychotic subjects derived from the Camberwell Psychiatric Case Register. The sample was selected to obtain an operationally defined cohort of subjects with schizophrenia for a series of other studies, now presented elsewhere (Castle et al, 1991, Wessely et al, 1991). The selected subjects represented 90% of all first episode or first contact cases recorded on the Camberwell Psychiatric Case Register who received a case record diagnosis of schizophrenia, paranoia, paranoid disorders, paraphrenia or psychosis not elsewhere specified. The remaining 10% of case records could not be located.

Following analysis, the frequencies of diagnosis for the 397 subjects were presented. Schizophrenia was the most common diagnosis for all criteria except DSM-III, which had atypical psychoses as the most common. DSM-III and DSM-IIIR criteria resulted in the fewest unclassified cases and the criteria of Feighner et al (1972) and Taylor and Abrams (1978) had most subjects falling into unspecified categories (39% and 29% respectively). Only a few cases were assigned to affective disorder, schizophreniform and schizoaffective disorder categories, and

10% of subjects were diagnosed as having DSM-IIIR delusional disorder. 74% of patients fulfilled Carpenter criteria for schizophrenia (Carpenter, 1973) and 56% exhibited Schneiderian first-rank symptoms (Schneider, 1959). When DSM-III and DSM-IIIR were compared, there was almost complete agreement for the categories 'no diagnosis' and major depression, but considerable discrepancy for cases of atypical psychosis and schizophrenia.

85% of subjects received a diagnosis of schizophrenia according to any of the classificatory systems, and they were examined further by the three subtyping classifications (Tsuang and Winokur, 1974, Crow, 1980, Farmer et al, 1984). According to subtyping by Tsuang and Winokur's criteria, 31% were classified as paranoid and 53.4% as non-paranoid. These subtypes showed a weak though significant association with the subtypes of Farmer et al (1984) (paranoid-like and hebephrenic-like). According to Crow's criteria 71% were assigned to Type 1, and 14.1% to a 'mixed' category. No cases were in the Crow type 2 category.

The authors subsequently reported the sensitivity of one set of operational criteria, namely Research Diagnostic Criteria, to changing the rating of a single item ('affective symptoms predominate the clinical picture').

After presenting the results, the authors argued that, although diagnostic procedures are now generally reliable, 'there remain many pitfalls for the unwary', and take the view that reliance on single accounts of psychopathology in cross section or on information derived from lay interviews is likely to magnify or compound these problems. They suggested using accurately recorded diagnostic information from multiple sources, as many as possible, as this is likely to promote

accuracy, and recommended that clinicians are involved in the final decision about diagnosis. They also recommended the use of more than one rater or clinician, with team evaluation of all possible information, and argued that in diagnostic assignment a polydiagnostic approach can only act as an adjunct to skilled clinical judgement.

Williams et al (1996) undertook a multicentre reliability study using the OPCRIT system. A total of 26 psychiatrists and 4 clinical psychologists, European and American, participated in the study. All were engaged in molecular genetic research with subjects and their families. A series of 30 vignettes/case summaries were obtained from independent research and clinical sources, chosen to reflect a range of diagnoses with an emphasis on the major psychoses. All raters were asked to rate the cases independently and confidentially on a 'lifetime ever' basis. A rating standard was prepared for each case, and subsequently OPCRIT diagnoses generated by each set of ratings were compared with this standard. Diagnoses within each classification were organised into a maximum of 7 different categories for ease of analysis, and a weighted kappa statistic was used to compare clinical and standard ratings for each of the 12 classification systems.

Overall, the mean kappa scores ranged from 0.6 for the St. Louis criteria to 0.82 for Schneiderian first-rank symptoms and the French criteria. Similar levels of reliability were achieved by both the USA and European raters across all classification systems. This good evidence of inter-rater reliability within all classification systems in a study of international multicentre design was considered

encouraging by the authors, taking into account the likely differences in training and experience between clinicians from different countries.

Craddock et al (1996) compared OPCRIT diagnoses with consensus best estimate lifetime diagnoses. Two clinical raters studied 50 cases from families multiply affected by Bipolar disorder and 50 from families multiply affected by schizophrenia, the subjects having been collected for research in the genetics of the functional psychoses. The data available for each subject included a scoresheet with recorded information on lifetime occurrence of psychopathology which had been obtained during a standard psychiatric interview, a narrative summary of the subject's background and social functioning, a summary of psychiatric case notes, and for some subjects a summary of information from an informant. Subjects from 'Bipolar families' were interviewed with the Schedule for Affective Disorders and Schizophrenia, Lifetime Version, Anxiety (Manuzza et al, 1986), and those from 'Schizophrenic families' with Version 9 of the Present State Examination (PSE-9, Wing et al, 1972), supplemented with the Past History Schedule (McGuffin et al, 1986). A single lifetime-ever OPCRIT checklist was completed for each subject using a system which allowed coding of both manic and depressive symptoms, and diagnoses were generated by version 3.31 of the OPCRIT program. Lifetime diagnoses were assigned according to DSM-III-R and RDC systems by a process of consensus after the raters reviewed the total data available on each subject.

The distribution of consensus best estimate lifetime diagnoses in 100 subjects was presented, and the main diagnoses were bipolar disorder (34 subjects for DSM-III-R, 32 for RDC) and schizophrenia (27 subjects for DSM-III-R, 26 for

RDC), although a good spread of diagnoses were represented. Each single rater achieved good agreement between the OPCRIT generated lifetime ever diagnosis and the consensus process of diagnostic assignment ($k>0.80$ for DSM-III-R and $k>0.72$ for RDC). When comparing the consensus diagnostic process with each rater's independently assigned best estimate diagnoses, agreement between the OPCRIT diagnoses and the consensus diagnoses was approximately as good or better.

The authors argued that this study demonstrated good agreement could be achieved between a single rater generating OPCRIT diagnoses and consensus best estimate procedures. Further, they emphasised that OPCRIT was used with data originating from 2 different semi-structured interview systems (PSE and SADS-LA), and there was good validity with both.

OPCRIT is used as part of the data set for the European Science Foundation Programme on the Molecular Neurobiology of Mental Illness (Leboyer and McGuffin, 1991), and in psychiatric genetic research at the National Institute of Mental Health (Berg et al, 1994). Nurnberger et al (1994) have used OPCRIT checklist items in the Diagnostic Interview for Genetic Studies. Further, a range of published studies have used OPCRIT to generate operationally defined diagnoses for research purposes (e.g.. Castle et al, 1991; Kendell et al, 1993; Davies et al, 1995; Balestrieri et al, 1997).

The evidence presented demonstrates that the OPCRIT system is reliable and valid, and a number of authors have commented that it incorporates the particular advantage of being easy and quick to use (McGuffin et al, 1991, Craddock et al,

1996). It has now moved beyond the experimental, and has entered into widespread use in psychiatric research.

f. Diagnostic Stability

It is clear that diagnoses can change from one episode of illness to another. Within the affective psychoses, change from depression to mania and vice versa has long been recognised - indeed, it was Kraepelin (1896) who brought mania and depression together as a single entity, and later Leonhard (1957) suggested division into three groups - unipolar depression, unipolar mania and bipolar - underlining this recognition of a relationship between different presentations of affective illness.

The relationship between schizophrenia and affective disorders has been less clearly delineated, but the literature does contain good descriptions of diagnostic change between these major syndromes. Since Lewis and Piotrowski (1954) described a change in diagnosis from manic depressive illness to schizophrenia in 50% of their cohort of 122 patients, this finding has been well replicated (e.g. Hwu et al, 1988). Similarly, a number of authors have described changes from schizophrenia to manic depressive illness (Ziskind et al, 1971, Sheldrick et al, 1977), and the syndrome of post psychotic depression in schizophrenia, first suggested by Mayer-Gross in 1920, has been well described (McGlashan et al, 1976). Recent studies have confirmed that the diagnosis of schizophrenia is not static, diagnostic flux between bipolar disorder and schizophrenia being relatively common (Chen et al, 1996), and a number of studies have confirmed that large numbers of patients who are diagnosed with schizophrenia received a different diagnosis during their first admission (Munk-Jorgensen, 1985, 1989, Jorgensen et al, 1988).

The principles of diagnosis are fundamental to psychiatric practise (Kendell, 1975), and the related concepts of reliability and validity are central to any diagnostic system. Diagnostic reliability is a measure of the extent to which there is diagnostic agreement between different raters, and diagnostic validity is the extent to which a given diagnosis defines that which it has been designed to define. Of the four types of validity - concurrent validity, predictive validity, construct validity and content validity (Zubin, 1967) - the predictive validity of a psychiatric diagnosis is the most important (Kendell, 1975). Diagnostic stability is related to both reliability and validity and, according to Stanton and Joyce (1993) it is a 'measure of the degree to which psychiatric diagnoses remain unchanged at subsequent psychiatric assessments'. In an ideal world where we could assume maximum reliability, diagnostic stability would then become a measure of the temporal stability of a diagnostic category. If, in the same world, we were able to go one stage further and assume the maximum possible validity of our diagnostic categories, then the measurement of diagnostic stability would be the exact tracing of the temporal course of the major psychiatric disorders.

However, in the real world the concepts of reliability and validity continually present challenges for those who conduct research in psychiatry. These difficulties are reflected in the available literature on diagnostic stability, which comprises many studies of differing design, most attempting to work optimally within the boundaries of reliability and validity. This work cannot provide us with exact tracings of the longitudinal progression of the major psychiatric disorders, but it can yield good approximations. These approximations or outlines tell us little about the

individuals involved, but they do convey something of the heterogeneity of mental illness, and are essential components of our understanding. When considered alongside individual case histories or epidemiological and sociological outcome studies (e.g. Johnstone, 1991), the bare sketchings become portraits which advance our knowledge immeasurably, even though a portrait is a long way from the exact likeness of a modern photograph.

Before the 1970s, the literature on diagnostic stability, though sparse, contained some important work. One of the first studies was a project by Masserman and Carmichael in 1938. They studied 100 patients admitted to a university psychiatry clinic in Chicago over a 12 month period, and reported that over 40% required a 'major revision' of diagnosis. Questions regarding diagnostic reliability and temporal stability had been raised, but there were few answers.

The next important study to attract attention was that of Babigian et al in 1965. The Monroe County case register in New York, established in 1960, was used to study diagnostic consistency. In the study 'initial diagnostic perceptions were compared with subsequent diagnostic perceptions as patients were seen in subsequent episodes of service' in a cohort of 1215 patients. The authors reported considerably greater agreement between different clinicians when diagnosing schizophrenia and chronic brain syndrome when compared with affective psychosis. However, the interval between diagnostic episodes was often very short, 815 of the 1215 subjects being seen for the second time within one week of the first interview, and it is likely that this study measured inter-rater reliability rather than temporal stability.

In 1967, Cooper studied a group of 200 patients which had been included in an earlier cohort study (Brooke, 1963). The subjects were all those first admitted to a mental hospital in England and Wales during the second half of 1955 who were subsequently readmitted 3 times within the next 2 years. In the earlier project, only 20% of the group had retained the same diagnosis using 4 digit ICD categories, and only 37% using 3 digit ICD categories. Cooper designed a project which would investigate some of the reasons for this diagnostic change. ICD categories were divided into broad groups, and it was found that only 54% of patients were allocated to the same diagnostic category on all 4 admissions, although a further 27% received the same diagnosis on 3 of 4 occasions. A significant relationship was demonstrated between change in doctor and change in diagnosis, especially in the neurotic, personality disorder and addictive groups. Of those studied, 16% had evidence of a 'marked change in clinical state', and the most common change was the development of schizophrenia in patients who originally presented with depressive symptoms.

In 1974, Kendell obtained a large semi-random sample of approximately 2000 patients first admitted to a psychiatric bed in England and Wales in 1964, and then readmitted on at least one further occasion before the end of 1969. The four major categories - depressive illness, schizophrenia, dementia and alcoholism - all showed a stability of around 70%, but other categories - anxiety states, paranoid states, confusional states, mania, personality disorder and hysteria - had stability ratings well below 50% (although the stability of mania rose to 72% if the diagnosis of depression was included). He also found no evidence of any transition from

depressive illness to schizophrenia with the passage of time, contrary to that reported earlier by Cooper (1967).

These papers had raised serious questions regarding diagnosis in psychiatry. It seemed that certain diagnostic categories were more stable than others, and that illness constructs commonly changed from one episode to another. However, the nature of these diagnostic changes remained unclear, and the extent to which it was the result of variation between doctors, or of actual changes in clinical state, was largely open to question.

Since the early 1970s, a number of other authors have studied diagnostic stability in different ways. Their results are summarised in figure 1.

Figure 1

Study	Time Interval	Diagnosis	Number of subjects	Stability (percentage)
Kendell (1974)	2.1 years	All depressive illness All schizophrenic illness Mania Alcoholism Anxiety states Personality disorders	870 386 47 99 78 43	69 75 43 67 41 35
Tsuang et al (1981)	30 to 40 years	Schizophrenia Bipolar disorder Unipolar disorder Affective disorder	93 25 35 60	92.5 56 62.9 78.3
Jorgensen et al (1988)	2 years	Schizophrenia Manic depressive psychosis Reactive psychosis Paranoia	122 384 475 147	74.6 72.9 49.7 48.3

Lenz et al (1991)	7 years	Schizophrenia	60	80
		Schizoaffective disorder	32	84.4
		Major affective disorder	62	72.6
		Paranoid disorder	19	31.6
		Other nonorganic psychoses	10	30
Marneros et al (1991)	25.2 years	Schizophrenia	165	90
		Melancholia	96	79
		Mania	21	14
		Schizodepressive	48	58
Rice et al (1992)	6 years	Major depression	519	74
		Hypomania	100	33
		Alcoholism	196	80
		Drug use disorder	72	74
		Generalized anxiety disorder	112	29
Stanton et al (1993)	5 years	Schizophrenia	560	67
		Affective disorder	847	67
		Affective psychoses	345	53
		Other psychoses	192	22
		Personality disorder	245	36
		Substance abuse	700	86
Chen et al (1996)	7 years	Schizophrenia	256	78.1
Chen et al (1998)		Bipolar disorder	235	71.1
Daradkeh et al (1997)	1.8 years	Schizophrenia	31	87
		Bipolar disorder	23	87
		Depressive disorder	18	73

Figure 1 continued

Tsuang et al (1981) studied diagnostic stability in a group of patients with schizophrenia and affective disorders over a 30 to 40 year period. A total of 525 patients, consecutive admissions to the University of Iowa Psychiatric Hospital during the period 1934 to 1944, were selected and separated into schizophrenic, bipolar and unipolar groups. A control group of 160 surgical patients admitted to the same centre during the same period for appendicectomy or herniorrhaphy was

also selected, and 97% of subjects were traced to death or current address. A total of 221 subjects were subsequently interviewed blind to initial diagnosis using the Iowa Structured psychiatric Interview, and final lifetime diagnoses were then assigned to all patients. 92.5% of subjects with a diagnosis of schizophrenia and 78.3% of those with a diagnosis of affective disorder received the same diagnosis at follow up.

Jorgensen et al (1988) undertook a study based on information derived from the Danish Psychiatric Register. They reported the incidence of first onset of functional psychosis as 55 per 100 000 inhabitants in 1984, and found that during the 2 year observation period half of the subjects were readmitted, and 40% had their diagnosis changed. They reported diagnostic stability ratings for schizophrenia (74.6%), manic depressive psychosis (72.9%), reactive psychosis (49.7%) and paranoia (48.3%).

Lenz et al (1991) undertook a 7 year follow up study of 200 first admissions with diagnoses corresponding to the functional psychoses. 186 of the subjects were traced, and a course diagnosis was applied to each. Temporal stability ratings were calculated using a number of diagnostic criteria, and they found that schizophrenia and affective disorder received high stability values, no matter which set of diagnostic criteria were used.

Marneros et al (1991) investigated the syndrome shift during the course of disease in 355 patients with functional psychoses over a mean observation time of 25.2 years. They found that patients with an initial diagnosis of schizophrenia displayed the greatest stability - in fact 90% of them had no other type of episode.

Most of the patients who suffered an initial episode of melancholia remained unipolar melancholics or developed manic symptomatology, and only a few suffered schizoaffective or schizophrenic episodes. Patients with manic symptomatology at the beginning displayed highly unstable and changeable courses.

Rice et al (1992) reported a well designed prospective investigation with large numbers of subjects which was a substudy of a larger project (The National Institute of Mental Health Collaborative Program on the Psychobiology of Depression - Katz et al, 1979, Andraesen et al, 1987). Although a broad diagnostic range was represented, schizophrenia was only present in 4 subjects. After 6 years, alcoholism and major depression showed diagnostic repeat of 80% and 74% respectively, whereas hypomania and generalized anxiety disorder showed the relatively poor levels of 29% and 33% respectively. A gradient was demonstrated within the major depressive disorders such that those with more symptoms at initial assessment had higher levels of diagnostic repeat (53% for those with 3 symptoms compared with 91% for those with 8 symptoms), and those who had received treatment had significantly higher levels than those who did not (83% compared with 64%).

Stanton and Joyce (1993) used a nationwide case register of inpatient admissions to examine the stability of first admission psychiatric diagnoses assigned in New Zealand hospitals in 1980 and 1981. Their aims were threefold - to determine the diagnostic stability of first admission diagnoses, to elucidate patterns of diagnostic stability, and to study the influence of age, time out of hospital and change of hospital on the stability of diagnosis. The data set contained 3184

patients with two or more admissions over the 5 year follow up period, and the authors reported high levels of stability for the initial diagnoses of substance abuse disorders (86%), anorexia nervosa (70%), schizophrenia (67%) and affective disorders (67%). Poor levels of stability were noted for the initial diagnoses of personality disorder (36%), other psychoses (22%) and other neuroses (20%). They also found that for patients with schizophrenia, a change of hospital was the strongest factor causing diagnostic instability, with time between admissions and age at first admission also having a significant influence.

Chen et al (1996) used a longitudinal study design and examined data collected over a 7 year period at an urban acute psychiatric hospital in Houston. Of the 256 patients who received a diagnosis of schizophrenia at the beginning of the study, 21.9% received a different diagnosis at subsequent hospitalisation. An additional 680 subjects received an initial diagnosis other than schizophrenia, and 32.8% of them were later diagnosed as suffering from schizophrenia. Chen et al (1998) later reported that of 235 subjects with an initial diagnosis of bipolar disorder, 28.9% received a different diagnosis at later hospitalisation, while 16.1% of the 701 subjects who initially received a non bipolar disorder diagnosis subsequently changed diagnosis to bipolar disorder.

Daradkeh et al (1997) examined the stability of ICD-10 diagnoses in small numbers of patients admitted to an inpatient psychiatric unit in the United Arab Emirates over a study period of 1.8 years. They reported high levels of diagnostic stability for schizophrenia (87%), bipolar disorders (87%) and depressive disorders (73%), but found poor levels of stability for patients with other conditions.

Despite refinements in the area of diagnosis over the decades, and the use of large studies involving multiple investigators and prospective designs on an international basis, the available literature on the subject of diagnostic stability remains frustrating. The measurement of diagnostic repeat has been the aim of most investigators, usually between one episode of illness and another, but diagnostic methods have varied considerably. Some investigators have gathered diagnostic information retrospectively from case notes, others have assigned diagnoses on the basis of case note information or ordinary clinical interview. Some have used teams of diagnosticians, others have used only one clinician, and some have used research diagnostic instruments while others have not.

Almost all investigators have reported levels of diagnostic repeat in percentage terms, but despite this the direct comparison between one paper and another has often been difficult because of important methodological differences. Nonetheless, it is clear that schizophrenia, affective disorders and substance abuse disorders have consistently higher reported levels of stability than personality disorders, neurotic disorders, or other psychoses.

Few authors have attempted the study of factors involved in diagnostic change, but of those who have, change of doctor (Cooper, 1967) change of hospital (Stanton et al, 1993), gender and ethnic factors (Chen et al, 1996) and substance abuse (Chen et al, 1998) have been implicated . Although these findings themselves raise serious questions about diagnostic change, the nature and range of studies undertaken indicate that diagnostic instability is not simply the reassignment of a static clinical state to a different diagnostic category by a new clinician. Neither,

however, can it currently be assumed that population changes in diagnosis necessarily reflect formal changes in clinical state. It is likely that the truth lies somewhere in the middle, but it is certainly clear that large studies with prospective design and diagnostic assignment using properly validated research instruments are indicated.

METHODOLOGY

In the first instance, approval for the study was obtained from Edinburgh Healthcare NHS Trust and from the Lothian Research Ethics Committee.

Subsequently, the Lothian Psychiatric Case Register was used to identify a group of subjects who had undergone a period of in-patient care at the Royal Edinburgh Hospital. All patients discharged from the Royal Edinburgh Hospital during the period studied had exit diagnoses coded by their supervising clinicians according to ICD-9 (WHO, 1978).

There were three stages to the method - subject selection, data collection, and data analysis.

a. Subject Selection

From the total number of patients discharged during the period, a subgroup was selected according to four sets of criteria:

1. All subjects were discharged from in-patient care at the Royal Edinburgh Hospital during the two year period 1st January 1993 until 31st December 1994.
2. All subjects selected were aged between 18 and 55 at the time of discharge.
3. All subjects had a minimum of 2 admissions to the Royal Edinburgh Hospital (there was no maximum limit to the number of admissions).
4. All those selected had ICD-9 exit diagnoses corresponding to the functional psychoses. They had all received exit codes from the following categories:

295.0 - schizophrenic psychoses

296.0 - affective psychoses

297.0 - paranoid states

298.0 - other non organic psychoses

In total, 998 patients fulfilled the necessary criteria. For the purposes of the study an attempt was made to examine the case notes of as many of these subjects as possible. Of those subjects selected from the larger group of 998, 71 patients who had been under the care of the consultants supervising the project were studied in the first instance. A further 133 subjects were selected by a method which was designed to allow for an adequate spread of diagnostic categories. This method involved dividing exit diagnoses (the last diagnosis that subject had received during their most recent admission to hospital) into three categories - schizophrenia, affective and other - and then choosing approximately equal numbers from each category by choosing a random number. Therefore, these 133 subjects were chosen by a method which could be described as stratified random sampling.

An additional 17 subjects were excluded from the study because their case notes were missing, and a further 26 were excluded because their case notes were substantially incomplete.

b. Data Collection

The following basic data was collected on all 204 subjects - age, sex, marital status, employment status, age of onset of the condition, number of admissions, dates of all admissions, history of alcohol or drug abuse, family history of mental illness and clinical exit diagnosis for each admission from first to last. It is

important to note that the index admission was also the exit admission, and that this refers to the most recent admission to hospital of that subject. Therefore, all other admissions took place before the index admission, and were studied retrospectively.

A period of training was undertaken in the use of the OPCRIT computer programme (McGuffin et al, 1991), with colleagues in the University Department of Psychiatry, and 30 introductory training case sample vignettes, supplied by the authors of OPCRIT, were completed.

The OPCRIT computer programme, version 3.31, consisting of a 90 item data sheet, was then applied to the case notes of each selected subject. The first and last admissions were examined in all cases. For those subjects who had a total of 2, 3, 4 or 5 admissions, each admission was examined by OPCRIT, while for those who had more than 5 admissions, the first, last, and three other randomly selected admissions were studied.

c. Data Analysis

The OPCRIT programme was used to generate diagnoses according to 12 separate operational criteria for each of the 204 subjects. From this, information on the following 5 operational criteria was recorded for further study:

DSM-IIIR (American Psychiatric Association, 1987)

Research Diagnostic Criteria (Spitzer et al, 1975)

St. Louis Criteria (Feighner et al, 1972)

Schneider's First Rank Symptoms (Schneider, 1959)

ICD-10 (World Health Organisation, 1993)

A unitary coding system was then designed to allow diagnostic comparison between clinical exit diagnoses and diagnoses according to the various operational criteria (appendix I).

All data were analysed using SPSS 7.5 for Windows (1996). Demographic and diagnostic data were analysed by frequencies and descriptives. Diagnostic stability, a measure of the repetition of a diagnosis from one episode to another, was determined for each diagnosis and for each of the diagnostic criteria. The frequency and nature of any diagnostic movement was calculated and described.

Subjects were then arranged into 5 diagnostic groups, as follows, and the groups were compared in terms of their demographic and admission data.

1. The **schizophrenic** group comprised subjects who received a main diagnosis of schizophrenia according to at least four of the five sets of OPCRIT criteria on at least 2 admissions.
2. The **manic depressive** group comprised subjects who received a main diagnosis of mania according to at least three of four sets of OPCRIT criteria on at least two admissions, or who received a diagnosis of mania for at least one admission and a diagnosis of depression for at least one other admission according to at least three of four sets of OPCRIT criteria (as Schneider's first rank symptoms do not code for mania or depression).

3. The **depressive** group comprised subjects who received a main diagnosis of depression according to at least three of four sets of OPCRIT criteria on at least two admissions.

4. The **atypical** group comprised subjects who received a main diagnosis which was not schizophrenia, mania or depression according to at least four of five sets of OPCRIT criteria on at least two admissions.

5. The **inconsistent** group comprised subjects whose diagnosis showed no consistency and fitted none of the other categories.

RESULTS

a. A Description of the Sample

Of the 998 patients who fulfilled the necessary inclusion criteria, 204 were selected for further examination by the method described. An additional 17 subjects were excluded from the study because their case notes were missing, and a further 26 were excluded because their case notes were substantially incomplete. All subjects had at least 2 admissions examined, and of those 147 had at least 3 admissions examined, 102 had at least 4 admissions examined, and 80 had at least 5 admissions examined. In total, 737 admissions were studied.

Of the 204 subjects studied, 103 were men and 101 women. The mean age of onset for the whole group was 26.10 years (standard deviation 7.88), although the men had an earlier mean age of onset of 25.13 years, than the women, 27.37 years. 90 subjects were married or in long term relationships during the 2 year period studied, while 114 were single. 117 subjects were employed (including women working full time in the home and students attending full time courses), while 87 were unemployed.

31 subjects had a history of poor premorbid work adjustment, 27 had a history of poor premorbid social adjustment, and 8 had a history of premorbid personality disorder. Measures of these items relate to the period before the onset of psychotic symptoms, and are according to the definitions given within the OPCRIT help glossary.

52 subjects had a history of alcohol or drug abuse within one year of the onset of psychotic symptoms, 21 had a family history of schizophrenia, defined as a

definite history of schizophrenia in a first or second degree relative, and 75 subjects had a family history of another psychiatric illness severe enough to warrant psychiatric referral.

None of the subjects studied had evidence from physical examination or special examinations of physical illness which could explain their mental symptoms, but 65 had evidence of a definite psychosocial stressor prior to the onset of their condition - defined as a severely or moderately severely threatening event which occurred prior to the onset of the disorder, which was unlikely to have resulted from the subjects own behaviour (and could therefore be seen as independent or uncontrollable).

The mean number of admissions per lifetime was 5.9 (standard deviation 5.1), with a minimum of 2 and a maximum of 35. The mean total length of admission per lifetime was 37.3 weeks (standard deviation 47.7) with a minimum of 1.0 weeks and a maximum of 376.0 weeks. The mean length of admission per year was 6.8 weeks (standard deviation 6.7) with a minimum of 0.2 weeks and a maximum of 40.3 weeks.

This description of the sample is summarised in figure 1, overleaf:

Figure 1

Sex	-	103 males 101 females
Admissions examined	-	at least 2 - 204 subjects at least 3 - 147 subjects at least 4 - 102 subjects at least 5 - 80 subjects
Age of onset	-	mean - 26.10 (S.D. 7.88) range - 15 to 55
Marital status	-	single 114 married 90
Employment	-	employed 117 unemployed 87
Poor premorbid work adjustment	-	31
Poor premorbid social adjustment	-	27
Premorbid personality disorder	-	8
History of alcohol or drug abuse	-	52
Family history of schizophrenia	-	21
Family history of other psych. illness	-	75
Coarse brain disease prior to onset	-	0
Definite psychosocial stressor	-	65
Total length of admission (weeks)	-	mean - 37.3 (range 1.0 - 376.0) (S.D. 47.7)
Total number of admissions	-	mean - 5.9 (range 2 - 35) (S.D. 5.1)
Average admission length per yr(wks)	-	mean - 6.8 (range 0.2 - 40.3) (S.D. 6.7)

b. The Diagnostic Spread

Diagnoses were assigned in keeping with the unitary coding system given in Appendix I, and the frequencies of clinical diagnoses and diagnoses according to each of the selected operational criteria were determined for each admission.

The results of the diagnostic spread are presented in six sections, one for each of the diagnostic measures used:

1. Clinical Diagnoses

Clinical diagnoses according to the ICD-9 coding system are summarised in figure 2. The most important findings were as follows:

45.5% of subjects received an initial diagnosis of depression, mania or bipolar disorder. Of those, 22.5% received an initial diagnosis of depression, and this number increased to 27.5% at admission 2 and to 29.9% at admission 3. However, by admission 5, those with a diagnosis of depression amounted to only 14% of the total. At the same time, the number of subjects receiving a diagnosis of mania was 13.7% for admissions 1 and 2, and although the frequency of this diagnosis dropped to 8.8% for admission 3 and 4.9% for admission 4. By admission 5, 10% of the total received a diagnosis of mania. 9.3% of patients received an initial diagnosis of bipolar disorder, and this diagnostic category showed a steady increase in numbers of subjects assigned to it such that by admission 5, 18.9% of the total received a diagnosis of bipolar disorder. By admission 5, 42.9% of the subjects received a diagnosis of depression, mania or bipolar disorder.

27% of subjects received a diagnosis of schizophrenia at admission 1, and this number showed a steady increase, peaking at 51% of the total by admission 4, and settling at 49.5% of the total by admission 5.

11.3% of subjects received an initial diagnosis of other nonorganic psychotic disorder at admission 1, and this number showed a steady decrease from admission 1 through 5 such that by admission 5 only 3.8% of the total were in this diagnostic category.

A total of 15.3% of subjects received diagnoses of neurotic disorders, personality disorders or other conditions at admission 1, and this number decreased such that by admission 5 no subjects received diagnoses from any of these categories.

Figure 2

Clinical diagnoses (valid percent)

	Admission 1	Admission 2	Admission 3	Admission 4	Admission 5
No diagnosis	0	0	0	0	0
Depression	22.5	27.5	29.9	21.6	14
Mania	13.7	13.7	8.8	4.9	10
Bipolar	9.3	10.8	10.9	12.7	18.9
Schizophrenia	27	35.3	38.8	51	49.5
Schizoaff disorder	1	1.5	2	0	3.8
Atypical psychosis	0	0	0	0	0
Delusional disorder	0	0	0	0	0
Other nonorganic psychotic disorder	11.3	8.3	7.5	4.9	3.8
Neurotic disorders	1.5	0	0	1	0
Personality disorders	2	1.5	0	0	0
Other conditions	11.8	1.5	2	3.9	0

2. DSM IIIR Diagnoses

Diagnoses according to DSM IIIR are summarised in figure 3. The main findings were as follows:

13.2% of subjects fell into no diagnostic category at admission 1, and the frequency of this diagnostic category remained similar for admissions 1 through 5 such that by admission 5, 15% of subjects remained in no diagnostic category.

In total, 33.4% of subjects received a diagnosis of depression, mania or bipolar disorder at admission 1, and the frequencies of each of these diagnostic categories remained similar for admissions 1 through 5 such that by admission 5, 33.8% of the total received these diagnoses.

24% of subjects received an initial diagnosis of schizophrenia, and this figure showed a steady increase from admissions 1 through 4, peaking at 38.2% for admission 4 before settling at 37.5% for admission 5.

There was a general decrease in those receiving diagnoses of delusional disorder or other nonorganic psychotic conditions from admissions 1 through 5.

Figure 3

DSM IIIR diagnosis (valid percent)

	Admission 1	Admission 2	Admission 3	Admission 4	Admission 5
No diagnosis	13.2	10.8	15.9	14.7	15
Depression	17.2	16.7	17.2	14.7	17.5
Mania	14.2	16.7	15.2	13.7	15
Bipolar	2	1.5	0.7	1	1.3
Schizophrenia	24	25.1	26.5	38.2	37.5
Schizoaff disorder	2.9	2	1.3	1	0
Atypical psychosis	16.2	18.2	16.6	14.7	12.5
Delusional disorder	2.9	3.4	2	2	0
Other nonorganic psychotic conditions	7.4	5.4	4.6	0	1.3
Neurotic disorders	0	0	0	0	0
Personality disorders	0	0	0	0	0
Other conditions	0	0	0	0	0

3. Feighner Diagnoses

Diagnoses according to the Feighner criteria are summarised in figure 4. The main findings were as follows:

70.6% of subjects fell into no diagnostic category at admission 1, but this number showed a decrease such that by admission 4, 57.8% of subjects received no diagnosis and by admission 5, 61.3% of subjects received no diagnosis.

In total, 11.3% of subjects received a diagnosis of depression or mania at admission 1. The frequencies of these diagnoses remained similar for admissions 1 through 4, but dropped to 7.5% of the total by admission 5.

18.1% of subjects received a diagnosis of schizophrenia at admission 1, and this number showed a steady increase for admissions 2 through 5 such that by admission 5, 31.3% of the total received this diagnosis.

Figure 4

Feighner diagnoses (valid percent)

	Admission 1	Admission 2	Admission 3	Admission 4	Admission 5
No diagnosis	70.6	70.6	68.2	57.8	61.3
Depression	9.3	9.8	9.9	7.8	7.5
Mania	2	2	1.3	2.9	0
Schizophrenia	18.1	17.6	20.5	31.4	31.3

4. ICD 10 Diagnoses

The diagnoses according to ICD 10 are summarised in figure 5. The most important findings were as follows:

20.1% of subjects fell into no diagnostic category at admission 1. This figure remained similar until admission 4 when it fell to 14.7%, and then to 13.8% at admission 5.

In total, 30.4% of subjects received diagnoses of depression or mania at admission 1. Frequencies for these diagnoses remained similar for admissions 1 through 5 such that by admission 5, 31.3% of subjects fell into these diagnostic categories. Only 0.5% of subjects received an initial diagnosis of bipolar disorder, and by admission 5 no subjects were in this category.

28.9% of subjects received an initial diagnosis of schizophrenia. The frequency of this diagnosis remained similar, but increased to 36.3% at admission 4 and 30% at admission 5.

1% of subjects received a diagnosis of delusional disorder at admission 1, and this figure showed a general increase from admissions 1 through 5 such that by admission 5, 5% of subjects received such a diagnosis.

17.6% of subjects received an initial diagnosis of other nonorganic psychotic conditions. This frequency remained similar for admissions 1 through 5, with 20% of subjects receiving this diagnosis at admission 5.

Figure 5

ICD 10 diagnoses (valid percent)

	Admission 1	Admission 2	Admission 3	Admission 4	Admission 5
No diagnosis	20.1	19.1	20.5	14.7	13.8
Depression	15.2	15.7	17.2	13.7	17.5
Mania	15.2	16.2	13.2	12.7	13.8
Bipolar disorder	0.5	1	0	0	0
Schizophrenia	28.9	28.4	27.2	36.3	30
Schizoaff disorder	1.5	0.5	2	1	0
Atypical psychosis	0	0	0	0	0
Delusional disorder	1	3.4	2.6	4.9	5
Other nonorganic psychotic disorders	17.6	15.7	17.2	16.7	20

5. Research Diagnostic Criteria Diagnoses

Diagnoses according to the Research Diagnostic Criteria are summarised in figure 6. The most important findings were as follows:

5.9% of subjects fell into no diagnostic category at admission 1, and this figure remained similar for admissions 1 through 4, but peaked at 8.8% of the total for admission 5.

35.4% of subjects received initial diagnoses of depression, mania or bipolar disorder , and, although the frequency of mania showed a slight increase from admissions 3 through 5, and bipolar disorder showed a decrease from admission 3, the total number of subjects in these categories remained similar for admissions 1 through 5, with 37.5% of subjects falling into these categories at admission 5.

27.9% of subjects received an initial diagnosis of schizophrenia, and the frequency of this diagnosis increased gradually such that by admission 5, 40% of subjects received this diagnosis.

19.1% of subjects received a diagnosis of schizoaffective disorder at admission 1, and the numbers of subjects falling into this category decreased from admission 1 through 5 such that by admission 5, 7.5% of subjects received this diagnosis.

11.8% of subjects received a diagnosis of other nonorganic psychotic disorders at admission 1. Although the frequency of this diagnosis showed an increase to 14.2% at admission 2, there followed a gradual decrease, such that by admission 5 only 6.3% of subjects fell into this diagnostic category.

Figure 6

RDC diagnoses (valid percent)

	Admission 1	Admission 2	Admission 3	Admission 4	Admission 5
No diagnosis	5.9	4.4	5.3	6.9	8.8
Depression	21.1	23.5	24.5	21.6	22.5
Mania	11.8	11.8	13.9	16.7	15
Bipolar disorder	2.5	2	0	1	0
Schizophrenia	27.9	31.9	30.5	35.3	40
Schizoaff disorder	19.1	12.3	13.2	10.8	7.5
Other nonorganic psychotic disorders	11.8	14.2	12.6	7.8	6.3

6. Symptoms of the First Rank

The presence of symptoms of the first rank according to Schneiderian criteria are summarised in figure 7. At first admission, 30.9% of subjects exhibited symptoms of the first rank, a figure which remained similar for admissions 1 through 5 such that by admission 5, 27.5% of subjects exhibited symptoms of the first rank.

Figure 7

Symptoms of the First Rank (valid percent)

	Admission 1	Admission 2	Admission 3	Admission 4	Admission 5
Absent	69.1	70.6	76.8	65.7	72.5
Present	30.9	29.4	23.2	34.3	27.5

c. Diagnostic Stability

Diagnostic stability, a measure of the frequency of diagnostic repeat from one episode to another, was determined for each diagnosis for the clinical data, and for all of the selected operational criteria. The results are presented as valid percentages, and only diagnostic groups containing more than 10 subjects are included.

As with the diagnostic spread, the results are presented in six sections, one for each of the diagnostic measures used.

1. Clinical Diagnostic Stability

The results for clinical diagnostic stability are summarised in figure 8. The main findings are as follows:

Over the five admissions studied, the diagnosis of schizophrenia had by far the highest stability ratings, with 96.4% of those who had 5 admissions examined and who had received a diagnosis of schizophrenia at admission 1 retaining the diagnosis at admission 5. The next most stable diagnosis was depression, which showed relatively high stability ratings in the region of 60 to 70% between consecutive admissions, though a considerably lower stability rating between admissions 1 and 5 of 23.5%. Mania and bipolar disorder followed with stability values of over 50% from admissions 1 to 2, after which the values began to fall off. By admission 3 the group receiving a diagnosis of mania had become too small for further presentation.

Those who received an initial diagnosis of other nonorganic psychotic conditions showed an initial low stability of 30.4%, with the result that the group

became very small and the rest of the results non applicable. The group of 24 subjects with diagnoses of other conditions showed very poor stability levels between admissions 1 and 2 of 4.2%. 12 of the same subjects were examined at admission 5, at which point none of them fell into the category of no diagnosis.

Figure 8

	Admission 1 to Admission 2	Admission 2 to Admission 3	Admission 3 to Admission 4	Admission 4 to Admission 5	Admission 1 to Admission 5
Depression	67.4%	69.2%	60.7%	71.4%	23.5%
Mania	57.1%	23.8%	n/a	n/a	30.0%
Bipolar disorder	52.6%	26.7%	41.7%	40.0%	n/a
Schizophrenia	83.6%	87.7%	97.9%	90.7%	96.4%
Other nonorganic psychotic conditions	30.4%	n/a	n/a	n/a	n/a
Other conditions	4.2%	n/a	n/a	n/a	0.0%

NB. n/a refers to a group containing less than 10 subjects.

2. DSM IIIR Diagnostic Stability

The results for DSM IIIR diagnostic stability are summarised in figure 9. The main findings were as follows:

Once again, those who received a diagnosis of schizophrenia displayed the highest stability values, with results of over 80% between each consecutive admission for admissions 1 to 5. The stability value between admissions 1 and 5 was 75%.

The DSM IIIR diagnosis of mania also displayed consistently high stability values in the region of 70%, while depression showed lower values in the region of 50 to 60%.

The group of 33 subjects which attracted an initial diagnosis of atypical psychosis had stability values which were lower again, while the group of 27 subjects which received no diagnosis at admission 1 displayed a very low initial stability of 18.5%, before settling at a level of over 40%. By admission 4 this group had become too small for further presentation.

Figure 9

	Admission 1 to Admission 2	Admission 2 to Admission 3	Admission 3 to Admission 4	Admission 4 to Admission 5	Admission 1 to Admission 5
No diagnosis	18.5%	47.4%	40.0%	n/a	n/a
Depression	51.4%	65.2%	60.0%	60.0%	n/a
Mania	75.0%	70.8%	73.3%	69.2%	63.6%
Schizophrenia	83.7%	81.0%	91.4%	84.8%	75.0%
Atypical psychosis	27.3%	42.9%	52.9%	33.3%	30.0%
Other nonorganic psychotic disorders	26.7%	n/a	n/a	n/a	n/a

3. Research Diagnostic Criteria Stability

The stability results for the Research Diagnostic Criteria are summarised in figure 10.

12 subjects fell into no diagnostic category at admission 1, but this group was completely unstable, and by admission 2 none of the subjects remained in this category.

Both schizophrenia and mania showed consistently high stability values of over 70% between consecutive admissions, with mania displaying a stability of 83.3% between admissions 1 and 5 and schizophrenia displaying a stability of 65.5% between admissions 1 and 5.

Depression was the next most stable diagnosis, with ratings in the region of 60 to 70% between consecutive admissions, and a stability value of 50.0% between admissions 1 and 5.

A total of 39 subjects received a diagnosis of schizoaffective disorder at admission 1, but this diagnosis showed low stability values in the region of 30 - 40%, such that by admission 3 the group had become too small for further presentation. 19 of the original group of 39 subjects were examined at admission 5, but at that stage only 5.3% retained a diagnosis of schizoaffective disorder.

The diagnosis of other nonorganic psychotic disorders also displayed low stability ratings in the region of 30 to 40%, and by admission 3 the group had become too small for further presentation.

Figure 10

	Admission 1 to Admission 2	Admission 2 to Admission 3	Admission 3 to Admission 4	Admission 4 to Admission 5	Admission 1 to Admission 5
No diagnosis	0%	n/a	n/a	n/a	n/a
Depression	69.8%	71.4%	62.5%	73.3%	50.0%
Mania	70.8%	76.9%	76.9%	78.6%	83.3%
Schizophrenia	71.9%	76.0%	80.0%	74.2%	65.5%
Schizoaffective disorder	30.8%	38.9%	n/a	n/a	5.3%
Other nonorganic psychotic disorders	41.7%	37.5%	n/a	n/a	n/a

4. Feighner Diagnostic Stability

The stability results for Feighner criteria are summarised in figure 11.

144 subjects fell into the no diagnosis category at admission 1. This group remained extremely stable, with ratings in the region of 80% between consecutive admissions. Of the group of 144 subjects, 50 had 5 admissions examined, and of this group 88.4% retained no diagnosis at admission 5.

37 subjects received a diagnosis of schizophrenia at admission 1, and this group displayed consistently high stability ratings in the region of 80 to 90 %.

The diagnosis of depression showed an initially low stability rating of 36.8%, and by admission 3 this group had become too small for further presentation. Only

4 subjects received an initial diagnosis of mania according to this set of criteria, and the group was too small for presentation.

Figure 11

	Admission 1 to Admission 2	Admission 2 to Admission 3	Admission 3 to Admission 4	Admission 4 to Admission 5	Admission 1 to Admission 5
No diagnosis	84.0%	87.0%	79.1%	88.4%	88.4%
Depression	36.8%	66.7%	n/a	n/a	n/a
Schizophrenia	78.4%	86.2%	96.0%	85.7%	85.7%

5. The Stability of Symptoms of the First Rank

The stability ratings for symptoms of the first rank are summarised in figure 12.

At admission 1, 63 subjects exhibited symptoms of the first rank, while 141 subjects did not. The group in which symptoms were absent displayed high stability ratings in the region of 80%, while the group in which symptoms were present showed poorer and more widely fluctuating stability values.

Figure 12

	Admission 1 to Admission 2	Admission 2 to Admission 3	Admission 3 to Admission 4	Admission 4 to Admission 5	Admission 1 to Admission 5
First rank symptoms absent	87.9%	85.8%	78.2%	88.2%	85.7%
First rank symptoms present	68.3%	44.4%	75.0%	55.2%	48.4%

6. The Stability of ICD 10 Diagnoses

The stability of diagnoses according to ICD 10 are summarised in figure 13.

59 subjects received a diagnosis of schizophrenia, and 31 subjects a diagnosis of mania at admission 1. These diagnoses displayed the highest stability ratings according to ICD 10 criteria, while the diagnosis of depression displayed lower stability ratings, and by admission 5 the group had become too small for further presentation.

36 subjects received an initial diagnosis of other nonorganic psychotic disorders. This group had consistently low stability ratings in the region of 30 to 40%, and by admission 5 had become too small for further presentation.

41 subjects fell into no diagnostic category at admission 1, and this group also displayed low stability ratings in the region of 30 to 40%. By admission 4 this group had become too small for further presentation.

Figure 13

	Admission 1 to Admission 2	Admission 2 to Admission 3	Admission 3 to Admission 4	Admission 4 to Admission 5	Admission 1 to Admission 5
No diagnosis	31.7%	43.3%	31.6%	n/a	22.2%
Depression	58.1%	72.7%	50.0%	60.0%	n/a
Mania	67.7%	54.5%	69.2%	75.0%	63.6%
Schizophrenia	69.5%	68.9%	83.9%	61.3%	57.6%
Other nonorganic psychotic disorders	36.1%	36.0%	44.4%	53.8%	n/a

d. Diagnostic Movement

The numbers of subjects changing clinical diagnoses between each admission were determined, and are presented in figure 13. A total of 92 of 204 subjects changed diagnosis between admissions 1 and 2, while 58 of 147 subjects changed diagnosis between admissions 2 and 3. 30 of 102 subjects changed diagnosis between admissions 3 and 4, while 24 of 80 subjects changed diagnosis between admissions 4 and 5. Of the 80 subjects who had 5 admissions examined, 45 changed diagnosis between admissions 1 and 5.

Figure 13

	Number of subjects	Valid percentage
Admission 1 to 2	92 (out of 204)	45.1%
Admission 2 to 3	58 (out of 147)	39.5%
Admission 3 to 4	30 (out of 102)	29.4%
Admission 4 to 5	24 (out of 80)	30.0%
Admission 1 to 5	45 (out of 80)	56.2%

The most frequent diagnostic changes were determined for each episode studied for the clinical information and for each of the selected operational criteria. All diagnostic movements involving more than 4 subjects are presented in six sections, one for each diagnostic measure used.

1. Clinical Diagnostic Movement

The most frequent changes in clinical diagnosis are summarised in figure 14.

There was frequent diagnostic movement between the diagnoses of depression, mania and bipolar disorder, but little movement to other non-affective diagnoses apart from 5 subjects who changed diagnosis from depression to schizophrenia between admissions 1 and 5, and 4 subjects who changed diagnosis from depression to other nonorganic psychotic disorders between admissions 2 and 3.

There was little movement away from a diagnosis of schizophrenia, but 10 subjects moved from a diagnosis of other nonorganic psychotic disorders to schizophrenia between admissions 1 and 2. In addition, large numbers of subjects moved from a diagnosis of other conditions to diagnoses of depression and schizophrenia between admissions 1 and 2. Thus, there was early movement of clinical diagnoses away from less clearly defined disorders and towards more definitive diagnoses.

Figure 14

NB. Other NOPD refers to other nonorganic psychotic disorders

From	To	Admission number	Number of subjects
Depression	Bipolar disorder	1 to 2	5
	Other NOPD	2 to 3	4
	Bipolar disorder	3 to 4	4
	Bipolar disorder	4 to 5	4
	Bipolar disorder	1 to 5	6
	Schizophrenia	1 to 5	5
Mania	Depression	2 to 3	6
	Bipolar disorder	2 to 3	7
	Bipolar disorder	1 to 5	5
Bipolar disorder	Depression	2 to 3	4
	Mania	2 to 3	4
	Mania	4 to 5	6
Other NOPD	Schizophrenia	1 to 2	8
	Depression	2 to 3	4
	Bipolar disorder	1 to 5	4
Other conditions	Depression	1 to 2	10
	Schizophrenia	1 to 2	9
	Depression	1 to 5	5

2. DSM IIIR Diagnostic Movement

The most frequent changes in DSM IIIR diagnoses are summarised in figure 15.

There was frequent early movement from no diagnosis towards affective diagnoses, and the movement continued towards a diagnosis of depression with later admissions. In addition, there was early movement away from a diagnosis of depression and towards mania and delusional disorder. There was very little movement towards a diagnosis of bipolar disorder, and some early movement from mania towards delusional disorder.

Some subjects changed from schizophrenia to no diagnosis after admission 4, but otherwise there was little movement away from a diagnosis of schizophrenia.

There was consistent movement away from a diagnosis of delusional disorder towards several other diagnostic categories, and frequent change of diagnosis from other nonorganic psychotic disorder to delusional disorder between admissions

1 and 2.

Figure 15

From	To	Admission number	Number of subjects
No diagnosis	Depression	1 to 2	12
	Mania	1 to 2	4
	Depression	3 to 4	5
	Depression	4 to 5	5
	Depression	1 to 5	5
Depression	Mania	1 to 2	4
	Delusional disorder	1 to 2	7
	No diagnosis	2 to 3	4
	No diagnosis	3 to 4	4
Mania	Delusional disorder	1 to 2	4
Schizophrenia	No diagnosis	4 to 5	4
	No diagnosis	1 to 5	5
Delusional disorder	Mania	1 to 2	4
	Schizophrenia	1 to 2	4
	Depression	2 to 3	4
	Schizophrenia	2 to 3	4
	No diagnosis	3 to 4	4
Other NOPD	Delusional disorder	1 to 2	7

3. Research Diagnostic Criteria Movement

The most frequent changes in Research Diagnostic Criteria diagnoses are summarised in figure 16.

There was early movement away from no diagnosis and towards diagnoses of depression or schizophrenia, with additional movement from a diagnosis of depression towards schizophrenia, other nonorganic psychotic disorders and no diagnosis.

There was some movement away from a diagnosis of schizophrenia towards no diagnosis between admissions 2 and 3, 4 and 5 and 1 and 5, and movement towards schizoaffective disorder between admissions 2 and 3.

There was consistent movement away from a diagnosis of schizoaffective disorder, initially to diagnoses of depression and mania, and then later to a diagnosis of schizophrenia, and there was early movement away from a diagnosis of other nonorganic psychotic disorder towards schizophrenia and schizoaffective disorder.

Figure 16

From	To	Admission number	Number of subjects
No diagnosis	Depression	1 to 2	5
	Schizophrenia	1 to 2	4
Depression	Schizophrenia	1 to 2	5
	Other NOPD	2 to 3	4
	No diagnosis	3 to 4	4
Schizophrenia	No diagnosis	2 to 3	4
	Schizoaffective disorder	2 to 3	5
	No diagnosis	4 to 5	5
	No diagnosis	1 to 5	4
Schizoaffective disorder	Depression	1 to 2	5
	Mania	2 to 3	4
	Schizophrenia	3 to 4	4
	Schizophrenia	4 to 5	6
	Schizophrenia	1 to 5	9
Other NOPD	Schizophrenia	1 to 2	4
	Schizoaffective disorder	1 to 2	4
	Schizophrenia	2 to 3	5
	Schizoaffective disorder	2 to 3	4

4. Feighner Diagnostic Movement

The most frequent changes in Feighner diagnoses are summarised in figure 17.

There was frequent and continuous movement from no diagnosis towards diagnoses of depression and schizophrenia. In addition, there was continuous movement from depression and from schizophrenia towards no diagnosis, but no movement between depression and schizophrenia.

Figure 17

From	To	Admission number	Number of subjects
No diagnosis	Depression	1 to 2	13
	Schizophrenia	1 to 2	7
	Depression	2 to 3	7
	Schizophrenia	2 to 3	6
	Depression	3 to 4	4
	Schizophrenia	3 to 4	8
	Depression	4 to 5	4
	Depression	1 to 5	4
	Schizophrenia	1 to 5	9
Depression	No diagnosis	1 to 2	12
	No diagnosis	2 to 3	4
	No diagnosis	3 to 4	5
	No diagnosis	4 to 5	4
	No diagnosis	1 to 5	6
Schizophrenia	No diagnosis	1 to 2	8
	No diagnosis	2 to 3	4
	No diagnosis	4 to 5	4
	No diagnosis	1 to 5	5

5. Movement of Symptoms of the First Rank

The movements of these symptoms are summarised in figure 18.

There was frequent and continuous movement of subjects from present to absent categories, and vice versa.

Figure 18

From	To	Admission number	Number of subjects
Absent	Present	1 to 2	17
	Present	2 to 3	15
	Present	3 to 4	17
	Present	4 to 5	6
	Present	1 to 5	7
Present	Absent	1 to 2	20
	Absent	2 to 3	25
	Absent	3 to 4	6
	Absent	4 to 5	13
	Absent	1 to 5	16

6. ICD 10 Diagnostic Movement

The most frequent changes in ICD 10 diagnoses are summarised in figure 19.

There was frequent and continuous movement from no diagnosis towards other diagnoses - depression, mania, schizophrenia and nonorganic psychotic disorders - and this movement was maximal early on. In addition, there was some movement from the affective diagnoses of depression and mania towards no diagnosis, also maximal early on.

There was frequent movement from schizophrenia across all admissions towards no diagnosis, delusional disorder and other nonorganic psychotic disorders.

There was additional frequent movement from other nonorganic psychotic disorders towards a range of other diagnoses - no diagnosis, mania and schizophrenia.

Figure 19

From	To	Admission number	Number of subjects
No diagnosis	Depression	1 to 2	9
	Mania	1 to 2	6
	Schizophrenia	1 to 2	6
	Other NOPD	1 to 2	6
	Depression	2 to 3	4
	Mania	2 to 3	4
	Other NOPD	2 to 3	5
	Depression	3 to 4	5
	Depression	4 to 5	4
	Depression	1 to 5	4
	Mania	1 to 5	4
	Other NOPD	1 to 5	4
Depression	No diagnosis	1 to 2	7
	No diagnosis	3 to 4	5
Mania	No diagnosis	1 to 2	5
	Other NOPD	3 to 4	4
Schizophrenia	No diagnosis	1 to 2	5
	Delusional disorder	1 to 2	4
	Other NOPD	1 to 2	7
	No diagnosis	2 to 3	6
	Other NOPD	2 to 3	5
	Other NOPD	4 to 5	6
	Delusional disorder	1 to 5	4
	Other NOPD	1 to 5	6
Other NOPD	No diagnosis	1 to 2	9
	Mania	1 to 2	4
	Schizophrenia	1 to 2	7
	No diagnosis	2 to 3	6
	Schizophrenia	2 to 3	6
	No diagnosis	3 to 4	4
	Schizophrenia	3 to 4	4

e. The Comparison of Five Diagnostic Groups

Subjects were arranged into 5 diagnostic groups for comparison, as described in the methodology. The results are summarised in figure 20.

The numbers of subjects in each group were as follows:

Group 1 (schizophrenia)	-	53
Group 2 (manic depressive)	-	35
Group 3 (depressive)	-	25
Group 4 (atypical)	-	34
Group 5 (inconsistent)	-	57

The schizophrenic group had the earliest mean age of onset at 22.38 years, while the depressive group had the latest mean age of onset at 29.6 years. The inconsistent group had a mean age of onset of 28.33 years.

The schizophrenic group had by far the largest number of single subjects - 45 of this group were single while only 8 were married. The other groups had similar proportions of single and married subjects.

The schizophrenic group also had by far the largest number of unemployed subjects - 43 were unemployed, while only 10 were employed. None of the depressive group were unemployed, while the manic depressive, atypical and inconsistent groups had intermediate results.

18 of the schizophrenic group had a history of poor premorbid work adjustment and 14 had a history of poor premorbid social adjustment. The other groups had few numbers of subjects in these categories, but the inconsistent group again exhibited intermediate results.

Few subjects had a history of premorbid personality disorder, but large numbers in both the schizophrenic group and the inconsistent group had a history of alcohol or drug abuse.

10 of the schizophrenic subjects had a family history of the condition, and 7 of the inconsistent subjects had a family history of schizophrenia. Few subjects from the other groups had a family history of schizophrenia. A family history of other psychiatric illness was common in all diagnostic groups, as was a history of psychosocial stressor prior to the onset of the condition - the inconsistent group had the largest number of subjects in this category.

The schizophrenic group had the highest mean number of admissions at 9.1, while the manic depressive, depressive and atypical groups had lower numbers in the region of 4.6 to 6, and the inconsistent group had the lowest mean number of admissions at 3.60.

In addition, schizophrenic subjects had the highest mean admission length per year at 10.11 weeks, while the inconsistent group had the lowest at 4.72 weeks. The schizophrenic group had also spent more total time in hospital - with a mean total length of admission of 64.66 weeks - and the inconsistent group had the lowest mean total length of admission at 20.26 weeks.

Figure 20

	Schizophrenia	Manic Depressive	Depressive	Atypical	Inconsistent
Sex (numberof subjects)	Male - 39 Female - 14	Male - 14 Female - 21	Male - 6 Female - 19	Male - 18 Female -16	Male - 26 Female -31
Age of onset (mean)	22.38	25.77	29.6	26.74	28.33
Marital status (numberof subjects)	Married - 8 Single - 45	Married -20 Single - 15	Married -16 Single - 9	Married -15 Single - 19	Married - 31 Single - 26
Employment status (U.E. = Unemployed)	Employed - 10 U.E. - 43	Employed - 26 U.E. - 9	Employed - 25 U.E. - 0	Employed - 17 U.E. - 17	Employed - 39 U.E. - 18
Poor premorbid work adjustment	Present - 18 Absent - 35	Present - 2 Absent - 33	Present - 0 Absent - 25	Present - 5 Absent -29	Present - 6 Absent - 51
Poor premorbid social adjustment	Present - 14 Absent - 39	Present - 0 Absent - 35	Present - 0 Absent - 25	Present - 4 Absent -30	Present - 9 Absent - 48
Premorbid personality disorder	Present - 3	Present - 1	Present - 1	Present - 2	Present - 1
Alcohol/ drug abuse	Present - 19	Present - 8	Present - 2	Present - 8	Present - 15
Family history of schizophrenia	Present - 10	Present - 2	Present - 0	Present - 2	Present - 7
Family history of psychiatric illness	Present - 14	Present - 19	Present - 12	Present-11	Present - 19

Psycho social stressor prior	Present - 7	Present - 16	Present - 7	Present - 13	Present - 22
Mean no of admissions	9.1 (SD - 6.74)	6.29 (SD 5.25)	4.68 (SD 2.93)	5.41 (SD 4.43)	3.60 (SD 2.14)
Mean admission length per year (weeks)	10.11 (SD 7.38)	5.70 (SD 6.65)	4.80 (SD 3.59)	7.71 (SD 6.59)	4.72 (6.06)
Mean total length of admissions in weeks	64.66 (SD 60.74) (range 5.0 - 376.0)	33.43 (SD 46.95) (range 4.0 - 260.0)	20.56 (SD 18.98) (range 2.0 - 84.0)	39.35 (SD 55.13) (range 2.0 - 290.0)	20.26 (SD 19.52) (range 1.0 - 121.0)

(Figure 20 continued)

Discussion

When the study was being designed, methodological concerns were considered to be of prime importance. The aim was to produce a representative sample which contained a diverse diagnostic spread for the purpose of subsequent comparison. A circumscribed age range of 18 - 55 was specifically chosen for a number of reasons. One of the main aims was to keep the study within the realm of general adult psychiatry, and doing this required the exclusion of subjects who would more appropriately fit into child and adolescent or old age psychiatry in terms of their clinical needs. Quite aside from this an age range of 18 - 55 also provided continuity with the available literature on diagnostic stability, as few attempts have been made to extend studies in this field beyond the given age ranges. Finally, a cut off age had to be chosen, and 55 was selected in preference to, for example, 60 or 65 in the expectation that an older population would be more likely to present with organic accompaniments.

Of the 204 subjects selected from the larger group of 998, 71 were under the care of the supervising consultants while 133 were chosen by the method of stratified random sampling which has been described. Thus the final sample was semi-random rather than completely random. Clearly there would have been a number of advantages had the sample been completely randomly selected, but unfortunately such a method would have been unable to deliver a sample group as large as 204 subjects. The use of patients who were under the care of the supervising consultants definitely allowed for ease of availability of case note information, and in that respect was of clear benefit to the project.

In addition to the final sample of 204 subjects, 17 subjects were exluded from the study as a result of missing case notes, and a further 26 were excluded because their case notes were substantially incomplete. No information was recorded regarding these subjects, and it is not possible to predict what would have happened had it been possible to include them. However, of the subjects included, good quality information was available regarding all admissions studied. The study probably benefited considerably from the excellent existing mechanism for filing clinical material and archiving historical information.

The group of 204 subjects studied comprised approximately equal numbers of males and females, and the mean age of onset for the whole group was 26.10 years, although the schizophrenic group had an earlier age of onset at 22.38 years, and the depressive group had the latest age of onset at 29.6 years, with the other groups having intermediate ages of onset. The literature on age of onset of depression, mania, bipolar disorder and schizophrenia has been well summarised - three quarters of all schizophrenia has an onset between 15 and 30 years of age (Hafner, 1998), while mania has a mean age of onset of less than 30 years in more than 60% of subjects (Kendell, 1993). Bipolar disorders tend to begin in the mid twenties, while unipolar disorder is said to begin in the late thirties (Gelder et al, 1993). The results of the present study are reassuringly consistent with this current understanding.

114 of the subjects were married or in long term relationships, but of those who were not, the largest number, 45 of 53 subjects, were in the schizophrenic group. Similarly, of the 87 unemployed subjects, the largest number, 43, were in the

schizophrenia group. Subjects with schizophrenia were also more likely to have a history of poor premorbid work adjustment and poor premorbid social adjustment than other subjects. We have long known that schizophrenia is a debilitating condition which produces symptoms in the mind which are often not responsive to treatment (Meltzer, 1992), but a more complete understanding of the condition and its resulting serious social consequences and disabilities has been relatively recent (Johnstone et al, 1991). The results of the present study support the findings that schizophrenia is a catastrophic condition, and that its consequences stretch far beyond medically delineated symptoms and signs.

Of the 204 subjects, 52 - more than a quarter - had a reported history of alcohol or drug abuse. Selzer and Lieberman (1993) reported a high prevalence of substance misuse in schizophrenic patients in the USA, and alcohol dependence is known to be associated with other substance abuse and a range of psychiatric disorder (eg. Lewis and Bucholz, 1991). Given that the information in the present study was taken retrospectively from case notes, this reported history of alcohol or drug abuse must, if anything, be considered an underestimate. The results underline the existing knowledge that substance misuse is commonly associated with major psychiatric disorder.

Eight of the 204 subjects had a reported history of personality disorder which predated the onset of their functional psychotic illness, although there was no particular excess of premorbid personality disorder in any of the five diagnostic groups. Although comorbid axis I and axis II diagnoses have been well described (eg. Coid, 1993, Prasad, 1990), their nosological status is unclear. The finding in

the present study is again, if anything, likely to be an underestimate, but confirms that in some subjects an axis I disorder can follow an axis II disorder.

The finding that 65 of the 204 subjects had a history of definite psychosocial stressor prior to the onset of their condition is not surprising - eg. Hunt et al, 1992, reported an excess of life events preceding depression and mania, and there is moderate support in the literature for the influence of stressful life events in schizophrenia (Zubin and Spring, 1977).

The positive findings for family history of schizophrenia (21 subjects) and other psychiatric illness (75 subjects) are also not surprising, and are consistent with our current understanding of the heritability of major mental disorder (Murray and McGuffin, 1993).

The group of subjects with schizophrenia had the highest mean number of admissions, the highest mean admission length per year, and almost twice the mean total length of admission in weeks than that of the other diagnostic groups. A number of studies have confirmed that a diagnosis of schizophrenia in particular is predictive of a long cumulative stay in hospital (eg. Zilber et al, 1990), although others have found that additional factors as well as schizophrenia are predictive, including number of previous admissions, a primary diagnosis of mood disorder, and a comorbid alcohol or drug related disorder (Huntley et al, 1998).

The results pertaining to the demography and the admission characteristics of the group are largely in keeping with the available literature on the epidemiology of the functional psychoses. Further analysis of the five groups - schizophrenic, manic depressive, depressive, atyical and inconsistent - suggests important

differences between the schizophrenic group and the other groups, emphasising the distinct and highly debilitating nature of this condition.

When considering the diagnostic spread results, it is important to note that in the clinical category a large number of subjects, 45.5%, received an initial diagnosis of affective disorder. Across the five admissions, clinical diagnoses of depression and mania became less frequent, while the diagnosis of bipolar disorder became more frequent. This trend was not replicated with the DSM IIIR, Feighner, ICD-10 or with the RDC diagnostic spreads, which tended to show similar numbers of patients in each affective category across the five admissions. It is particularly important to note that, although clinicians made the diagnosis of bipolar disorder regularly, this diagnosis was considerably less frequently generated by the operational criteria. This result is probably an artefact of the methodology - the application of criteria to episodes of illness, one at a time, does not allow for the course of the condition to be taken into consideration. These findings confirm that clinicians are more likely to adapt the diagnosis with the passage of episodes of affective illness, while the operational criteria do not. In the case of bipolar disorder, subjects in the present study were more likely to receive other affective diagnoses, such as mania or depression, on an episode by episode basis. It is likely that the rigidity of operational criteria makes this sort of adaptation which has been described difficult, as information relating to course and progression of an affective disorder which is available for clinical use is not necessarily available or able to be entered into a diagnostic program which considers each admission as a distinct entity.

There was an increase in the diagnosis of schizophrenia across all admissions according to all sets of diagnoses, and this increase was most marked in the clinical diagnostic group. In addition, 11.8% of subjects who were later diagnosed as suffering from functional psychoses received an initial clinical diagnosis of another condition, and a number of less clearly defined diagnoses according to all sets of criteria (other nonorganic psychotic disorder according to clinical, RDC and DSM IIIR criteria, no diagnosis according to ICD-10 and Feighner criteria) decreased in frequency across the five admissions. These findings confirm the results of a range of other studies which have demonstrated that large numbers of patients who are diagnosed with schizophrenia received a different diagnosis during their first admission (Munk-Jorgensen, 1985, 1989, Jorgensen et al, 1988). The reasons for this increase in the frequency of schizophrenic diagnosis following the first admission are not entirely clear, but a number of hypotheses have been examined within the literature. It is possible that clinicians are reluctant to use serious labels early because of the potential impact on the patient and their family (McGorry, 1991). This hypothesis might partly explain the finding of an increase in the clinical diagnosis of schizophrenia across the five admissions, but it could only explain the smaller increase in diagnosis according to the sets of operational criteria if clinicians had a tendency to under report abnormal mental state findings during earlier admissions to hospital. As this is unlikely other explanations have to be sought. An alternative hypothesis is that schizophrenia is underdiagnosed early because of the clinical feeling that there is 'not enough to go on' (McGorry, 1994). Again, this might partly explain the lower frequency of early diagnosis according to

clinical criteria, but it cannot explain the lower frequency of early diagnosis according to the other operational criteria which operate in a rigid fashion, without consideration of clinical feeling. Of course, it may be that in a number of cases there really is 'not enough to go on' because symptoms are in an early stage of development, in which case subjects will fall out of the schizophrenic category into other categories. Another hypothesis which has been considered is that of differentiation (McGorry, 1994) - ie. the idea that the clinical picture becomes clearer over time. It is possible that the balance of the illness changes, and in particular that the relationship between the prominence of schizophrenic and affective symptoms shifts over time (Coryell et al, 1986), such that a clearer symptom structure is revealed. This increase in syndromal clarity would then allow a more definitive diagnosis at a later stage, in much the same way as dirt will settle after a time in a tumbler of water which has been agitated, allowing clear water to emerge.

There were noticeable differences between all sets of criteria with regard to frequency of diagnosis of schizophrenia. Feighner criteria proved the most restrictive, with a large number of subjects falling into the category of no diagnosis, closely followed by DSM IIIR. By admission 5, more subjects received a diagnosis of schizophrenia according to clinical criteria than according to any of the operational criteria. In addition, DSM IIIR criteria tended to diagnose more atypical psychosis, and RDC tended to diagnose more schizoaffective disorder than the other criteria.

These findings confirm that certain criteria are more restrictive than others, and they replicate the results of a number of other studies which have demonstrated that diagnoses derived from a number of different operational criteria often show considerable variation (eg. Stephens et al, 1982, Farmer et al, 1992).

When considering diagnostic stability, schizophrenia was the most stable condition in this study according to most sets of criteria (according to clinical, DSM IIIR and Feighner criteria the stability was virtually consistently above 80%, although the results according to RDC and ICD-10 were somewhat lower). These high levels of stability according to multiple sets of operational criteria are in keeping with the levels obtained in previous studies of this type (eg. Tsuang et al, 1981, reported a stability of 92.5% for schizophrenia, Marneros et al, 1991, reported a stability of 90%). Apart from schizophrenia, the next most stable category was that of no diagnosis according to Feighner criteria. Feighner criteria are highly restrictive, and it is likely that these consistent restrictions served to keep the same subjects out diagnostic categories from one admission to the next. Depression, mania and bipolar disorder displayed moderate stability levels which varied more widely between sets of criteria. These intermediate results are again in keeping with the range of results obtained from similar previous studies (eg. Jorgensen et al, 1988 reported a stability of 72.9% for manic depressive psychosis, and Stanton et al, 1993, reported an overall stability of 67% for affective disorder). The diagnoses of depression and mania showed generally higher levels of stability according to DSM IIIR, RDC and ICD than according to clinical criteria, but larger numbers of subjects attracted a diagnosis of bipolar disorder according to clinical criteria. It is likely

that clinical movement from mania and depression towards a diagnosis of bipolar disorder contributed to these lower levels of stability according to clinical criteria. First rank symptoms displayed a low to moderate stability rating in the region of 60%, although the absence of first rank symptoms displayed consistently high stability ratings in the region of 80%. This finding confirms that psychotic symptoms can display considerable change from one episode of illness to the next, and is in keeping with other reports from the literature (eg. Winokur et al, 1985). In addition, the moderately low stability ratings attached to symptoms of the first rank call into question their reliability and diagnostic specificity. A range of other diagnoses (no diagnosis according to DSM IIIR, RDC and ICD-10, other nonorganic psychotic conditions according to clinical, DSM IIIR, RDC and ICD-10, other conditions according to clinical criteria, atypical psychosis according to DSM IIIR, schizoaffective disorder according to RDC) displayed poor levels of stability. These findings are also in keeping with the results of previous studies of this type, and a number of hypotheses have been advanced to explain them. Clinical reluctance to assign diagnostic labels cannot explain the phenomenon of early diagnosis of 'other' conditions which subsequently attract low stability ratings, as the same phenomenon is observed according to a number of operationally defined criteria. However, the idea that there might be symptom and syndrome shift towards a clearer diagnostic picture over time, as discussed above, is a possible explanation.

In the present study, more than 50% of subjects changed diagnosis between episodes one and five, and large numbers changed diagnosis between every other admission according to clinical criteria. This confirms that diagnostic movement

between episodes of psychiatric illness is common. According to clinical criteria, there was considerable diagnostic movement between the diagnoses of depression, mania and bipolar disorder. This movement was not replicated with the operational criteria - according to DSM IIIR there was more movement between these conditions and delusional disorder, while according to RDC there was movement to schizophrenia or, more commonly, to other nonorganic psychotic disorders or no diagnosis. Similarly, with ICD-10 and Feighner criteria there was movement from affective diagnoses towards no diagnosis. The clinical findings confirm our current understanding of manic depressive illness, and it is clearly possible to see regular and flowing triangular movement between the three conditions of depression, mania and bipolar disorder according to the clinical results. However, the results according to the other operational criteria are more difficult to understand. Some of the criteria allow for a diagnosis of bipolar disorder and others do not, but even when the diagnosis is possible it is made infrequently. Instead subjects move to other categories, or else drop out of diagnostic assignment towards no diagnosis. This phenomenon demonstrates the difficulties operational criteria have when considering the course of a condition, and hence the limitations of their application. Information which is available clinically as 'past psychiatric history' is very difficult to tailor for a computerised list, and difficult to make sense of even when it is. According to all of the sets of operational criteria, there was considerable movement from 'no diagnosis' to other conditions (mainly to depression with DSM IIIR, to depression and schizophrenia with RDC, to a range of definitive diagnoses with ICD-10 and to depression and schizophrenia with Feighner criteria). This clearly

reflects changes in the reporting of symptoms with time, such that more definitive diagnoses become possible, and there are two possible explanations. Either there is true under reporting of symptomatology early in the course of an illness, or more symptoms develop later, allowing for an additive effect such that conditions which previously dropped out of diagnostic categories now find themselves well allocated. The possibility that more symptoms develop later is related to the idea that early or embryonic conditions undergo change, refinement and differentiation with time, such that symptoms become clearer, easier to elicit and record, and consequently more able to take their place in the grand scheme of diagnostic assignment.

There was little movement away from a diagnosis of schizophrenia towards other major psychiatric disorders, and in particular little movement towards affective diagnoses. According to clinical criteria, there was very little movement indeed from schizophrenia to any other diagnostic category, but there was some movement towards 'no diagnosis' according to DSM IIIR, RDC and Feighner criteria, and according to ICD-10 criteria there was greater movement towards a range of other diagnoses (eg. delusional disorder, other nonorganic psychotic disorder). These findings are in keeping with our current understanding of the stability of the diagnosis of schizophrenia, and the movement away from a diagnosis of schizophrenia to 'no diagnosis' might reflect two possibilities. In the first instance, it is possible that there is under-recording of symptoms later in the stages of a schizophrenic illness, as clinicians may not perceive the need to re-record mental state items which have previously been well elicited and described within the case notes. An alternative possibility is that the symptom structure of schizophrenia

undergoes changes with time, such that phenomenology which was previously present starts to drop off - this possibility has been reported within the literature (eg. Winokur et al, 1985, reported a striking finding that all psychotic diagnoses were associated with a decrease in psychotic symptomatology over time).

There was also considerable movement from other conditions towards alternative diagnoses, in keeping with the finding that these conditions attracted relatively low stability ratings. According to clinical criteria, there was movement towards depression and schizophrenia, according to DSM IIIR there was movement towards delusional disorder, addording to RDC there was movement towards schizophrenia and schizoaffective disorder, and according to ICD-10 there was movement towards mania, no diagnosis and mania. These findings confirm that there is movement from less well defined conditions towards more definitive diagnoses with illness progression, and the possible reasons have been explored above.

Finally, there was considerable movement between each admission with regard to the presence or absence of symptoms of the first rank, confirming the idea that psychiatric phenomenology is not static from one episode of illness to the next.

The fact that the design of the present study was retrospective and relied upon phenomenology which had been recorded by other clinicians provided limitations. It is clearly possible that different clinicians will give different weight to different aspects of mental state examination, and hence record abnormal symptoms in a different way. However, despite this ongoing research difficulty this study does provide useful information regarding the differential demographic and

admission data of a large group of subjects diagnosed as suffering from a psychotic illness, and it provides good additional information with regard to diagnostic comparison between a number of different sets of operational criteria. At a macrodiagnostic level, it also adds information regarding the stability of a range of diagnoses across a number of episodes of inpatient contact, and largely confirms findings in the current literature on this subject. At the level of individual subjects it provides invaluable information regarding the nature of diagnostic movement from one episode of illness to the next.

The application of a clinical diagnosis in psychiatry requires the mobilisation of a number of complex factors, from mental state findings to treatment response, from considerations of the course and progression of the condition to corroborative information from a variety of sources, and from 'clinical impression' to the need to minimise the use of potentially harmful labels. Operational criteria and clinical diagnoses attempt to work optimally within these factors which often compete, and full scale international agreement will only become possible when properly validated external biological markers become available for schizophrenia, mania, depression, and a range of other conditions. For the time being, these illness markers seem a long way away, and so psychiatry must continue to struggle with the proper medical study of factors which aggregate to form the recognised syndromes which have been forged over the years, and which now achieve good international levels of recognition.

Appendix I

Unitary coding system:

No diagnosis	-	0
Depression	-	1
Mania	-	2
Bipolar	-	3
Schizophrenia	-	4
Schizoaffective disorder	-	5
Atypical psychosis	-	6
Delusional disorder	-	7
Other nonorganic psychotic disorders	-	8
Neurotic disorders	-	9
Personality disorders	-	10
Other conditions	-	11

ICD-9 coding system:		**Unitary coding system number:**
295.0 simple schizophrenia	-	4
295.1 hebephrenic schizophrenia	-	4
295.2 catatonic schizophrenia	-	4
295.3 paranoid schizophrenia	-	4
295.4 acute schizophrenic episode	-	4
295.5 latent schizophrenia	-	4
295.6 residual schizophrenia	-	4
295.7 schizoaffective type	-	5
295.8 other schizophrenia	-	4
295.9 unspecified schizophrenia	-	8
296.0 manic type	-	2
296.1 depressed type	-	1
296.2 manic depressive psychosis (man)	-	3
296.3 manic depressive psychosis (dep)	-	3
296.4 manic depressive psychosis (mixed)	-	3
296.5 manic depressive psychosis (unsp)	-	3
296.6 manic depressive psychoses (other)	-	3
296.8 other affective conditions	-	8
296.9 unspecified	-	8

DSMIIIR coding system:		Unitary coding system number:
1 major depression	-	1
2 hypomania	-	2
3 mania	-	2
4 bipolar disorder	-	3
5 mania with psychosis	-	2
6 depression with psychosis	-	1
7 bipolar with psychosis	-	3
8 schizoaffective disorder (manic)	-	5
9 schizoaffective disorder (depression)	-	5
10 schizoaffective bipolar	-	5
11 schizophreniform disorder	-	8
12 schizophrenia	-	4
13 delusional disorder	-	7
14 atypical psychosis	-	6
15 probable schizoaff	-	8
16 probable schizoaff	-	8
17 probable schizoaff	-	8

RDC coding system:

1 major depression	-	1
2 mania	-	2
3 bipolar disorder	-	3
4 schizoaff/manic	-	5
5 schizoaff/dep	-	5
6 schizoaff/bipolar	-	5
7 broad schizophrenia	-	4
8 narrow schizophrenia	-	4
9 unspecified functional psychosis	-	8

Feighner et al (St. Louis) coding system:

1 depression	-	1
2 mania	-	2
3 bipolar	-	3
4 probable schizophrenia	-	4
5 definite schizophrenia	-	4
6 schizophrenia 2 aff disorder manic	-	4
7 schizophrenia 2 aff dis dep	-	4
8 schizophrenia 2 aff dis bipolar	-	4

Schneider coding system:

1 first rank schizophrenia	-	4

ICD-10 coding system:		**Unitary coding system number:**
1 mild depression	-	1
2 moderate depression	-	1
3 mild dep with somatic syndrome	-	1
4 mod dep with somatic syndrome	-	1
5 severe dep without psychotic symptoms	-	1
6 severe dep with psychotic symptoms	-	1
7 severe dep with psychosis	-	1
8 mania without psychosis	-	2
9 mania with psychosis	-	2
10 bipolar	-	3
11 undiff schizophrenia	-	4
12 paranoid schizophrenia	-	4
13 hebephrenic schizophrenia	-	4
14 catatonic schizophrenia	-	4
15 schizoaff manic	-	5
16 schizoaff depressed mod	-	5
17 schizoaff depressed severe	-	5
18 schizoaff bipolar	-	5
19 delusional disorder	-	7
20 other nonorganic psychotic disorders	-	8

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