DEPRESSION: A CONCEPTUAL ANALYSIS AND ATTEMPT AT QUANTIFICATION

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A THESIS SUBMITTED IN PARTIAL FULFILLMENT OF

THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

in the Department

of

Psychology

SIMON FRASER UNIVERSITY

April 1976

APPROVAL

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Title of Thesis: Depression: A Conceptual Analysis and Attempt at Quantification.

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Depression: A Conceptual Analysis and attempt at quantification

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April 30/76

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Abstract

The present study attempts to shed some light on the nature of depressive disorders by documenting the range and pattern of classical, traditional depressive symptomatology in a group of normal subjects and a group of psychiatric patients. Using the technique of factor analysis, the results of a comprehensive questionnaire are used to test the hypotheses:

1) That "normal" depression is not categorically different from "clinical" depression; and
2) that depression is a disjunctive concept characterized by one or more of nine major dimensions: apathy, guilt, retardation, loss of self-esteem, despondency, sadness, anxiety, somatic complaints, and impairment of cognitive functioning.

Some support for both of these hypotheses is obtained, although there was only one major source of variance (factor) in the patient sample.

Acknowledgements

I would like to thank my supervisor, Dr. E. M. Coles, the members of my committee, and the committee chairman, Dr. R. F. Koopman, for their guidance in planning the research and preparing this thesis. I would also like to express my appreciation to the staffs of Riverview Hospital--particularly Mrs. J. I. Anderson, Occupational Health Nurse; The Greater Vancouver Regional Health Project and the Surrey and Port Coquitlam Mental Health Clinics for their co-operation and assistance in collecting the necessary data. Thanks are also due to my sister Judy for typing and the editing which made this thesis as readable as it is and to Bob for his encouragement and for allowing me to quote him with no acknowledgement but this one.

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INTRODUCTION

Chapter 1

Concepts of Depression

Seligman (1973) has suggested that depression is the "common cold of psychopathology." Indeed, in accordance with the theory that a historical era tends to shape or be associated with a particular form of the aberration known as "mental illness," depression could be called the characteristic psychological disorder of the 1960s and 1970s. Several women's magazines have recently published articles which advise their readers on how to deal with depression: "Antidepressants May Bring New Life to Your Life," (Vogue, 1975); "New Ways to Treat Depression," (Good Housekeeping, 1975); "Focus on the New Depression Treatments," (Harpers Bazaar, 1973). Several books written for the general public have appeared on the same subject: How to Win Over Depression, (LaHaye, 1974); Depression and the Body, (Lowen, 1972); Up from Depression, (Cammer, 1969).

The reported increase in the incidence of depression has at least three possible explanations. One is that there is, indeed, more depression than heretofore. Although some people consider depression to be biologically based, others consider it to be a reaction to "problems in living." It is possible that life in modern society exposes individuals to more stresses which lead to depression.

For example, Mendel (1971) suggests that people get depressed because they have not learned to cope with the increased leisure time that our technological society provides. Alexander (1967) links feelings of depression to the combination of increasing emotional isolation from other people and the lack of privacy that results from living in large modern cities. Increasing alienation from meaningful work caused by assembly-line jobs, and the equivalent "instant housekeeping" that many women currently experience may be a contributing factor. And, with regard to the latter, it may be suggested that women's liberation and the general consciousness-raising among women may account for the large number of housewives whose newfound awareness of their situation leads to depression.

As the incidence has risen, there have also been changes in the population at risk and in the presenting picture of depression. Paykel (1971) noted that cases of mild depression involving patients who are younger, neurotic and anxious, are much more common than in the past. These changes in symptomatology raise the possibility of the alternative explanations of the increased incidence of depression.

The second possibility is that we are attaching the label "depression" to conditions which would have been given different names (e.g. neurasthenia) in a different historical

era. Today more and more people are going to general practitioners with a constellation of vague emotional and physical complaints, rather than a depressed mood per se, yet being diagnosed depressed and being given antidepressant therapy (Enelow and Wexler, 1966; Rawnsley, 1968).

The third alternative is that in recent years it has become more socially and personally acceptable to adopt the "sick role" (Szasz, 1969). The threshhold for tolerance of depressive symptoms may be lower and people are defining themselves as ill and seeking help sooner than in the past.

Implicit in these second and third alternatives is the widespread confusion over the most appropriate definition and description of depression. The term is so broadly defined and loosely used that there can be no consensus as to what constitutes depression. Under these circumstances, the very concept of "depression" would appear to warrant reexamination.

1.1 Depression: Mood, Symptom, Syndrome and Disease

As early as 1905, Meyer wrote "the difficulty in discussing the subject is that the term melancholia [the early term for depression] is used with great latitude and absence of specificity." Today, although the term depression is in common use, it does not appear to have a common meaning: although they use the same word, no two people appear to mean the same thing. Depression is variously spoken of and investigated as if it were a mood, a symptom,

a syndrome, and a disease.

The layman typically uses the term to refer to either an unhappy mood associated with sadness and crying, or to a feeling of dejection associated with lack of interest and energy. Wessman and Ricks (1966) reported an indepth study of elation and depression (as moods) in 38 Harvard and Radcliffe students. They found that the students varied greatly in their average[1] daily mood level and in the variability of their mood levels over six weeks of daily recordings. Furthermore, they were surprised by the frequency with which a degree of elation and depression which would more commonly be seen in a clinical population, was reported in this apparently normal population.

Depressed mood is sometimes considered to be a symptom which may accompany many different kinds of disorders, both physical and psychological. The physician who says that his patient is "depressed" may thus be implying that his patient is suffering from a disorder of some kind, one of the symptoms of which is a depressed mood.

However a symptom of depressed mood may also be part of a syndrome of depression. In medical practice the term syndrome usually refers to a group of symptoms which commonly go together. The typical psychiatrist's conceptualisation

1. The authors constructed sixteen mood scales for their study. Each scale had ten points ranging from "very elated" to "very depressed". Each point was "anchored" by a statement about mood. Each day, each subject recorded his or her highest, lowest and average mood for the day on each scale.

of depression includes cognitive, motivational, vegetative, and emotional symptoms in addition to depressed mood. In fact, Beck (1967) states that a diagnosis of depression may be appropriate in the absence of the symptom of depressed mood.

The term syndrome usually refers to a group of symptoms which characterize a specific disease. However, the concept of disease and the adoption of the disease model implies a specific origin for the symptoms (a cause, in the form of an infectious agent, a genetic defect, an organic lesion, etc.), a particular set of symptoms, course and prognosis. Depression has been regarded in this way until quite recently although evidence to the contrary has been available for many decades (see Kendall, 1968).

A specific etiology of depression has not been discovered. Consequently the emphasis in psychiatry has of necessity been on the symptomatology of the disorder and on depression as a syndrome, not depression as a clinical disease. Strictly speaking, it is inappropriate to refer to the disease depression.

This point is not a mere technicality of terminology. The practical result of this failure to locate a specific etiology has been a vagueness in the description of the syndrome. The latter is taken by workers in the area (collectively) to include a very large number and range

of symptoms. However, for any particular study reported in the literature, the author of necessity makes a choice from the long list of symptoms attributed to depression. It is obvious that this practice must perpetuate the vagueness of the description of the syndrome.

The confusion which results from this vagueness is worsened by an equally vague conceptualization of abnormality. If depression is considered as a mood the discussion above has shown that there is only a quantitative difference between normality and abnormality. However, the difference is qualitative if depression is conceptualized as a disease or syndrome. These alternatives can not be effectively dealt with until usage of the terms mood, symptom, syndrome, and disease, with respect to depression, is standardized and until each individual investigator is clear and consistent in his understanding of each concept of depression.

1.2 Depression as a Clinical Disorder

Kraepelin's original description of the syndrome of depression (which he called manic-depressive disease) appears to be the basis for all modern psychiatric practice in the area. In his description he included consideration of: perception, memory, consciousness, hallucinations, inhibition of thought and action, mental efficiency, insight, mood, and bodily symptoms such as sleep, weight

loss, and appetite (see Appendix A). Studies done since Kraepelin's time have not improved his description of depression. Thus current descriptions, although superficially different, contain basically the same elements. Beck (1967) provides a representative example. He suggests that the symptoms of depression can be grouped into four categories which subsume the symptoms traditionally considered to indicate depression. They are:

1) emotional e.g. dejected mood, loss of satisfaction, crying
2) cognitive e.g. pessimism, low self-esteem, indecisiveness
3) motivational e.g. inability to "get going", increased dependency
4) physical and vegetative e.g. loss of appetite, fatigue

Beck further suggests that these symptoms are reflected in five major characteristics of depressive disorders:

1) a specific alteration in mood: sadness, loneliness, apathy
2) a negative self-concept associated with self reproaches and self blame
3) regressive and self-punitive wishes: desires to escape, hide or die
4) vegetative changes: anorexia, insomnia, loss of libido
5) change in activity level: retardation or agitation

Kraepelin considered the disorder he described to be one disease -- manic depressive disease -- which included all manic and depressive disorders, both mild and severe, including some which were hardly differentiable from normal mood swings. Kraepelin implicitly endorsed the disease model which assumes that individuals affected with the disease can be clearly differentiated from those who are not affected and

from those suffering from other diseases. He believed that "normality" was categorically distinguishable from depression at the level of etiology. Thus, the disease model employs a categorical mode.

The problem is further complicated by the attempts to identify sub-types of depression, as exemplified by the Diagnostic and Statistical Manual of the American Psychiatric Association (see Appendix B).

1.3 Psychiatric Classification of Depression

Although current psychiatric practice has retained (with some modifications) Kraepelin's description of the depressive syndrome, and his basic disease model, it has definitely diverged from his thinking on the subject of subtypes.

Kraepelin considered that all affective disorders could be grouped into a single category (manic depressive disease). He also believed that they were all endogenous, i.e. they all resulted from some biological source within the individual patient. However, he recognized that some depressions seem to be precipitated (in predisposed individuals) by environmental events. Some of his followers (notably Lange, see Kendall, 1968) made further concessions to the reactive theory of the origin of depression. They hypothesized a subgroup which they called "reactive

depression." This division resulted in a classification system based on etiologies.[2] The other major basis of classification has been the symptomatology of depression. The obvious difference (in terms of symptomatology) between psychotic and non-psychotic depressions has been used as the basis of a classification system.

In the fifty years after Kraepelin wrote most attempts to classify depression were based on dichotomizations. Several dichotomizations have been suggested and have become entrenched in the literature. (All of the dichotomous pairs listed in Table 1.1 are currently used in the research literature as if they were roughly equivalent although they originally had different implications.) The most common of these are "reactive-endogenous" (based on etiology) and "neurotic-psychotic"[3] (based on symptomatology). With the

2. The similarity between this dichotomy and the two alternate etiologies described above is obvious. The only difference is the absence of a specific reference to predisposed individuals (in the earlier discussion). However, the theory of reaction to "problems in living" implies such a reference. It is accepted that only certain people, predisposed by experience or personality, react to adverse environmental circumstances with depression. Others react in other ways (e.g. psychosomatic ailments) or simply carry on as usual. The mixture of reactive and endogenous factors described, has been observed and reported in many studies (see Kendall, 1968).

3. These two dichotomies are the basis of the current official diagnostic system as described in the American Psychiatric Association's Diagnostic and Statistical Manual (2nd ed. 1968, referred to hereafter as DSM-II.) The classification of depression according to this source is outlined in Appendix B. Major categories are manic-depressive illness (which is described as an endogenous disorder), neurotic depressive reaction and psychotic depressive reaction.

passage of time the two etiological terms have come to imply the whole set of symptoms associated with the descriptive terms. (This process is discussed in some detail in Appendices C and D. Appendix E outlines the symptoms commonly associated with endogenous depression and with reactive depression.) Unfortunately, the merger has been neither complete nor universally accepted. According to Mendels (1970):

> The extrapolation of observable behaviour and subjective reports of mood state and cognition to etiology is unrealistic and constitutes one source of our current difficulties both in arriving at an acceptable classification for the affective disorders and in developing research into etiology. (p. 2)

Table 1.1

Dichotomous Classifications of Depression

autonomous-------reactive

endogenous------exogenous

psychotic--------neurotic

retarded---------agitated

Although the lack of progress in achieving a useful classification of depression can be partially attributed to the confusion of etiology and symptoms described above, it is also the result of the bewildering number of different types of depressive disorder which have been described. The latter situation has led some investigators to the suggestion

that the label "depression" is actually being applied to a hetergenous group of disorders i.e. that there may be many subtypes of depression. Some research using multivariate techniques has investigated this hypothesis (see Chapter 2).

Furthermore, failure to establish a specific origin has led some theorists to suggest that depression is not a disease in the medical sense, but is an exaggeration of a normal condition (i.e. they have adopted a dimensional model). This suggestion that there may be only quantitative differences between normal functioning and clinical depression is not new. Indeed, as pointed out earlier, it follows logically from conceptualizing depression as a mood or symptom. However, it has not received a great deal of attention in the literature which has been dominated by the medical, categorical model.

In a preliminary attempt to investigate both the dimensional model of depression and the appropriateness of the idea that there are many subtypes of depression, the present study undertook a literature review of previous research and a questionnaire survey of both a normal and a patient sample.

Chapter 2

Literature Review

This literature review is a critical survey of studies which have used factor analysis to investigate the nature of depressive disorders. These studies have focused on attempts to determine if there are distinguishable subtypes of depression. Specifically, in many cases they have attempted to provide empirical support for dichotomizing depression into two types.

A long debate over whether such dichotomization reflects the "true nature" of depressive disorders has continued for over fifty years (see Appendices C, D, and F). The debate is between proponents of the unitary view of depression (which asserts that there is only one kind of depression) and the binary or two type view (which endorses dichotomization). In the introduction to his monograph The Classification of Depressive Illnesses, Kendall (1968) provides an excellent summary of the history of this debate until the 1950s. His survey makes it clear that the issue is still unresolved.

The binary-unitary controversy continues to this day to form the centre of one major area of research on depressive disorders. Early work was speculative and theoretical. More recent studies have employed factor analytic methods. The advent of computers and modern methods of multivariate

techniques (especially factor analysis) has made it possible to investigate a third alternative (to the binary and unitary views) i.e. that there are many aspects of depression. All three of these suggestions are critically examined in this chapter. (Appendix G outlines the subject sample and specific methodology for each factor analytic study cited in this chapter).

Mendels and Cochrane (1968) reviewed seven factor analytic studies of the symptoms of depressive illness.[4] All of these studies presented results which included a bipolar factor. Mendels and Cochrane found that they showed an impressive amount of agreement in terms of which items loaded on which factors. They concluded that:

> the evidence supported the independence of the endogenous and reactive factors...but that the so-called endogenous factor might represent the core of depressive symptomatology, whereas the clinical features of the reactive factor may represent phenomenological manifestations of psychiatric disorders other than depression which "contaminate" the depressive syndrome. (p. 10)[5]

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4. Carney, Roth, and Garside, 1965; Hamilton and White, 1959; Hordern, 1965; Kiloh and Garside, 1963; Mendels and Cochrane, 1967; Rosenthal and Gudeman, 1967; Rosenthal and Klerman, 1966.

5. The significance of the suggested overlap between symptoms of depression and those of other psychiatric disorders is discussed in Section 2.7.

On the other hand, Eysenck (1970) in an extensive discussion of the classification of depressive illnesses, concluded on the basis of factor analytic studies reported to that time[6] that the "unitary hypothesis is wrong, and the binary hypothesis is supported very strongly indeed." One of Eysenck's strongest arguments appears to be the failure of a proponent of the unitary view (Kendall, 1968) to support his hypothesis in a large and well controlled study.

In the discussion which follows, brief comparison of additional factor analytic studies with those discussed by these two authors will be integrated with a critique of the methodology and conclusions of the entire set of studies. Common errors of technique such as:

1) insufficient range of severity in the subject sample
2) insufficient numbers of subjects
3) choice of inappropriate items
4) unsuitable factor analytic technique
5) unsuitable rotation
6) inappropriate factor score plots

are considered in the context of the conclusions which are drawn by each author.

The authors of the studies considered have usually been attempting to support a particular model or theory about the nature of depression. They have sometimes made errors

6. Carney, Roth and Garside, 1965; Hamilton and White, 1959; Kendall, 1968; Kiloh and Garside, 1963.

in the interpretation of their results and thus drawn incorrect conclusions. In the main these have been of two kinds. Some have involved confusions of considerations relevant only to the appropriateness of a categorical or dimensional model with those relevant to the independence of depressive syndromes (which in turn bears upon the binary-unitary controversy). Others have confused "factor space" and "people space" (Eysenck, 1970). That is to say they have drawn conclusions about depressed persons on the basis of factors which give information about symptoms only and not about people.

Many authors have discussed the significance of the general factor in their results and interpreted their results as support of either the binary or unitary theory of depression. They have failed to appreciate the critical effect of sampling considerations on the size and significance of the general factor. Section 2.2 below deals with these considerations in the context of the range of severity represented by the subject sample.

Sections 2.3 to 2.7 attempt to sort out some of the confusion arising from common misconceptions with respect to the significance of certain classes of results, and to outline the results which would support the various theories about the most appropriate model for describing depression.

Although they draw different conclusions with respect to their significance, both Mendels and Cochrane (1968) and Eysenck (1970), take the position that the studies they

review establish the independence of the endogenous and reactive syndromes. Reexamination of the studies fails to support this conclusion. The present author contends that neither the unitary nor the binary model of depressive disorders is adequate. The final section of the chapter discusses alternative models.

2.1 The Technique of Factor Analysis as Applied to Studies of Depression

After 1960 sophisticated new multivariate techniques became widely available (due to increased use of computers) for investigation into the classification of depression. Many authors have used the rituals of factor analysis.

Factor analysis has three basic uses (Hamilton, 1967):

1) to reduce a mass of inter-relationships between variables to a simpler and more comprehensible pattern,

2) to use empirical data as a basis for the classification of tests or persons,

3) to convert a set of correlated measurements into a set of uncorrelated scores.

Each of these usages has clear applicability to the area under discussion. However, there has been some tendency to consider factor analysis to be a magical technique which invariably produces significant results. The limitations of the process have not always been appreciated.

The most basic and obvious objection to many of the factor analytic studies in this area is that the authors do not seem to appreciate that the results of the factor analysis depend to a large extent on what you put into it.

Shakow (1965) claims that the "results depend entirely on the quality of the data put into the statistical hopper." Such considerations are the source of the adage "garbage in, garbage out." The results are also significantly affected by the technique of analysis and rotation used and by the effects of sampling of subjects. It would appear that these (obvious) facts are not always appreciated by the researchers, who may run their data through a standard program for an analysis whose limitations they do not understand.

Many authors have failed to appreciate that characteristics of the subject population such as age, sex, diagnosis, symptomatology and the type of setting from which they are drawn (e.g. medical practice, psychiatric outpatient clinic, state hospital, etc.), have a significant effect on the results of the study.[7] Each study population is a sample from the universe of possibilities. The heterogeneity of the total population cautions the researcher against generalizing from the results obtained in any given study to a population more extensive than the one studied.

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7. Some authors would argue that there are no significant qualitative differences of symptomatology between patients. Apparent differences of this kind are actually due to great differences in severity, or to different numbers and combinations of symptoms (according to these authors). There is undoubtedly some validity in this (unitary) point of view. Since it also appears very likely that diagnosis is based at least partly on severity and since it is known that patients present at different treatment settings according to the severity of their illness (Hamilton, 1967; Paykel, Klerman, and Prusoff, 1970), it is clear that the division made between quantitative and qualitative bases of heterogeneity is to some extent artificial and is made for convenience.

therein. It also implies that two studies are not strictly comparable if their subject populations are very different.

Some studies (Fahy, Brandon and Garside, 1968; McConaghy, Joffe and Murphy, 1967; Rosenthal and Klerman, 1966) do not meet the basic criterion of including an adequate number of subjects to ensure reasonable stability and replicability of results. It is generally accepted that a ratio of four subjects to one item is necessary.

In many cases the quality and even the appropriateness of the original data is highly questionable even to an uncritical eye. Many, if not all, of the so-called depression items are not specific to depression (Foulds, 1962) and for many the meaning is unclear or controversial (Appendix H). In very few studies does the author provide his specific definitions of symptom terms (Carney, Roth and Garside, 1965 is an exception) and it is clear, in context, that these vary considerably.

Most of the factor analytic studies employ symptom measures (frequently clinician ratings) with little evidence of reliability and even less of validity. The only claim to the latter is based on the content of items chosen, according to each individual author's predilection, from among the many traditionally considered to indicate depression. Although there are at least fifty depression scales reported in the literature, there are very few whose reliability or validity can be said to be established. A few studies (Hamilton, 1960, 1967; Hordern, 1965; Mowbray, 1972;

Pichot and Lemperiere, 1964; Weckowicz, Cropley, and Muir, 1971) have used scales with established reliability or validity.

The problem of reliability is not so marked when symptoms are rated only present or absent, but this procedure introduces other forms of error. It has been established that the use of binary data has a significant biasing effect on the results of factor analytic studies i.e. factor structure tends to be predetermined by the binary nature of the data rather than by the relationships between items[8]. Many studies of depression have utilized this type of data (Carney, Roth and Garside, 1965; Fahy, Brandon and Garside, 1969; Kay, Garside, Beamish and Roy, 1969; Kear-Colwell, 1972; Kiloh and Garside, 1963; McConaghy, Joffe, and Murphy, 1967).

An aspect of factor analytic results which is often ignored concerns the particular type of analysis and rotation performed, although it is obvious that these determine (to some extent) the results which will be obtained. The technical-arithmetical manipulations differ, as do the criteria for optimal factor loading patterns and these in turn affect the results. Clearly the magnitude and general nature of the differences that the use of different techniques can be expected to make should be considered when evaluating the results of any study.

Most of the studies used principal component analyses. When this technique is used there is a strong tendency for the first two principal axes to be a general factor and a

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8. A serious bias is introduced into the data by the use of phi correlation coefficients, if some items are rarely endorsed.

bipolar factor. Unrotated results of this nature were reported in several cases (Carney, Roth and Garside, 1965; Hamilton and White, 1959; Kay, Garside, Beamish and Roy, 1969; Kiloh and Garside, 1963). In light of the "pre-determination" of results, the amount of support of the binary theory of depression that was claimed to be represented by them (in Eysenck's 1970 review and in individual studies) seems exaggerated.

Objections can also be raised to the reporting of the principal axis (unrotated) results at all (not just in principal components solutions) since these results are largely dependent on the technique employed. There is no uniquely best rotation but the criterion used to determine the best rotation technique for a particular study can be justified in terms of the nature of the data being used and the hypothesis being investigated. Specific criteria are rationalized as being more useful than principal axes solutions on the basis of the unique properties of the results of each different rotation method. It would be helpful if these criteria were explicated briefly in each study for the benefit of the many readers who are not aware of their significance in the interpretation of results.

Criticism of several studies (see Weckowicz, 1973 and Becker, 1974) can be made on the basis that they rotated and reported too few factors and the factors reported did not account for a large proportion of the variance in the data. This indicates that there are really no strong tendencies

for items to cluster and that factor analysis may not have been the appropriate method of investigating the data. In fact in some cases where full correlation matrices are reported high correlations are rare enough that it seems difficult to justify undertaking the analysis in the first place.

2.2 The General Factor

The general factor in any given study is one upon which all or almost all of the items included in the study load in the same direction. Most items would have large or medium size loadings. The significance of the general factor is open to three possible interpretations.

Most studies imply or explicitly state that it is a general factor of depression, but in fact this is not necessarily the case. Unless one includes symptoms characteristic of other psychiatric (or other medical) disorders (which studies of depression have by definition not done), and finds that the depressive items cluster together in a distinct factor, there is no basis for assuming that these items would not cluster with many others. In fact these symptoms may not be specific to depression and may instead represent part of a general distress factor (Welsh and Dahlstrom, 1956). The question of discriminant validity of the disorder depression is discussed at some length in Section 2.7 in the context of those studies which have measured symptoms of many disorders in addition to depression.

The general factor can also be interpreted as a general

severity factor[9]. Such a factor extracts variance due to severity from the intercorrelation matrix and is larger if the range of severity in the sample is wider. Such a factor may be an artefact which reflects only the differences in severity within the subject sample. It is possible to observe a general factor in the results in the absence of significant similarity in symptom patterns between patients i.e. if differences in severity levels across patients are sufficiently great they alone will result in a general factor. Symptom patterns may still be very different in different groups of patient subjects. This possibility must be eliminated by further examination of the data before the factor can be assumed to represent a general symptom pattern. One way of doing this is to examine symptom patterns in logical subgroups of the subject sample if these can be delineated Alternatively, one could partial out severity (e.g. by standardization of the dataset).

In practice an appropriate range of severity is one which is neither excessively wide nor extremely narrow. It is desirable to incorporate a reasonable range of severity into the subject sample because the relative size of the general and bipolar factors in a given study is a direct function of that range.

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9. In general a high score on this factor indicates that a patient is quite ill since he must score highly on many items i.e. symptoms, in order to get a high factor score.

For studies which report two major factors, one bipolar and one a general factor, the size of the latter relates directly to the independence of the syndromes represented by the opposite poles of the bipolar factor (see Section 2.3). The absence of a large general factor makes it impossible to separate the two poles on rotation of the principal axes of the factor analysis. If the variance due to severity is not present, the data will be best described by the single bipolar factor (according to the criterion of simple structure, see Hamilton, 1967)[10]. The relative importance of these two factors has been the central evidence cited in support of their cause, by adherents of both the unitary and the binary theories of depression.

As an illustration of these points, Hamilton (1967) draws a comparison between studies of depression and investigations in the field of intelligence. He describes the interaction of sampling effects with the appearance of the general and bipolar factors:

> the subtests for intelligence or general ability have positive intercorrelations and the first factor is a general factor of intelligence...the second factor extracted usually represents the pattern of arithmetical vs verbal abilities. This is true only if the correlations are based on tests from a wide range of ability. If the

10. The single bipolar factor supports a unitary model of depression as a disorder characterized by the absence of certain symptoms (the items with negative signs) and the presence of others (the items with positive signs).

> range is narrowed, the intercorrelations diminish in size and some may become negative. This has the... effect of reducing the variance of the first factor as compared with the second and other factors. If the subjects were selected so that they all had the same score on the total test, then the matrix of correlations would be "bipolar", the first factor would disappear, leaving the bipolar factor...to appear as the largest factor. A selection of subjects not quite so limited in range would produce results intermediate to those described. (p. 285)

In other words a general factor is usually extracted when many of the depression items used have positive intercorrelations. This will occur only if the sample represents a range of severity of illness. The second factor in many depression studies is bipolar and is often interpreted as contrasting the symptoms of neurotic and endogenous depression (see Mendels and Cochrane, 1968).

Specific examples of these principles are available in the research literature on depression. According to Hamilton (1967), Kiloh and Garside (1963) used variables similar to those in his rating scale but included only outpatients in their sample. Their bipolar factor had a variance larger than the general factor. In contrast, Paykel, Klerman and Prusoff (1970) who included inpatients, outpatients, day hospital and emergency patients found an unrotated general factor which was twice as large as their

bipolar factor.

Factor analytic studies of depressive symptomatology can be arranged on a continuum according to the size (or variance accounted for) of the general factor they extracted. The size of the general factor can be manipulated via sampling techniques. The wider the range of severity of illness in the patient sample, the larger will be the general factor. The important influence of sampling techniques on the interpretation of study results is mediated through the size of the general factor.

2.3 The Binary Theory and the Unitary Theory

The fact that the size of the general factor can be manipulated by subject sampling is important because its size can be interpreted as support of either the binary or unitary theory.

The binary-unitary controversy centres around the attempt to "prove" the existence of separable, independent depressive syndromes. According to Eysenck (1970) if Lewis' (1934) position that there is only one type of depression is to be supported, then:

> the matrix of intercorrelations of depressive symptom items...should have rank one i.e. it should give rise to only one important factor which is a general one. If, on the other hand, the binary position of Roth and the Newcastle group is to be supported, this intercorrelation matrix must give rise to a single general factor and in addition an equally large or larger bipolar factor. (p. 118)

In order to support the contention that there are two types of depression, the bipolar factor must separate into two independent (uncorrelated) factors (descriptive of the two types) on rotation to simple structure. This separation is an indication of the independence of the two syndromes, i.e. of their separate existence.

Although this statement appears to provide clear criteria for solving an old problem, no study has actually reported clearcut results. The arbitrariness of the interpretation of factor analytic results is partly to blame for this. The problem is that there really is not the clear cut criterion that Eysenck suggests because the technique of principal component analysis determines that there will always be a general factor and a bipolar factor extracted from any set of data. This is true of any technique which extracts the first factor to account for maximum possible variance in the data. (Principal components and centroid factor analysis are of this type.) As a result one is still left with the problem of deciding when the general factor is big enough to be considered the only important factor.

Roughly speaking, principal components analysis plots items in multidimensional space according to their intercorrelations and then positions the first factor among them so that it accounts for the maximum variance possible. Figures 1a and 1b represent two possible results of this procedure.

In both cases the first factor is a general factor by virtue of the criterion used to position it. From the diagram it is easy to see why the second factor will almost certainly be a bipolar one when the criterion is that the second factor will be orthogonal to the first.

Figure 1b illustrates a case where both the general factor and the bipolar factor are large. The two poles of the latter are fairly independent, i.e. a ninety degree rotation would make them orthogonal to one another. Data which fit this pattern would provide fairly strong support of a binary model of depression.

In figure 1a the bipolar factor is small (in terms of variance accounted for) and the general factor large. The two poles of this bipolar factor might appear as correlated factors if an oblique rotation was performed. They would not separate out as orthogonal factors. The variance of data fitting this pattern is probably best accounted for by a single factor. This result supports a unitary model of depression.

There is a third possibility. If the data is clearly best accounted for by a single bipolar factor there will be a very small general factor (Figure 1c). In this case the two syndromes represented by the poles of the bipolar factor are correlated (negatively) and would not be appreciably separated by any rotation. This would also indicate that a unitary model of depression was appropriate. However, in this case the diagnosis of depression is made on the basis

Figure 1

The Effect of Item Correlations on Positioning of Principal Axis Factors in Principal Component Analysis

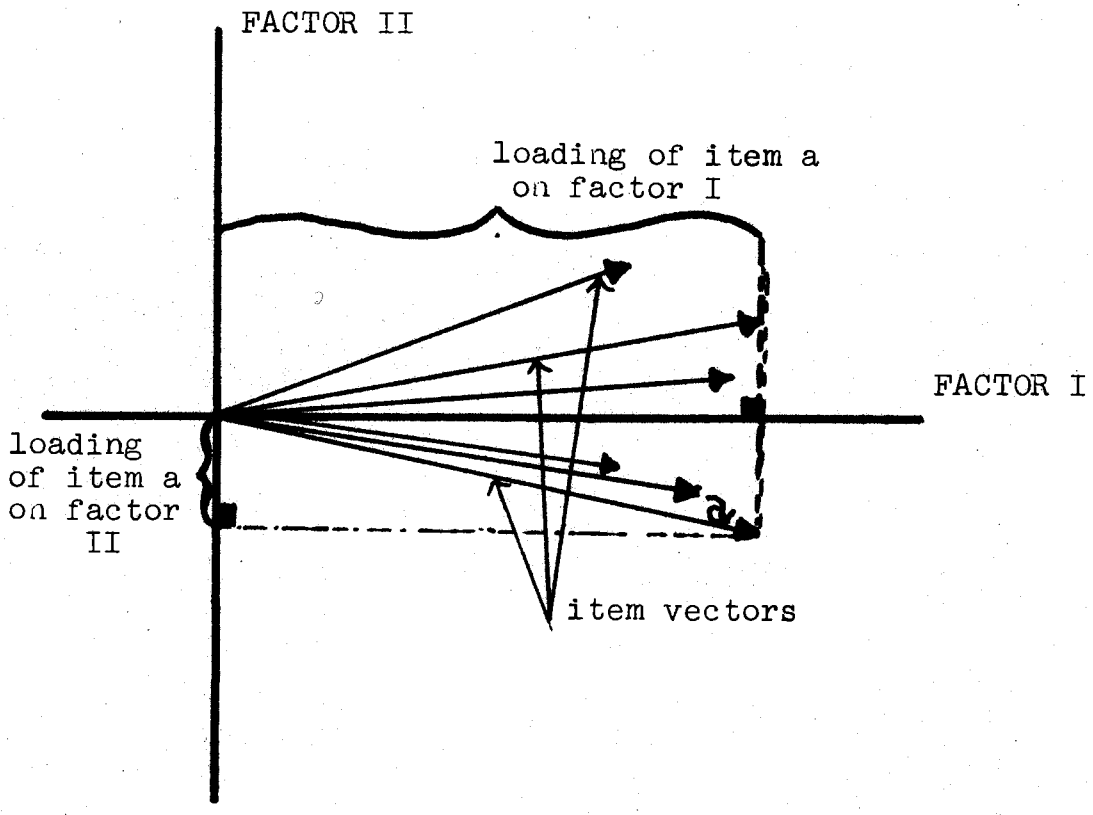


FIGURE 1a

Item vectors indicate a large general factor(I) and a small bipolar factor(II). All loadings on the general factor are large. Loadings on the bipolar factor are small.

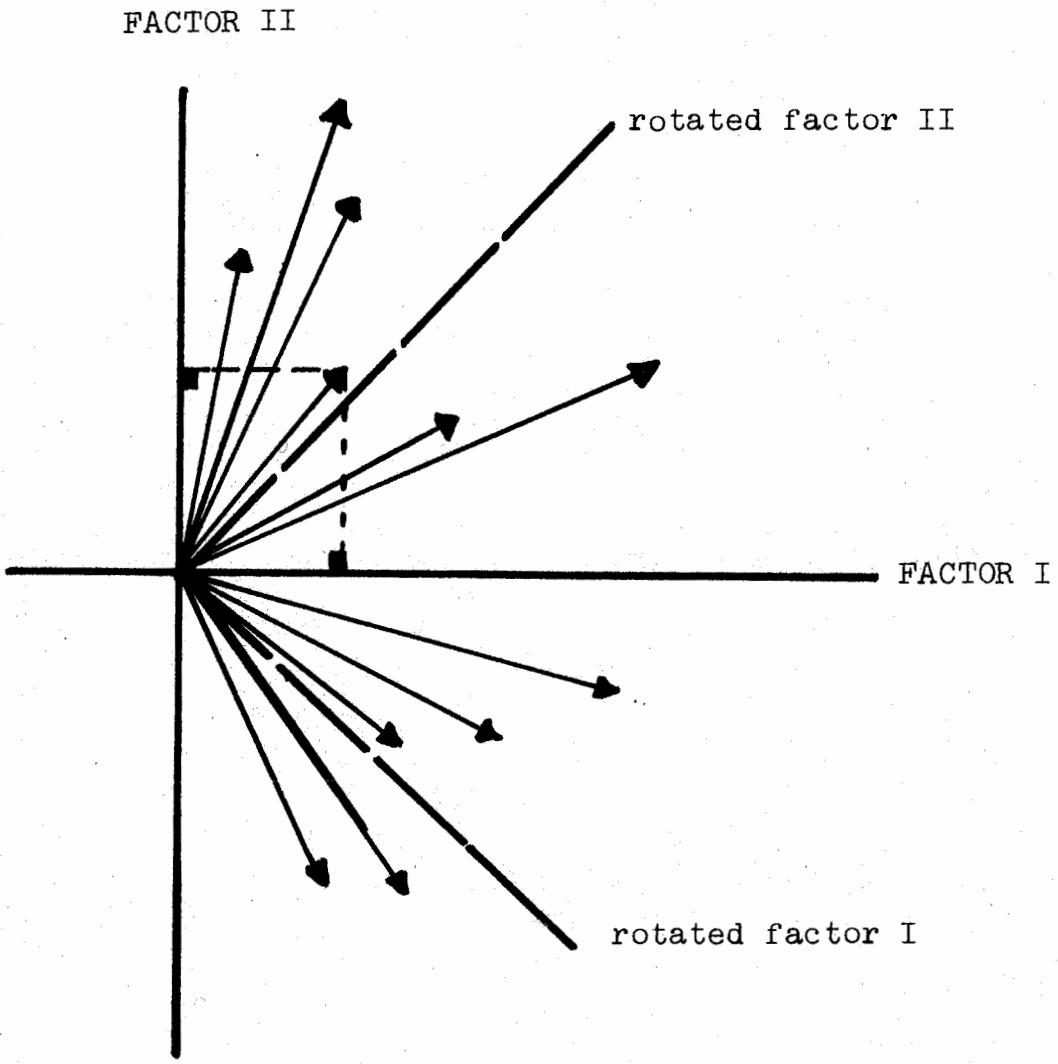


FIGURE 1b

Item vectors indicate a large bipolar factor and a small general factor (I). Rotation produces two orthogonal factors.

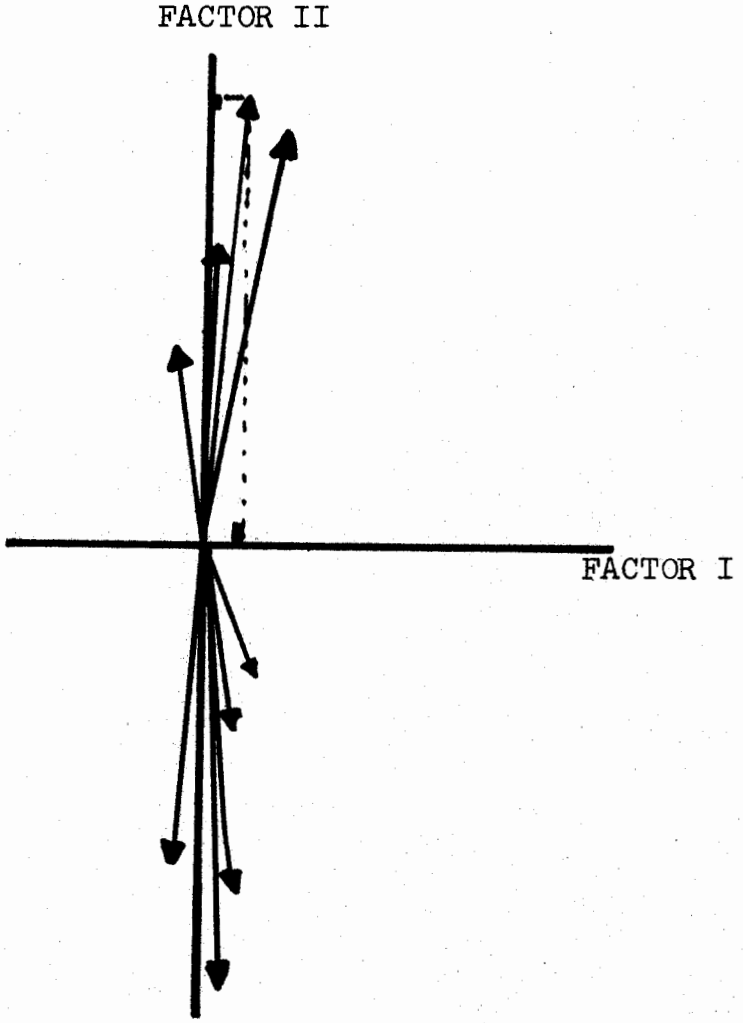


FIGURE 1c

Item vectors indicate a single large bipolar factor(II). Loadings on the general factor(I) are uniformly small.

of the absence of some symptoms and the presence of others.

When the symptom patterns (as delineated by factors) are independent, the possibility exists that they may occur in the same person at the same time (by chance, not due to correlation). In fact this is the definition of independence; "when conditions are independent the occurrence of one has no relation to the occurrence or absence of the other. When variables cluster at either end of a bipolar factor this indicates that these clusters are mutually exclusive, not independent" (Kiloh, Andrews, Neilson and Bianchi, 1972). In this case the clusters are in fact perfectly correlated and totally dependent.

Such a correlation reflects an arbitrary dichotomization of a single group of symptoms. It is the result of rater bias in scoring or of a biased choice of the original items included in the analysis. If the person doing the symptom ratings is influenced by his belief that a given patient should exhibit only the symptoms of neurotic or endogenous depression, but not both, the result may be a bipolar factor whose poles represent sets of symptoms which are polar opposites. Alternatively, as Carney, Roth and Garside (1965) comment: "the possibility that the results may have been largely determined by the original selection of features has to be considered" (p. 676). If the original items are delineated by an investigator with a two-type bias, they may simply reflect the opposite ends of several continuous dimensions e.g. retardation-agitation, or the presence or

absence of a given symptom e.g. reactivity, lack of reactivity.

The implications of any given set of results which closely resembles one of the three prototypes diagrammed is reasonably obvious. However, the difficulties of interpretation which arise in actual studies where the results may be anywhere between these extremes are easy to imagine. This problem is illustrated by the study performed by Kiloh et al (1972). The second factor analysis that they describe extracted a general factor which accounted for over 50% of the variance in their data and a bipolar factor which accounted for 9% of the variance. One could argue that in comparison to the first factor, the second is unimportant and so the study provides support for the unitary hypothesis. However, the second factor has an eigenvalue of approximately three, which makes it quite large enough to be included in a rotation of the solution.[11] Such a rotation produces two separate factors descriptive of endogenous and neurotic depression. (These two terms have no specific meaning but are used to designate the two kinds of depression implied by the widely accepted and used binary model. The different levels of analysis implied by the original etiological significance of the term endogenous

11. By the standard, accepted (if arbitrary) criterion that factors having eigenvalues greater than one are usually included in the rotation.

and the symptomatological nature of the term neurotic, have been lost. In the text below these terms are used with this non-specific meaning whenever models of depression are discussed.) This of course, is support for the binary view and this is how the authors chose to report their results.

The question of which subset of factors to consider is not going to be answered here. Hopefully further analysis will confirm or deny the usefulness of the interpretation offered. In the present context it serves as an illustration of an everpresent problem. Factor analysis cannot prove or disprove a theory, it can only suggest the most appropriate interpretation of the data.

2.4 The Categorical Model and the Dimensional Model

The categorical model. It is common practice to speak of the categorical model of depression as if that phrase were self-explanatory. In fact it has several possible sets of implications which are not always appreciated or clarified in the literature.

Basically the categorical model of depression is equivalent to a disease model. It assumes that depression has a specific etiology and that persons suffering from a depressive disorder can be distinguished from those who are not, i.e. it assumes a discontinuity between the normal

population and the depressed population.[12] The model also assumes that depressive disorders are categorically distinguishable from other psychiatric and physical disorders. The model can be extended to subtypes of depression in which case these are considered to be readily distinguishable from one another.

The dimensional model. If we equate the disease model with a categorical model we are stating that a dimensional model does not involve diseases as such. We are in fact advocating a totally different model of mental illness which has two basic tenets:

1) that mental illness is not a disease with a specific etiology and therefore by implication, it must be the result of interactions between several factors e.g. stress, constitution etc.

2) that the bases of particular diseases such as depression are more like personality traits than diseases and are characteristics of all members of the population to a greater or lesser extent. Those persons eventually recognized as depressed patients are individuals for whom this trait has assumed prominence.

This idea of dimensionality thus carries with it the idea

12. Such a distinction could very likely not be made with 100% accuracy as medicine recognizes that symptoms occur as the result of the interaction of the body and a cause of a disease. The reaction may be more or less complete e.g. a man may harbour tuberculosis bacilli without developing the disease, a cold may be just a sniffle and a headache or it may put the patient in the hospital. In some sense however, most people who have a particular disease are distinguishable from most who do not. Practically speaking the most useful model is the categorical one when the concern is with decision-making.

of dimensions of depression (as opposed to diseases, which we have defined as being not dimensional i.e. not present in all members of the population). A logical extension of this idea is to conceptualize a mental illness such as depression not as a unidimensional phenomenon or as a disease but as a position in multi-dimensional space (Eysenck, 1970). There could be several dimensions contributing to the clinical picture of those people we choose to label "depressed" for example guilt, anxiety, despondency. Several such dimensions might quite reasonably occur in one person at one time. This model could account for a wide variety of different presenting clinical manifestations of depression (see Section 2.7).

Mixed models. Problems arise because some authors who advocate the categorical model of subtypes on the basis that they believe there are distinct etiologies, claim that there is considerable overlap at the phenomenological level. On the other hand, Lewis (1938) claims that while it sometimes appears from the phenomenological level, that there are two kinds of depression, the differences are merely the results of differences in severity. The fact that severely ill patients who are psychotic, are so obviously anomalous in appearance, leads people to think they have a different disorder. However, he claims there is insufficient evidence for this view. The point, for the purpose of the present discussion, is that Lewis has delineated another aspect of

dimensionality. In this case it is the dimensional nature of variation in severity within a single disorder. This aspect of the usage of the word has to be distinguished from those discussed above.

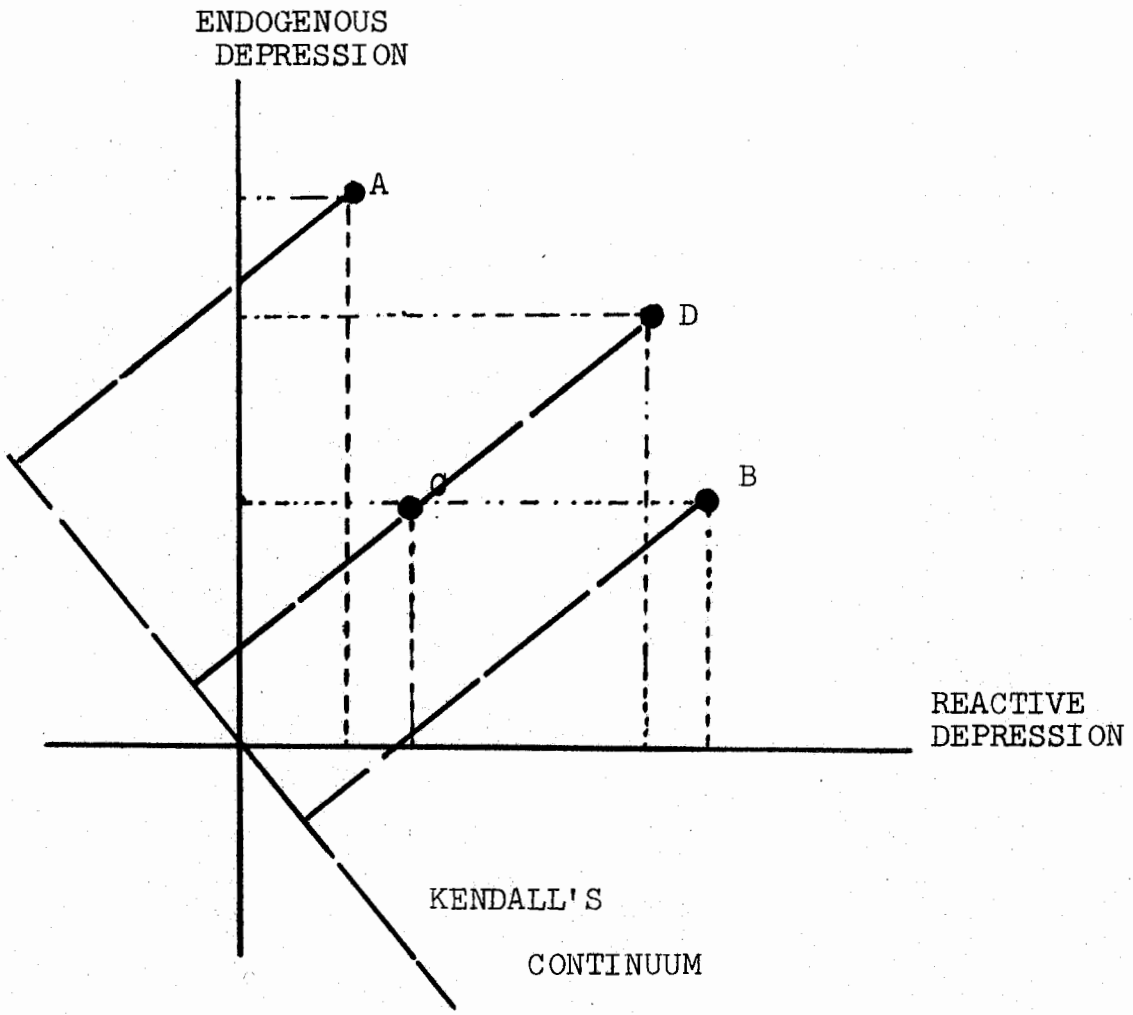
Empirical evidence in support of each model. Some authors (Carney, Roth and Garside, 1965; Garside, Kay, Wilson, Deaton and Roth, 1971) plot factor scores on the bipolar factors they extract. They then claim that a bimodal distribution of scores constitutes support of the binary theory of depression. Eysenck (1970) points out that the distribution of scores on this factor is not relevant to this question. In fact he illustrates how this procedure actually results in a loss of information. Some persons whose scores on two separate factors derived from the bipolar factor would be quite different, actually end up having the same score on the continuum represented by the bipolar factor itself (see Figure 2). It is not sensible to decide that there are two sources of variance and to then collapse them into one continuum on which patient scores are plotted. Eysenck contends that a patient must be given a score on each factor (endogenous and reactive) in order to characterize him properly.

In any case plots of scores on these factors[13] are relevant to the question of whether depressions are

13. Most studies did not go so far as separating their bipolar factors and so could not do this. Kiloh et al (1972) is an exception.

Figure 2

Eysenck's Factorial Resolution of Kendall's Continuum



Eysenck's (1970) diagram indicates the factorial resolution of symptoms associated with depressive illnesses in terms of two factors (endogenous and reactive). The diagram also shows Kendell's proposed continuum, and the position of four hypothetical patients on the two factorial continua, and on Kendall's continuum.

categorical or dimensional and have no bearing on the unitary-binary issue. A dimensional model predicts a distribution of scores. A categorical model predicts that patient scores will cluster around the axes representing factors, i.e. no person will score appreciably on both factors. Kiloh et al (1972) plotted all subject's scores on their endogenous and reactive factors and found that patient groups determined by clinical diagnoses (endogenous and neurotic) were quite well separated by their factor scores. However, the separation of groups was not complete and the authors concluded that endogenous depression was categorical and neurotic depression was dimensional. They based this conclusion on the observation that endogenous scores clustered more tightly than neurotic scores. Similar conclusions have been reached by other authors (Kay et al, 1969; Kear-Colwell, 1972).

Eysenck (1970) feels that arguments from distributions are not particularly strong because their shape is subject to errors from such sources as unreliability, halo effect, preconceived rater bias and non-cardinal metric in the data. But he feels that the most significant problem arises from differential selection of subjects from sample to sample. Some authors select according to diagnoses or other criteria, some use successive admissions. He continues:

> admissions certainly do not represent fairly all applicants. And all applicants are certainly not a

> fair sample of all persons who might be considered to be suffering from depression....The final distribution of scores...will depend very strongly on selection procedures (the nature of which is largely unknown) used on samples themselves self-selected (or G.P. selected) on principles equally unknown, from a universe entirely unknown! It does not require much knowledge of statistics and sampling procedure to see that this method is unlikely to give us a population very representative of anything, other than itself. (p. 268)

This state of affairs might account to a large extent for the failure of investigators in this area to come up with any consistent solution to the problems of classification of depression.

2.5 Factor Space and People Space

The controversy over the number of kinds (symptom patterns) of depression seems to have been widely confused with the question of whether or not pure types exist. People have tended to assume that if there are two kinds, then any particular person suffering from a depressive disorder should show the symptoms of only one kind or the other, i.e. should be a pure type.[14]

Pure symptom pictures will be the rule in a large

14. This confusion may have arisen in part from inconsistent use of terminology. When one speaks of types one is usually referring to typologies of persons, however discussions of kinds of depression have often referred to them--as has the discussion above--as subtypes.

majority of cases if the disorder is a categorical one, since mixed pictures would occur only when an individual was unfortunate enough to be suffering from two distinct diseases at the same time. However, many investigators (Garmany, 1958; Lewis, 1934) have found that mixed symptom pictures are the rule.

It is a common misconception that such mixtures of endogenous and reactive, or neurotic and psychotic, symptoms in patients (people space) imply a unitary model of depression (factor space). This is one possible explanation of mixed pictures, i.e. that the differences are simply reflections of differences in severity. However, a dimensional model of depression would also account for mixed pictures. A dimensional model implies that all persons have some degree of endogenous (psychotic) and some degree of reactive (neurotic) depressive characteristics. Consequently, mixed pictures might give rise to two groups of patients who looked quite different from one another but did not really resemble either reactive or endogenous. This possibility led Hamilton (1960) to say:

> If their experience with patients has led them to believe that there are two types of depression i.e. two different sets of symptoms constituting depressive disease, investigators expect factor analysis to delineate the classical syndromes of depression and perhaps some

new ones. In fact this will occur only if no person can have more than a single "kind" of depression at any given time.

In this case "factor space" corresponds to "people space."

2.6 Seven Models of Depression

Eysenck's (1970) discussion of four models of depression (two unitary and two binary) serves as the basis of this section. The models he outlined were: 1) unitary and dimensional, 2) unitary and categorical, 3) binary and categorical, and 4) binary and dimensional. The discussion below will consider a mixed binary model where one type is dimensional and the other categorical. Eysenck chose to ignore this alternative for the sake of simplicity, but several studies (Kear-Colwell, 1972; Kiloh et al, 1972) have supported this particular model since Eysenck published his article. The sixth and seventh models are multi-type models. An attempt will be made to delineate the factor analytic results which support each model.

The unitary model. The simplest result of a factor analysis, a single large general factor, would support a unitary model of depression. Similar general factors reported from normal and patient populations would support a dimensional model. The dimensionality would be reflected in a unimodal distribution of scores on the general factor.

The implication of this unitary dimensional model is that there is a cohesive group of symptoms which form the syndrome of depression. In the main these symptoms are

normal occurrences (see Appendix H) but can become exaggerated in intensity or duration so as to constitute a disorder requiring treatment. Since the general factor would not account for all of the covariance in the data, it is likely that actual presenting symptom pictures would still vary considerably.

The unitary view, in Eysenck's opinion, is the one held by Kendall (1968) and Freud (1917). The only differences between patients under this model are differences of severity, and normal depression may be placed on the same continuum as clinical depression. Psychotic depression is seen as an exacerbation of neurotic depression which in turn is an exaggeration of normality. A supporting theory is proposed by Kay et al (1969) who point out that a symptom may seem to change in quality as it becomes more severe. It is reasonable to suggest that psychotic symptoms (hallucinations and delusions) may be a matter of degree, and may be the manifestation of a very severe depression and consequently not necessarily discontinuous with the symptoms of milder depression.

When the distribution of scores on the general factor is clearly bimodal, a categorical model is indicated. In this case there is only one kind of clinical depression and it is categorically different from the normal state we associate with "having the blues" or "being down." This result would essentially support a disease model of depression. According to Eysenck (1970), this is the model

used by Lewis (1934) and Mapother (1926). Lewis believed that within the group of depressive illnesses, the only differences between patients were differences of severity, but that patients were clearly distinguishable from normals. He felt that psychotic depression was an exacerbation of neurotic depression and that the two were extremes of a continuum.

No study has been reported which actually seeks to test this theory. Such a study might involve a sample which was composed of patients (selected so as to present a range of severity) and normals in equal numbers. Normals would be expected to score near zero on a factor delineated by symptoms of clinical depression since such depression occurs in patients only.

In order to properly test either of the unitary theories of depression it is necessary to have a sample which includes undiagnosed depressions at several levels of severity, from the general population (including temporary low moods). The difficulty of procuring such a sample is probably the reason such a study has not been undertaken.

The nature of the relationship between normal and clinical depression is particularly important, if, as several investigators now believe, there are substantial numbers of people in the general population who suffer from clinical levels of depression. It is a research question which has received little attention in the past.

The binary model. Several studies report a factor solution involving two major factors of approximately equal size. Suitable rotations may delineate two independent depressive patterns. If these patterns correspond to patient groupings a categorical model is indicated. This binary categorical model is the one attributed by Eysenck to the "Newcastle group" (Carney, Roth, Kiloh and colleagues).

Eysenck himself supports a binary dimensional view. He considers that any depressed person (patient or normal) is properly characterized only if his scores on both the neurotic depression factor and the psychotic depression factor are given. His view is that both factors represent personality traits possessed by all persons to a greater or lesser extent (Eysenck and Eysenck, 1968). Since all possible combinations of scores on these two factors will occur, there will be a considerable variety in presenting symptom pictures.

Multi-type models. A factor analysis may extract several factors of approximately equal size. The interpretation of these results is analogous to those for one factor or two factor solutions.

If a categorical model is appropriate, the situation is relatively simple. Depressed patients are clearly separable from normals and from patients suffering from other kinds of psychiatric disorders. The use of appropriate

methodology should make it relatively easy to delineate discrete subtypes.

If consistent results of this kind, i.e. where factors or particular combinations of factors correspond to patient groupings, were consistently reported, they would support the view that there are really several different disorders which are called depression. This is the situation currently assumed by the official APA diagnostic nomenclature. However, clinicians observe considerable overlap between categories and the poor reliability of psychiatric diagnosis attests to their difficulty in assigning individuals definitely to one group or another.

However, if a dimensional model is appropriate, i.e. if all types of psychiatric symptoms are to be considered exaggerations of normal traits, then it is appropriate to envision a model which positions all psychiatric disorders in the same multidimensional space. All patients would have scores on all factors and each dimension would contribute to the presenting picture of each patient. However, a single dimension in any given patient might predominate, thus producing the appearance of considerable heterogenity in the patient population. Stated simply, this implies that different pictures of depression are created by the interplay of different traits or dimensions, e.g. guilt, anxiety, sadness, apathy, in the subject. It is quite possible that relative dominance of one or the other is dependent on such things as premorbid personality and

environmental circumstances.[15]

Clearly under this model "pure types" presenting with the symptoms of any particular dimension would be rare, although they would occur. Mixed symptom pictures would be much more the rule. This model therefore accounts for the situation reported by several authors (Garmany, 1958; Lewis, 1934) that such mixed symptom pictures are common in their samples. As Eysenck (1970) points out, the dimensional model helps us to account for many of the difficulties encountered in trying to construct and operate a system of differential psychiatric diagnosis. (This model is discussed at length in Section 2.7)

A Mixed Model. There is an additional model which Eysenck mentions but "for simplicity's sake" he avoids discussing. This is a mixed model, i.e. a model in which one type of depression is dimensional and the other categorical. In fact in a recent paper by the Newcastle group (Kiloh et al, 1972) the rapprochement of their position with that of Kendall (1968) through the medium of this model, is noted. Both groups endorse a model where neurotic depression is considered to be a dimensional phenomenon and endogenous depression is considered to be categorical.

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15. A multifactor result which did not show any particular tendency for specific patterns to occur in specific subsamples might indicate a methodological artefact. For example, behavioural items, feelings and concerns items, and items indicative of cognitive disturbances might be grouping to form three factors. Alternatively, demographic characteristics (sex, age, I.Q.) might be the primary determinants of factor patterns.

Summary. A unitary dimensional model of depression implies not only that there are not different kinds of depression (or to put it slightly differently, different presenting pictures of depression cannot be separated because they represent positions on a single continuum) but that depression is also continuous with "normality". Thus, the distinction between a "normal" person and a "depressed" person is arbitrary: the "depressed" person is considered to be depressed simply by being labelled that way and not by contracting a disease.

The unitary categorical model accepts the first part of this continuum, i.e. that there is only one kind of depression but it maintains that there is a specific etiology of depressive illness which would distinguish between depressives and "normals" if we knew what it was. This theory maintains that being "well" is qualitatively and not just quantitatively different from being depressed. This model does not necessarily deny that there is a phenomenological continuum between normals and depressed persons, although this has generally been considered a corollary of the model.

The binary, categorical model maintains that there are two kinds of depression which are distinguishable from each other and from "normality".

The binary dimensional model considers that there are two distinct and separable depressive patterns but that each of these is continuous with normal personality characteristics. That is, the definition of who is pathologically depressed

and therefore becomes a patient is an arbitrary one which depends on the ability of the individual and his environment to tolerate depressive symptomatology.

A mixed model which considers endogenous depression to be categorical and reactive (neurotic) depression to be dimensional has been supported by several studies which show a much broader range of severity in cases of the latter kind. It has been suggested that the apparent clustering of endogenous scores may result solely from the identification of severe psychotic cases as categorically different from others.

A multitype model suggests that there are several groups of symptoms (factor patterns) which are characteristic of depression. If there is assumed to be a continuum between normality and depression on every dimension the model is a multidimensional one. Alternatively, a categorical model implies that each patient scores highly on only one factor or a specific combination of factors delineating his "type".

When using any of these models researchers must be careful not to confuse factor space and people space. The fact that there are two or more kinds of depression does not mean that a single person cannot have the symptoms of more than one type at one time and so present a mixed symptom picture. (Although this is much less likely under a categorical model.)

2.7 The Multidimensional Model and the Convergent/Discriminant Validity of the Concept of Depression

This section will explain the concept of a multidimensional model and delineate the evidence supporting it. This evidence derives mainly from studies of the convergent and discriminant validity of depression. This section will outline the arguments for the proposal that the multidimensional model subsumes all others and that as the most all-encompassing model, it is the best.

Recently a number of investigators in the field of psychopathology have conducted studies on a model of psychiatric disorders which denies the existence of discrete psychiatric diseases such as schizophrenia or depression. Instead they advocate a multidimensional model which postulates that all mental illness is dervied from a finite number of dimensions of abnormal behaviour. Psychiatric disorders, such as depression, seen in the clinic are the result of a particular combination of these dimensions and may be conceptualized as occupying a particular position in the multidimensional space defined by them.

If confusion is to be avoided in the discussions which follow, three aspects of the multidimensional model must be borne in mind. Firstly, the fact that dimensionality implies continuity between normal experience and the experience of psychiatric patients. Secondly, the fact that the model implies the possibility of the shading of the limits of one disorder into another. This situation makes the drawing of

boundaries between disorders arbitrary. Thirdly, the assumption that the group of disorders called depressive occupy one particular region of the multidimensional space which defines all psychiatric disorder (i.e. mental illness). The implication of these three corollaries is that the multidimensional model is a model of abnormal symptomatology in general and not simply a model of depression.

Convergent and discriminant validity. The multidimensional model would suggest that investigators would have a difficult time establishing the validity of the syndrome of depression as it is presently constituted since the traditional model of depression includes elements of several dimensions of abnormal behaviour. This may be one reason why no adequate measure of depression has been developed. On the other hand the multidimensional model suggests that it might be possible to establish the convergent and discriminant validity of a dimension of depression which would be narrower in scope than the traditional syndrome. Such a dimension would be accessible to accurate measurement.

An attempt of this kind, specifically concerned with depression has never been undertaken. However, several investigators have studied depression in the context of general inventories of psychopathology. Many of these (Clyde, 1963; Foulds and Hope, 1968; Lorr, Klett and McNair, 1963; Wittenborn, 1955) attempt to measure several relatively independent dimensions of behaviour (of which depression is one) derived from multivariate techniques such as factor

analysis. In the context of the present discussion their attempts can be approached at several levels.

The discriminant validity of depression as a diagnostic category or discrete disorder can be approached at the level of item analysis. The symptoms commonly included in descriptions of depressive disorder are not unique or specific to depression.

Foulds (1962) constructed eight a priori scales of ten items each (including neurotic and psychotic depression scales). From these sets of items he then derived scales which distinguished each of five diagnostic groups from each of the other five, e.g. a scale whose items distinguished between patients diagnosed as depressive and those diagnosed as paranoid states. He found that most of the neurotic depression items did not distinguish between any groups. The only exception was the item "attempted suicide" which entered into several scales (some of which were not concerned with either depressed group). All of the other neurotic depression items occurred with equal frequency in all groups. Anxiety items did not distinguish neurotic depressive patients. The only other item (in addition to attempted suicide) which distinguished neurotic depressives from most other groups at the .05 level of significance was from the paranoia (a priori) scale. Psychotic depressives were distinguished by one traditional depression item (the future seems pointless) and by items concerning agitation, attempted suicide and psychotic

symptoms. The picture which emerges from his study is that there is no consensus with respect to the association of neurotic symptoms and particularly those traditionally associated with neurotic depression) with particular syndromes such as depression. In fact Foulds assigned several symptoms often included in descriptions of depression to the a priori scales for hysteria and anxiety.

At this point if we move to the level of scale analysis reports of several studies (Costello and Comrey, 1967; Kellner and Sheffield, 1973; Saltzman, Kochansky and Shader, 1972) indicate considerable overlap in the item content of scales which are derived as measures of various dimensions of psychopathology. Even the content of Spitzer, Fleiss, Endicott and Cohen's (1967) factor analytically derived Depression-Anxiety scale (see Table 2.1) shows considerable variety of content in spite of its relative independence from other study scales such as retardation, isolation, suicide, somatic concern and agitation.

In light of the kinds of overlap described above it is not surprising that scales designed to measure particular types of psychopathology often fail to distinguish between specific diagnostic groups. Foulds found that even with his derived scales he could only distinguish 52% of diagnosed neurotic depressives from hysterics, 72% from anxiety states and 66% from psychotic depressives.

Problems of the discriminant validity of a diagnostic

Table 2.1

Spitzer et al's (1967) Factor Analytically Derived Depression-Anxiety Scale

worries a lot
many fears
fears abandonment
fears insanity*
morbid fear of future
phobia
attacks of panic
bothered by anxiety
continually anxious
feels restless
bothered by sadness
continually depressed
feels like crying
accuses self of sin
feels inadequate
guilt feelings
can't function
hurt when criticized
irritable or easily upset
broods
obsessions
bothered by appearance
says he is ugly
feels physically inferior
compulsion
no sexual desire
homosexual fears
sexually impaired
troubled with masturbation
feels tired
feels slowed down
poor appetite
insomnia
rituals time consuming
cannot concentrate
slowed thinking
poor memory
no plans for the future
hopeless towards future
says he is humourless
enjoys nothing
no interests
loses interest
feels punished
thinks of his death
indecisive
says he is aimless
harps on effect of illness
expresses regrets
fear prevents activity
thinking impairs routine

* underlined items correspond to items included in the present study

category called depression are increased at the level of examining depression questionnaires, inventories, or rating scales. It has already been noted that depression questionnaires encompass a large variety of types of symptomatology. This is amply demonstrated by a group of factor analytic studies which have confined their area of study to traditional depressive symptomatology and have reported several well defined and conceptually straightforward factors (Friedman, Cowitz, Cohen and Granick, 1963; Grinker, Miller, Sabshin, Nunn and Nunnally, 1961; Kear-Colwell, 1972; Lorr, Sonn and Katz, 1967; Overall, 1963). A glance at Table 2.2 shows that these can be reasonably summarized by postulating nine dimensions of depression:

1. despondency (depressed mood, hopelessness)
2. guilt (remorse, sin)
3. apathy (withdrawal, loss of interest)
4. anxiety (fear, phobias)
5. sadness (crying)
6. somatic complaints (insomnia, loss of libido)
7. retardation (psychomotor)
8. impairment of cognitive functioning (concentration, memory)
9. loss of self-esteem

Of these only despondency and sadness are consistently primarily associated with a diagnosis of depression. Although apathy, loss of self-esteem, guilt and retardation are most often considered to be associated with this diagnosis, the latter is also very common in some types of schizophrenia.

Table 2.2

Comparison of the Factors Reported in the Multi-factor Solution Studies

Overall (1963)	Friedman et al (1963)	Lorr, Sonn & Katz (1967)	Kear-Colwell (1972)	Grinker et al (1961)
I depressed mood	A depressed guilty withdrawn	depressive mood	I loss of appetite confusion indecisiveness loss of interest and energy	despair, hopelessness helpless unworthy
VI preoccupation with health	C physical response to stress	somatic symptoms	III weight loss physical concern	concern with external environment
VII physical response to stress	loss of interest and satisfaction			
III retardation	B retarded-withdrawn, fatigue	retardation	IV retardation	
V impaired functioning	D neurotic irritable self-proccupied agitated	impaired functioning	V sleep disturbed derealization precipitation	anxiety
IV anxiety				
II guilt		anxious self-blame	II guilt self-depreciation VI loss of self-esteem suicidal	guilt, restitution

All of these are very often associated with other types of psychiatric disorders. They can in fact be construed as very likely to occur as a result of any serious pnysical or psychological disorder that is to any extent incapacitating. This suggestion is supported by studies which have found inflated scores on depression questionnaires in medical populations (Zung and Richards, 1965) and in the normal aged (Zung, 1967).

Anxiety, somatic problems and cognitive impairment are types of symptoms most commonly associated with other conditions (anxiety states, hypochondriasis, schizophrenia) but are still considered to be integral parts of the traditional concept of depressive disorders. Anxiety in particular has been suggested to be a very common concomitant. Wiggins (1973) says "in hospitalized psychiatric patients anxiety and depression are so common that the attribution of either anxiety or depression to a given patient is unlikely to contribute information that will enable him to be discriminated from any other hospitalized patient".

The discussion above, which deals with a multidimensional model of depression, has amply demonstrated that many of the "dimensions" of depression are also indicators or components of other psychiatric disorders and would therefore obstruct the isolation of depression as a unique syndrome, from a broad study of psychiatric symptomatology (i.e. it would be hard to establish the discriminant validity of the syndrome of depression).

In fact the obvious overlap between psychiatric syndromes has prompted some authors to investigate more general models which attempt to describe all psychopathology within a single multidimensional framework. One of the dimensions is often labeled depression. However, in general, this dimension does not resemble the traditional syndrome and is more likely to encompass only so-called "core" symptomatology i.e. those aspects of depression which are clearly related to depressed mood without most of the accompanying features of guilt, anxiety, etc. The latter conditions would constitute separate dimensions in the model.

It is possible that a group of patients might be delineated who appeared to be suffering from a syndrome basically similar to this dimension of "pure" depression. There is some support for equating the latter with the traditional description of endogenous depression (see Appendix E). Some studies of depressive symptomatology (Rosenthal and Gudeman, 1967; Rosenthal and Klerman, 1966) have reported a factor which could be interpreted as "core" symptomatology and which is roughly equivalent to the traditional picture of endogenous depression. Mendels (1970) suggests that:

> the factor under discussion may indicate that in a large group of patients with depression there are a number who demonstrate a fairly pure depressive picture, and that in others there are features of hysteria, character disorder (inadequacy), anxiety and other nondepressive

> characteristics...when depression is present in association with these other features, it might be regarded as just one of several symptoms, any of which might dominate. (p 9)

At the level of general models of psychopathology there is considerable evidence from several sources that it is very difficult to clearly differentiate depression from other psychiatric syndromes, particularly from other so-called neurotic disorders. Studies of the reliability of psychiatric diagnosis indicate that it is more difficult to distinguish among neurotics than among psychotics or between neurotics and psychotics (Eysenck, 1961; McGuire 1973). Foulds (1962) had considerable difficulty distinguishing neurotic depressives from other neurotic groups. Pilowsky, Levine and Boulton (1969) distinguished three classes in a group of 200 psychiatric patients with a variety of diagnoses. One class was non-depressive, one corresponded "to the syndrome commonly described as endogenous depression" and the third represented "a type of non-specific stress reaction of a depressive type, which is common to a wide spectrum of psychiatric patients, regardless of diagnosis".

There has been some suggestion that as depression is such a universal concomitant of other disorders it may in fact (especially in the neurotic as opposed to the endogenous form)[16] represent a general distress syndrome. Some credence is lent to this view by the significant overlap between items

16. In accordance with the usage most widely accepted in the literature, the terms endogenous and neurotic will be used to designate the two alternative subtypes within dichotomous systems.

included in a general distress rating scale (Kellner and Sheffield, 1973) and those used in depression questionnaires. This suggests that it might be worthwhile to attempt to assess the extent to which the "subjective distress" factor reported from a factor analytic study of the MMPI (Welsh and Dahlstrom, 1956) is similar to general factors reported from factor analytic studies of depressive symptomatology.[17]

Some tangential evidence that depression may in fact be a distress reaction to many kinds of situations is found in studies by Spitzer and his colleagues (1967, 1970). They devised a structured psychiatric interview (PSS) which consists of 321 items which are questions about feelings or small units of behaviour. 13 scales derived by factor analysis are combined into summary scales (See Table 2.3). In a study involving almost 1,000 subjects they found that the depression-anxiety scale had a correlation of .93 with the subjective distress summary scale.[18] In another study (Spitzer, 1970) (n=1,022) one of the highest mean scores of the psychotic depression group was on the summary scale "feelings and concerns".

Spitzer et al (1967) found some evidence that depressive disorders are difficult to distinguish from neurotic disorders.

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17. Although the widely divergent methods of choosing items for these two types of measures tends to reduce the utility of such a comparison.

18. The Depression-anxiety scale was correlated .66 with daily routine-leisure. It did not discriminate between groups any better or differently. D-A had correlations between .31 and .52 with all role scales.

Table 2.3

Scales of Psychopathology (Spitzer et al, 1967, 1970)

Subjective Distress

depression-anxiety
daily routine-leisure time impairment
social isolation
suicide-self mutilation
somatic concern

Behavioural Disturbance

speech disorganization
inappropriate affect, appearance, behaviour
agitation-excitement
interview belligerence-negativism
disorientation-memory
retardation-lack of emotion

SYMPTOM SCALES

Impulse Control Disturbance

antisocial impulses or acts
drug abuse
reported overt anger

Reality Testing Disturbance

grandiosity
suspicion-persecution-hallucinations

alcohol abuse

Summary Role*

denial of illness
wage earner role
housekeeper role
student or trainee role
mate role
parent role

ROLE SCALES

* the role scales are not factor-analytically derived

Their subjects were divided into four broad diagnostic groups: psychotic depressive isorders, CBS[19], schizophrenic reactions and neurotic reactions (including neurotic depression). They found that the profiles of the entire neurotic reaction group were very similar to those of the psychotic depressive group. Their scales "agitation-excitement" and "suicide-self-mutilation" failed to discriminate between groups although symptoms of these kinds are often considered to be indicative of depression. Psychotic depressives in the early study had high scores on the depression-anxiety scale and on somatic concerns. In the latter study the highest correlation of the depression-anxiety scale with any other symptom scale was .38 with social isolation.

However, in the later study, (1970) an attempt was made to measure the extent of role impairment caused by psychopathology. Five a priori role scales were added to the factor analytically derived scale measuring impairment in daily routine and leisure time functioning. The high correlations reported between these and the depression-anxiety factor are further indications that depression is a very general kind of distress.

Some subjects had taken the Zung, Hamilton or Beck depression inventories. Correlations of these scores with scores on the depression-anxiety factor might be interpreted

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19. Chronic brain syndrome

as evidence of the convergent validity of the concept of depression summarized by that factor. The inventory scores correlated approximately .5 with the depression-anxiety factor scale and the "feelings and concerns" summary scale but they had correlations of a similar order of magnitude with "confusion-retardation", "agitation-excitement" and "retardation-emotional withdrawal".

Two related points concerning these results are concerned with the concept of a general subjective distress factor. Firstly, it is quite possible that the convergent validity of a concept of depression will only be established when it is much more carefully (and specifically) defined. The establishment of the validity of the concept will require convergent evidence from several types of measures (including behaviour) and the discrimination of depression from other psychiatric disorders. At present the overlap between syndromes of abnormal behaviour and the resulting correlations between such syndromes may be responsible for the extraction of a large general factor in many studies. In other words the general factor may be an artefact of inadequate differential definition of syndromes. On the other hand correlations between various aspects of abnormal behaviour may persist because there are real relationships between these aspects. In the latter case the general factor represents a less specific level of analysis of abnormal symptomatology.

The second point is that there is a possibility that

the general factor is a methodological artefact of the type of items being employed in various studies. The subjective distress summary scale is a composite of five scales, all based on the "feelings and concerns" type of item. None of these scales is appreciably correlated with the five "behavioural disturbance" scales whose items are based on behaviour. Although it is encouraging that the "feeling and concerns" scales are correlated with the role scales, this may merely reflect the obvious fact that general distress will affect role functioning. A definitive general factor of distress or depression should include behavioural items as well as "feelings andconcerns" items.

In summary, some recent factor analytic studies have employed large symptom inventories designed to sample the domain of psychiatric symptomatology. These have generally failed to identify a pattern which corresponds to the classic description of the depressive syndrome. In particular they have not separated depressive symptoms from those generally attributed to anxiety. However, almost all of these studies have identified a factor which they label depression, which contains the "core" symptoms of depression including depressed mood.

This type of result is not surprising in light of the fact that many other disorders e.g. hypochondriasis, anxiety states, inadequate personality and schizophrenia) are presumed to be characterized by many of the same symptoms as depression. A multidimensional model of psychopathology is based on the

assumption that mental illness can be more usefully described through the use of dimensions of abnormal behaviour than by postulating the existence of discrete psychiatric syndromes or diseases.

The generality of the multidimensional model. In general a dimensional model always subsumes a categorical model. The latter may be thought of as a special case of a dimensional model where many points on the continuum are in fact not observed. When the data fit this model, this fact will be evident from the clustering of factor scores.

A further strength of this model is that it can account for the heterogenity of depressive disorders and at the same time account for the evidence which supports the relatively simple unitary or binary models of depression. It does this by employing the concept of second order (factor) analysis.

Interpretation of the results of a factor analysis must consider the specificity level of the items used. A study which uses items of very specific content is not directly comparable to one where the item content is more general or global. In the former case the results might show a large number of intercorrelated factors. This result indicates that a multitype model of depression is applicable. However, if these factors were factor analysed in turn they might produce only one or two factors. This second level analysis supports a unitary or binary model respectively.

Kear-Colwell (1972) and Kendall (1968) report the results of such second order analyses which produced two factors.

They conclude that the data support a binary model of depression. If these authors chose to theorize on the basis of the first order analysis they might have suggested a multidimensional model of depression. The latter interpretation was the one offered by Lorr, Sonn and Katz (1967) who reported five factors from an analysis of depressive symptomatology. Their second order analysis produced a single factor which supports a unitary model of depression.

The failure of investigators in the area to consider the possible superiority of the multidimensional model in the past has at least two possible causes:

a) the apparent face validity of the traditional dichotomization had dampened investigation of alternatives
b) the principal components method of factor analysis makes it very likely that one or two major factors will be extracted from any particular set of data and this result may obscure whatever less general patterns exist in the data

However, it seems apparent that an attempt should now be made to determine if a multidimensional model of all psychiatric disorders, based on several dimensions of abnormal behaviour, can account for the data which describe depressed patients.

Before the validity of the multidimensional model can be established, research in the area will have to delineate a set of constructs which represent appropriate dimensions of depression. The discussion above has illustrated that the careful item sampling and examination of internal consistency of groups of items which would establish these constructs has often been neglected or ignored. The present study is an attempt to begin to fill this gap in the research.

THE PRESENT STUDY

Introduction

This study is an investigation of symptoms traditionally labelled "depressive". Subjects for the study were a group of normals and a group of psychiatric patients. Each subject completed a questionnaire developed for this research. Data analysis concentrated on a comparison of patterns of response to the questionnaire items in the two populations. It was hoped that examination of this data would throw some light on the nature and classification of depressive disorders. Specifically, the aim of the study was to make a preliminary contribution to the testing of the validity of a multi-dimensional model of depression.

Before the validity of the multidimensional model can be established empirically, research in the area must determine if there are groups of depressive symptoms which can accurately be designated dimensions or constructs.

The minimum requirement for a measure of a construct to be used for development of any model or theory is that it be homogenous. One kind of empirical evidence supporting such a construct is provided if it can be defined by a group of items whose high internal consistency demonstrates that all items are related to a common theme. Such a demonstration of homogeneity in turn depends on a sould rationale for item selection which results in comprehensive and representative item sampling. In the specific case of choosing depressive symptom items in order to establish dimensions of depression, item selection

should be based on close scrutiny of the content validity of individual symptom items.

Accordingly, this study began with a survey of the items used in previous factor analytic studies of depression (see Appendix H). A subset of these items, selected to be representative of the domain of depressive symptomatology as a whole, was chosen for the present study.

Factor analyses and cluster analyses were performed to delineate relationships between groups of items and to briefly consider the question of the number of dimensions in the data.

In the next stage of the study, many of the symptom items were grouped into preliminary composites using the criteria of content validity and the results of previous studies in the area which delineate nine possible dimensions of depression (see Section 2.7). In an attempt to maximize their internal consistency, additional items were added to these composites and other items deleted on the basis of relationships indicated by factor or cluster analyses and on the basis of content validity. The final set of composites was examined to determine the degree of their independence from one another.

In the final stage of the study the validity of designating these composites as possibly reflecting dimensions of depression is examined by two means. Firstly, by comparing composite scores of the patient sample and the normal sample in this study and secondly by comparing the composites themselves with the factors reported in previous studies of depressive symptoms.

Chapter 3

Method: Development of the Depression Questionnaire

3.1 Rating Scales for Depression

There are over fifty scales, inventories and checklists described in the literature which purport to measure depression.[1] Of these, only the three most commonly used (those constructed by Zung, 1965; Beck, 1961; and Hamilton, 1961) provide any significant reliability or validity information. This situation may have contributed to the practice of using no rating scale at all in research into the nature of depression. Most studies use an ad hoc scale or data extracted from a routine clinical interview.

The fifty scales do not constitute a homogenous group. They differ in many important ways:

(1) They measure different constructs or conceptions of depression. Some measure depression as a clinical entity which includes physiological, behavioural, cognitive and motivational variables besides those of mood (Beck, Ward, Mendelson, Mock, and Erbaugh, 1961; Foulds and Hope, 1968; Hamilton, 1967). Others measure only the last of these (Clyde Mood Scale, 1963) and yet others deal with depression as a personality trait (Gough, 1960; Guilford and Guilford, 1939; Hathaway and McKinley, 1942; Jasper, 1930).

(2) The scales have different purposes. Most attempt only

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1. This discussion is concerned with scales designed to measure depression only and excludes depression scales which are part of large psychiatric inventories.

to quantify depression in a recognized depressed population. Cutler and Kurland (1961) emphasize that rating scales are not diagnostic aids but "methods for quantitative analysis of disease states and are useful for research; they have no predictive validity per se, but can be used only for recording symptoms at a given point in the course of the illness". Rating scales are most often employed in assessing feelings, concerns and emotions. Behavioural inventories are sometimes used to quantify ward or interview behaviour either to determine an overall adjustment score or to derive subscores in such areas as characteristic ward behaviour, work habits and interpersonal relationships. Behavioural inventories are easier to complete than rating scales but if the behaviours monitored are not very specific they may be less sensitive to change and less discriminating.

(3) The content of rating scales is diverse. Some attempt to cover the entire range of depressive symptoms (Foulds and Hope, 1968; Grinker et al, 1961; Wechsler, Grosser and Busfield, 1963; Zung, 1965), some are selective (Costello and Comrey, 1967; Snaith et al, 1971) and others measure only mood (Clyde, 1963; Zuckerman and Lubin, 1965).

(4) They vary in format. Some are adjective checklists (Clyde, 1963; Gough, 1960; Zuckerman and Lubin, 1965), and others are in the form of statements requiring simple dichotomous or graded answers (Hathaway and McKinley, 1942; Jasper, 1930; Zealley and Aitkin, 1969; Zung, 1965) according to the severity of the patients symptoms. Behavioural

inventories consist of groups of statements concerning specific concrete behaviours and requiring simple present/absent type answers (Bunney and Hamburg, 1963).

(5) They differ in mode of administration. Some require a trained and/or experienced rater who may be a psychiatrist psychologist, nurse, or ward staff member and who may make ratings on the basis of a clinical interview (Hamilton, 1967) or ward behaviour (Bunney and Hamburg, 1963); others are self-rating scales (Zung, 1965); at least one scale contains both of these kinds of items (Wechsler et al, 1963).

(6) Different scales concentrate on different dimensions of severity: they measure frequency, intensity, duration, extensity or a mixture of these. No scale attempts to measure all of them.

3.2 The Choice of Questionnaire Items

The intent of the present study was to employ a concept of depression defined by the traditionally accepted psychiatric symptom complex called depression. The study was designed to compare the patterning of these symptoms in normal subjects and in patient subjects. An appropriate measure would reflect the incidence and severity of symptoms in the two populations. In addition, the scale would include items which represented the nine dimensions (see the introduction to the present study) suggested by previous factor analytic studies.

A review of all available depression scales was undertaken in an attempt to find one which suited the purposes of this study. No suitable scale was located. No scales reported

information on the ability of specific items to distinguish between normal groups and depressed groups (both of which were to measured in this study). There was no indication of which items were indicative of different "types" of depression. Depression scales uniformly assume a unitary concept of the disorder. None of the available scales contained a set of items broad enough to represent all nine dimensions mentioned above. Most contained 15-30 items which did not provide the broad coverage necessary. However, the biggest problem was the widespread tendency of available scales to confound and mix measurements of frequency, duration and extensity. The manner in which this problem was dealt with is described in some detail below.

There are several possible bases for item selection for a depression scale:

1) consensus opinion of which items are appropriate as represented by the items chosen for other scales
2) the item's ability to distinguish depressives from normals
3) ability to distinguish different types of depression
4) appropriateness of items for the population under consideration
5) clarity of definition i.e. items whose meanings are not ambiguous or lacking in consensus among investigators

The lack of information on the second, third and fourth alternatives was one reason why a decision was made to concentrate on the broad base of traditional symptomatology. Consequently, clear definitions of items were located or

derived such that the first alternative-consensus of opinion-could be satisfied and could serve as the foundation of the study. Available scales were surveyed and the items most commonly included were noted. It was assumed that this consensus represented the "core symptomatology" of depression. To reasonably represent the dimensions outlined above and still avoid making the questionnaire excessively time consuming to complete it was decided that 45 was the maximum feasible number of items to be indluded.

All of the items were worded so as to be readily understandable to a sample representing the general population. For this reason they sometimes differ slightly in wording from the original items upon which they are modeled. Each item in the scale was drawn directly from a previously reported scale in the interest of comparability (see Appendix I). Since many depression items appear to be defined differently by different investigators, the present study examined different possible definitions of items whenever there was a failure of consensus (see Appendix H).

3.3 The Format of the Questionnaire

Use of a self-rating format. One advantage of a self-rating questionnaire is that it eliminates the need for an expert clinician to spend an hour or so with each patient. However, it is often true that for satisfactory completion of a lengthy questionnaire such as the one used in this study individual supervision or small group supervision is necessary. When subjects are simply given the questionnaire to fill in

and return after a period of time, obtained results may be quite different than if the subject is supervised. Unfortunately resources were not available for individual interviews of all subjects in this study. Practical considerations dictated the use of a self-rating questionnaire and the concentration on a subjective view of depression which is decreed by this choice.

Measurement of severity. There is one self-rating depression scale, the SRD-S developed by Zung (1965), for which considerable reliability and validity data is available. It consists of 20 depression items worded as statements. (For example: I feel down-hearted and blue.) The patient is asked to indicate the extent to which each one applies to him, by checking one of four categories:

never or a little of the time
some of the time
a good part of the time
most of the time or always.

Zung has done some work using this scale to measure depression in normal subjects (Zung, 1967). This scale was considered unsuitable for the present study. The obvious advantages of the simplicity of this format are offset by the fact that it confounds or obscures a great deal of important information about the patient's condition. Like most other depression questionnaires, the SRD-S attempts to measure severity. But again as in most other questionnaires, this term is used to mean intensity, frequency, extensity, duration or some combination of these dimensions. These

aspects of the disorder are different (or at least must be considered to be different and independent until proven otherwise) and must be considered separately. The importance of this separation is illustrated by the old controversy about which is worst: a mild but chronic depression or a severe and acute depression. The chronic/acute question is one of duration, while the mild/severe one is a function of intensity. These differences in severity require different responses to the patient involved. He should not be treated the same way in the two situations even though the same symptoms may be predominant.

A more specific example is based on an SRD-S item. If a person says that he feels "down-hearted and blue", "a little of the time", he is responding to a question which confounds considerations of duration and frequency. How often (frequency) and for how long (duration) are implied in the question. His answer could mean a few minutes on a single occasion, a few days (continuously) or anything in between. Almost certainly considerations of intensity and extensity also enter the subject's deliberation before answering. If he feels that these feelings did not interfere with his daily functioning and/or that he really didn't feel <u>very</u> blue, he will say a "little of the time" even if it was several days, he may even say "never" as he feels he "wasn't really <u>that</u> down-hearted". On the other hand it is quite unlikely that he will answer "never" if he felt "low"

or "down" all month. He may even answer "always" even though he was quite capable of living a normal life, fulfilling his responsibilities and not suffering tremendously.

The point is that he used a set of interrelated but not interchangeable criteria for arriving at his conclusion and response. The set includes duration, extensity, intensity, and frequency (and probably also seriousness i.e. whether the condition is dangerous to his life) and his particular manner of weighting these dimensions of severity results in his response. Since this is the case and since it is very likely that different people weigh these components differently in reaching a decision, attempts to measure "severity" as a global concept, seem illfounded.

Although attempts to measure several aspects of severity do become cumbersome (Eber, 1964) it is important to make an attempt to determine if questions on different dimensions of severity actually provide extra information. It is possible that to most people severity is in practice a unitary concept and no real discriminations are possible within it. If this is the case, correlations between these dimensions of severity will be very high. (Kellner and Sheffield (1973) report some preliminary studies where duration/frequency correlations were high.)

Self rating questionnaires are usually simple in format so that the subject can answer them easily. However, such simplicity is detrimental if it distorts the information obtained. The alternative is to increase the complexity of

the questionnaire by dividing each item into several parts in an attempt to quantify several dimensions of the severity of the feeling or behaviour under consideration. This alternative was chosen in the present study.

The item format. In keeping with the need to measure several aspects of severity, the questionnaire was constructed such that each item had five parts. The first part simply asked the subject to indicate whether or not he/she had experienced the particular symptom during the last month. The second part was a measure of frequency, the third of duration, the fourth consisted of four separate measures of extensity and the fifth was an attempt to measure perceived relative severity. Each of these is discussed in some detail below. (See Appendix J for an example of the final format of the questionnaire.)

Subjects were required to answer "yes" or "no" in Part 1 of each item. This ensured that failure to answer could be distinguished from negative answers indicating that the person had not had the experience in the past month. The absence of a frequency score (see Part II) could indicate either of these alternatives.

Pilot studies attempted to measure the frequency of occurrence of "depressive symptoms" using a line graph which subjects marked between points labeled "always" and "never" on the two extreme ends. Frequency words were also

used as anchor points on the line between these two extremes. These were converted to numerical values on the basis of a study by Hakel (1968).[2]

The obvious advantages in terms of ease of answering (by simply circling the appropriate word) are offset by the lack of precision associated with these words. Hakel's study showed that the range of values associated with each word was very wide. There was limited consensus on the meaning of these frequency words. Consequently, in the present study, this method was replaced by a simple question: "How many times in the past month?" (Part II). The latter method is less ambiguous. Its disadvantage is that subjects have some difficulty coming up with a discrete number which is, at best, an estimate of their experience.

In Part III subjects were asked to indicate the usual duration of their experience of depressive symptoms. Pilot studies provided subjects with eight alternative answers ranging from "a few minutes" to "all month". These were reduced to five in the final questionnaire because three alternatives were infrequently endorsed in the pilot studies. Although the five alternatives are scored one to five, they represent only ordinal scale values. Five alternatives were retained in order to provide a relatively continuous variable with properties useful for factor analysis.

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2. 100 university student were asked to assign values between 0 (never) and 100 (always) to common frequency words such as seldom, often, etc.

It would appear that the question of the extent to which depressive symptomatology interferes with a person's daily life is central to a discussion of severity and to the measurement of depression.[3] This is especially true if one accepts the suggestion that depression is defined as pathological (i.e. a disorder or "disease") when it causes enough disruption in a person's life to prompt him to seek professional aid. As Hamilton puts it "there is always a loss of function in illness, with impaired efficiency". Given the obvious importance of the extensity of the disorder, the two pilot studies dealt with this aspect of severity in some detail. They asked if depressive symptoms interfered with the patient's daily life in general, work, hobbies, family, marriage, friendships and social activities.

As these were separate questions answered "yes" or "no" it was cumbersome and time consuming to include all of them. In the final form only family, friends, work and leisure activities were included. It was assumed that a simple count of the areas where disruption was acknowledged would give a crude measure of degree of interference in daily life.

Previous work in the area (Wessman and Ricks, 1966) indicates that people vary considerably in their baseline mood level. It therefore appears very likely that concomitants

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3. The fact that the very large and careful set of studies undertaken by Spitzer and his colleagues (1967, 1970) included considerations of role functioning, indicates that the importance of this facet of psychiatric disorders is beginning to achieve the attention it deserves.

of changes in mood (such as feelings of isolation, hopelessness and low self-esteem) would also have different baseline levels in different people. Since the individual undoubtedly used his own normal level of functioning as a personal reference point against which to judge how he felt during the previous month, it was important to attempt to determine the relative deviation from his personal norm (if any) which was reported in the questionnaire. To give an extreme (but not impossible) example, one person may say that he felt depressed every day of the past month. This may indicate that he has been more depressed than is usual for him. However, one might also discover that while "being depressed" interferes somewhat in his daily life, he has considered it his standard level of functioning for several years.

A crude measure of relative functioning was obtained by asking the subject to compare his experiences during the study month with the previous month [4] (Part V).

The final questionnaire then had five parts:

(1) Did you have this experience?
(2) How often?
(3) For how long?
(4) Did it interfere in your daily life?
(5) How does this compare to your usual experience in an average month?

Although the five parts are arranged in a single line

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4. This measure is not considered in the results section of the study because it had virtually no variance. This was to be expected in the normal sample but indicates that patients probably did not understand the question.

from left to right on a page (five items per page) they still presented some difficulties to patients who occasionally had some initial trouble understanding what they were being asked to do. The major problem however, was the length of the questionnaire which seemed very imposing although answers consisted only of check marks in various places and took a minimal amount of time.

Time frame of the questionnaire. Since many of the study subjects were "normals" who might be expected to experience little or no depressive symptomatology, if depression was largely confined to a clinical population, it was important to base the questionnaire on a fairly long period of time. This would increase the chance that the subject had experienced a period of depressed mood during the study period. A questionnaire based on how the subject was feeling at the time he filled it out was inappropriate for many of the questions asked e.g. those relating to appetite and sleeping habits, guilt feelings, self-esteem etc.

The time period chosen was one month. This was partially to allow subjects to indicate that they had experienced particular feelings (or "symptoms") over periods of a week or more (i.e. constantly for a week). All items began with the phrase: "In the past month, did you ever...". Items all referred to feelings e.g. guilt, hopelessness, or behaviours e.g. restlessness, irritability.

Chapter 4

Method: Subject and Procedure

161 adult subjects completed the depression questionnaire which, as described in Chapter 3, was designed for this study. The questionnaire attempted to measure severity of traditional depressive symptomatology by determining the frequency, duration, and extensity of depressive symptoms in each subject during the month immediately preceding its completion.

4.1 Subjects

The sample consists of 53 patients and 108 normals for a total of 161 subjects. 19 of the patients had a primary diagnosis of depression. The majority of the remaining 34 had a diagnosis of schizophrenia (see Appendix K.). The normal subjects consisted of 3 groups:

1) 25 undergraduate students of psychology
2) 64 staff of the provincial mental hospital
3) 19 staff of mental health clinics serving outpatients

The 53 patients consisted of four groups:

1) 11 inpatients from an acute ward of the provincial mental hospital
2) 17 outpatients from the same facility (5 of whom were attending occupational therapy at a day hoppital)
3) 7 patients from community care teams
4) 18 patients from mental health clinics.

Patients from the community care teams were very similar to hospital inpatients in terms of their level of disturbance but an attempt was being made to maintain them in the

community. Outpatients from the clinics were typically much less disturbed and being treated with individual psychotherapy.

The average age of the patient sample was 35 years. There were more men than women. Of these subjects, 75% had never married or were separated from their spouses.

The number of patient subjects in this study was considerably fewer than originally planned due to difficulties in gaining access to patients who could serve as subjects and due to the fact that many patients, when they were asked, refused to take part. A group of potential subjects (mostly inpatients) were eliminated because they were unable to complete a self-rating questionnaire. In addition the staff members of clinics who participated in the study had hoped to provide a larger number of completed questionnaires.

The normal subjects consisted of three groups. The psychiatric hospital staff were one third male and two thirds female. They were the oldest group with an average age of 39 years. They include clerical, nursing and supervisory staff. The students were the youngest group with an average age of 26. They were almost equally divided between men and women. The third subgroup were a sample of the professional staff of mental health clinics (social workers, psychologists, and psychiatrists). They were 75% women and had an average age of 32. Approximately 60% of the total normal sample were married. (A more detailed breakdown of the demographic characteristics of the sample is given in Appendix L.)

4.2 Administration of the Questionnaire

Conditions under which the questionnaire was administered varied according to subsample. The questionnaire was accompanied by brief instructions for its completion and by examples, and was meant to be completely self-explanatory and self-administered. However, only normal subjects and those patient subjects who were attending the mental health clinics were capable of completing it in this fashion. These groups were simply handed the questionnaire and asked to return it completed in one week. Inpatients and outpatients of the provincial mental hospital needed individual verbal instruction and encouragement to fill it out.

At each mental health clinic[5] and community care team several members of the staff were involved in the study. Each staff member agreed to have 3-5 questionnaires completed by his or her patients over a six week period. Clinic patients were given an absolute minimum of verbal instructions and asked to complete the questionnaire at home. However, community care team patients required considerable individual aid to complete it.

4.3 Manipulation of the Dataset

Substitution for extreme values. Fifteen of the forty five items had a single instance of a reported frequency greater than "90". Two items had two instances of such values. All of these scores were reported by patient subjects

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5. There were three clinics and two community care teams involved in the study.

(two inpatients and four outpatients). Since the patient sample was relatively small these extreme values made significant differences in group statistics and analyses including these values would not have been truly representative of the dataset as a whole. Although all of these values were attributable to six individuals the small size of the sample made it undesirable to delete these subjects. Therefore, since there were very few values (19 of a total of 2385 scores) greater than 50 reported in the entire study, a value of 50 was substituted in the dataset whereever a value over 90 had been reported (a score of 50 represented a z score of 3). This value was considered to be sufficiently extreme to maintain the general shape of the distribution of scores. This slightly altered dataset was used in all subsequent analyses.

Substitution for missing values. The programs available for internal consistency analysis were not capable of dealing with missing data except by the method of listwise deletion (deleting all subjects with missing data). Therefore each subject's mean score over all items was substituted for his missing values in these analyses.

Approximately 7% of normal data and 15% of patient data values were missing. The differences in results produced due to substitution (compared to the listwise deletion method) were trivial in all cases. The largest difference in the coefficient of internal consistency of composites developed from the questionnaire under the two conditions, was a

difference in the second decimal place.

Standardization of the dataset. As described in Section 2.2 differences in means of subgroups of subjects in a factor analysis can contribute to the extraction of a very large general factor which is an artefact of between group variance. Since factor analysis of the entire sample of 161 subjects (normals and patients) was to be carried out in this study all scores were standardized prior to the analysis. Separate standardization procedures were carried out for normals and patients since item means for these groups were considerably different. All factor analyses and internal consistency analyses reported were performed on standard scores.

4.4 Data Analysis

All major analyses (internal consistency and factor analyses) were done on standardized frequency scores. Although duration and extensity scores were collected, frequency scores had far fewer missing values.

The major aim of the study was an attempt to delineate patterns of depressive symptoms. The data analysis attempts to define groups of items which have maximum internal consistency and at the same time are optimally separable from one another. In order to do this an iterative process is employed which draws upon the interrelated results of factor analyses, cluster analyses and internal consistency analyses. Items were initially grouped on the basis of a priori dimensions of depression suggested by the factor analytic literature.

For each dimension a group of core items was subjected to internal consistency analysis. Items were then added (if they were found to load on the same factor or to occur in the same cluster) or deleted (if they lowered the internal consistency of the group) on the basis of the pattern of their interrelationships. This iterative approach was continued until maximum internal consistency was obtained for small (6-10 items) groups of items. These groups of items represent patterns of depressive symptomatology occurring in this sample.[6]

Cluster analyses. Intercorrelations of all item scores were calculated for the patient sample and the normal sample. A simple clustering of items was performed according to a method devised by McQuitty (1957). The pair of items having the highest correlation in the matrix is located and forms the core of the cluster. Items are added to that cluster if their highest correlation is with an item already in it. When such items are exhausted those remaining are considered. A new cluster is begun with the pair of items having the highest correlation and items are added on the basis of the same criterion as for the first cluster. This process continues until all items are assigned.

The results of this clustering were significantly different for the normal sample and the patient sample. In

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6. This process was confined to the normal sample as the items were so closely interrelated in the patient sample that they essentially formed a single group (cluster).

the latter case there were four major clusters which were linked to one another by several high correlations i.e. there was essentially one large cluster. In the normal sample there were several distinct clusters consisting of items related to anxiety, self-esteem, despondency, guilt, apathy (loss of interest), and retardation-agitation. These clusters were used to guide modifications of the original scale analysis described below.

Factor analyses. Factor analyses were performed on patient, normal and combined samples to extract 3,4,5,6,7,9, and 11 factors.

Originally all analyses performed used the common factor method with squared multiple correlations as initial communality estimates. This choice reflects the assumption that the variables involved will have some degree of specific (unique) variance. Preliminary analyses indicated that this model was not appropriate for the patient population. Consequently principal component analyses were performed on this subsample. Both oblique (oblimin) and orthogonal (varimax) rotations were performed. Since the patient subsample contained too few subjects to provide stable factor analytic results, the major emphasis in Section 5.4 is on the normal subject sample.[7]

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7. The normal sample does not contain the proscribed number of subjects (4 times the number of items) however the stability of the factors derived from it is supported by the fact that results from the total sample are almost identical to those from the normal sample.

Internal consistency analyses. Nine dimensions suggested by previous factor analytic studies (of patient samples) were used as the basis for the original grouping of items into composites. These composites were then investigated for internal consistency using the RELIABILITY subprogram of the SPSS5 computor programming package.

Since some of the depression items are very general in nature they were difficult to assign to any particular dimension with certainty. In these cases additional analyses were performed using the laternate assignments. Modifications of the scales were also made on the basis of correlations between items, McQuitty's clustering analysis (described above) and the factor analyses described above.

Constraints on the study limited the item pool to 45 items. Therefore some of the nine dimensions outlined in Table 4.1 are not well represented. Major dimensions discussed in the literature are well represented and those of sadness, guilt, agitation and cognitive impairment have been underemphasized. Actual item assignments are outlined in Table 4.2.

The results of the internal consistency analyses were carefully examined. Items which did not contribute to the internal consistency and had item-total correlations less than .25 were eliminated. Possible additions to the scale from the pool of general items, or from items known to be correlated to it (on the basis of the cluster and factor analyses described above)

Table 4.1

A Description of the Nine Predicted Factor Patterns

1. DESPONDENCY - (despondent mood) - a general depression factor in the sense that it includes the core symptoms of depression such as depressed mood and suicidal tendencies. Guilt items are sometimes associated with this factor.

2. ANXIETY - the phobias and so-called free-floating anxiety or dread are included. These items sometimes load on the same factor as the agitation items.

3a AGITATION - restlessness and inability to relax, nervous pacing, wringing of hands etc. are symptoms. When the items are of the psychomotor behaviour type, they sometimes load on the same factor as the retardation items. Consequently, these two are sometimes considered to be simple opposites.

3b RETARDATION - involves slowing of time, thinking and motor activity. In this study the items are largely cognitive and are closely related to the "apathy" items. They may also be associated with items such as difficulty making decisions, or difficulty keeping your mind on a task and consequent difficulty working.

4. APATHY - loss of interest in friends and activities. Difficulty working, getting started and making decisions might follow. Fatigue would be a natural associate. Isolation and withdrawal items were included in this group in the present study.

5. LOSS OF SELF-ESTEEM - loss of self esteem is closely tied to difficulty working; the patient feels that nothing he does is very good and that he is useless. Consequently, he dislikes himself and tends to feel hopeless about the future.

6. GUILT - severe depressions sometimes include delusions of guilt or sin. Symptoms of guilt generally include feelings of having injured others, regrets for things done or said and a belief that one cannot be forgiven for past sins.

7. SOMATIC SOMPLAINTS - includes trouble with appetite and sleeping, and general fatigue. Loss of libido is usually included. It is sometimes distinguished from those complaints considered to be hypochondriacal, such as concern for general health, palpitations etc.

8. SADNESS - is indexed particularly by crying or feeling like crying. It is sometimes separated from despondency where the patient is more likely to berate himself of to show flattened affect.

9. IMPAIRMENT OF COGNITIVE FUNCTIONING - includes problems with concentration, memory and thinking clearly and difficulty making decision.

Table 4.2

Allocation of Items to Dimensions of Depression

1. SADNESS DESPONDENCY GUILT	2. RETARDATION	3. WITHDRAWAL APATHY
suicide†	slowthin	satisfac
hopeless	timeslow	people
worthliv	slowever	interest
miserabl	starting*	alone
blue	mindtask*	pushtodo
despise	taskeffo*	starting*
injured	decision	mindtask*
forgiven	difftodo*	taskeffo*
letdown	diffwork*	decision*
crying*	losemind*	difftodo*
diffcope*	thinking*	diffwork*
	pushtodo	

4. ANXIETY	5. SELF ESTEEM	6. SOMATIC COMPLAINTS
phobias	standard	sex
anxiety	dslikme	appetite
housepho	useless	waking
anxious	nogood	fatigue
panic	notice	health*
irritabl	diffwork*	
restless	diffcope*	7. COGNITIVE IMPAIRMENT
relaxing	difftodo*	thinking*
losemind*		decision*
health*		mindtask*
		losemind*

† For ease of handling, items are referred to by their abbreviated labels throughout the text. All items and their corresponding labels are listed in Appendix I.

* starred items are those for which the correct original allocation was not completely obvious; they are included in at least two scale analyses

were considered and the analyses redone up to ten times. The original a priori composite and the best derived composite for each dimension were reported (see Section 5.3).

Incidence of depressive symptoms. Since little descriptive data comparing the answering patterns of normal and patient populations has been published, the incidence of depressive symptoms in these two groups is reported in Section Section 5.4.

Average number of reported symptoms, average number of missing responses, average total score, average item score (total score/45), and the range of total scores for each group is recorded. All are based on frequency scores. (Statistics for individual subjects are included as Appendix K).

A summary of the duration and extensity data is reported in Section 5.5. A detailed discussion of this material was not warranted due to the large number of missing values and the doubtful reliability of the data.

Demographic data were available on most subjects. Age, sex composition, marital status and living arrangement for each subject group are briefly described in Appendix L.

Chapter 5

Results and Discussion

The major purposes of this study were:

(1) to examine patterns of depressive symptoms in normal subjects and in patient subjects

(2) to examine the similarities and differences between the patterns of these two groups

(3) to compare the results with traditional psychiatric models of depression in the context of proposing a new multidimensional model.

The specific hypotheses (a) that reported patterns of occurrence of depressive symptomatology would be similar in normal subjects and in patient subjects, and (b) that there were several distinguishable patterns of depressive symptoms within the general class of disorders designated "depression", were specifically examined by factor analysis. Internal consistency analysis was then employed to clarify and confirm the patterns revealed by the factor analysis.

5.1 A Comparison of Questionnaire-Answering Patterns Among Subject Groups

Patients and normals. The overall level of endorsement of items was much higher in patients. This was to be expected if the questionnaire was tapping pathological depression. The results indicated that there was a single occurrence of each symptom for each subject each month (i.e. the average item mean was 1) for normal subjects. On the other hand the equivalent average for patients was 7. However, the

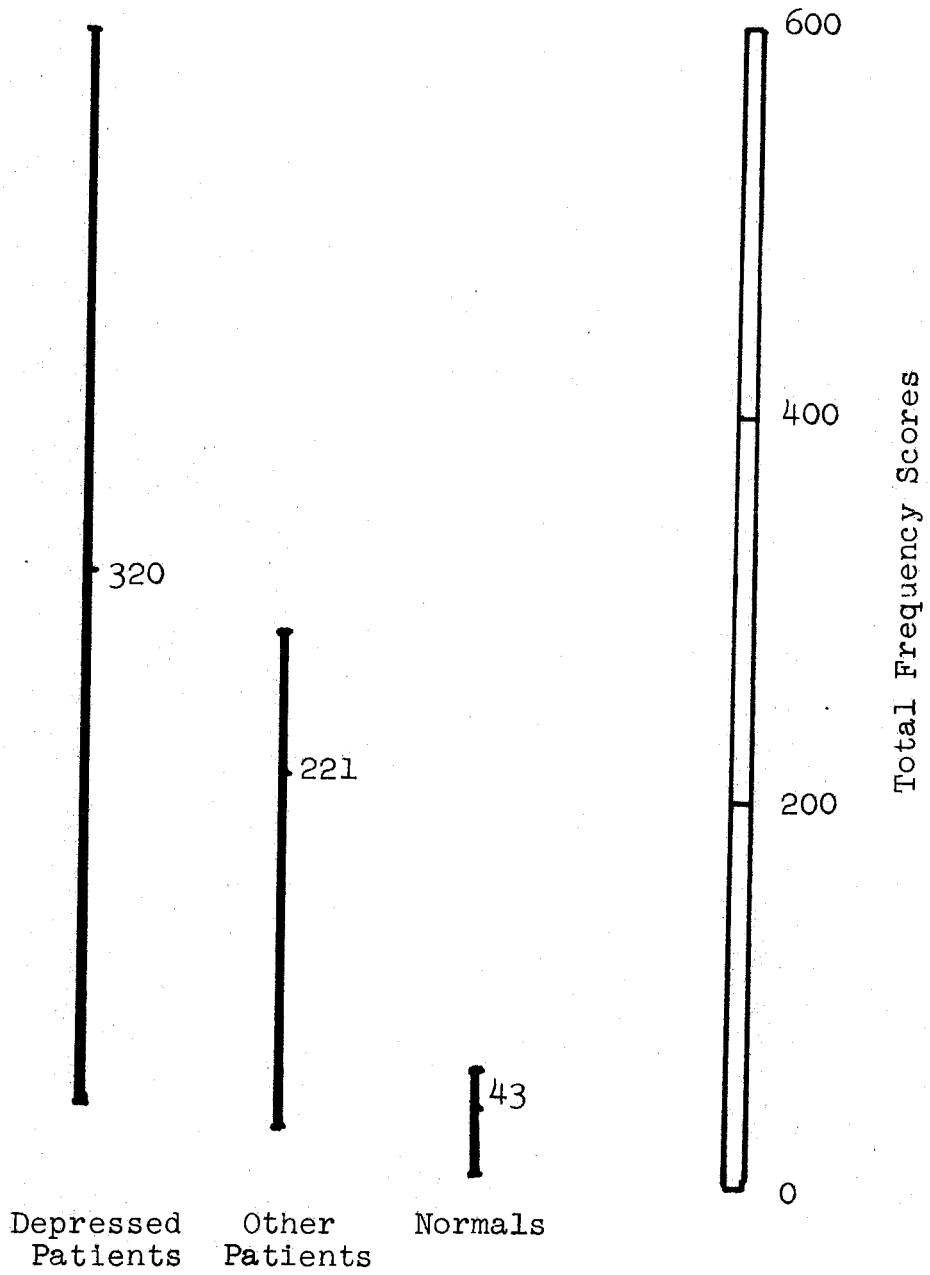
rate of endorsement of items by normals suggests that it is reasonable to use the same set of depression items for the two populations. The patterns of answering may be quite similar but the levels are very different. Figure 3 indicates the very large differences in mean total scores for patients and normals reported in this study. (This difference is significant at the .001 level).

There is considerable overlap of patient and normal scores in the sense that all normals who score over the mean for their group (i.e. 50%), fall within the semi-interquartile range of patient scores.

The patient sample. There were not enough subjects in the patient sample to justify a detailed comparison of scores of patients with a primary diagnosis of depression with scores of patients whose primary diagnosis was not depression. (Most of the latter group had a diagnosis of schizophrenia.) However, it may be noted in passing that the mean total scores for the two populations were 320 and 221 respectively. (This difference is not statistically significant due to the large variance of scores in each sample.) The difference in these scores indicates that the questionnaire discriminates between the two groups to some extent. Although there is considerable overlap between the dsitributions of total scores for the two groups, all total scores of non-depressed patients fall below the mean for depressed patients (see Table 5.1).

Figure 3

A Comparison of Means and Semi-interquartile Ranges of Total Scores for Normals, Depressed Patients and Other Patients



A glance at Table 5.1 confirms that the average item scores and the average number of items endorsed by the two patient groups, both follow the expected pattern of being higher for depressed patients than for the other group.

Table 5.1

Statistics Describing the Answering Patterns of Subject Groups

	Normals	Patients	Depressed Patients	Other Patients
average # of items endorsed	9	20	23	17
semi-inter-quartile range of total scores	9-58	43-441	43-603	25-288
mean total frequency score	43	257	320	221
mean item score	1	6	7	5
mean # missing values	3	7	8	6

5.2 Factor Analyses

Factor analysis of both patient and normal samples extracted large first factors which remained after all rotations and accounted for 20% of the variance in normals and 40% in patient unrotated solutions.

Patient sample. Communalities of all variables but one were over 0.5 and most were over 0.7 (see Appendix M). Combined with the size of the first (general) factor, the communalities make a strong argument for giving serious consideration to the position that there is only one major

source of variation in the data. Since the number of subjects in the sample was hardly larger than the number of items, a replication is needed to confirm these results. However, the general factor was so large in this sample that it seems likely that results with a larger sample would be essentially the same. (Loadings over 0.4 on the first factor of the unrotated solution are listed in Table 5.2).

Table 5.2

First Unrotated Factor for the Patient Sample[8]

waking	57	sex	49	appetite	44
crying	50	phobias	58	standard	60
housepho	56	diffcope	81	relaxing	64
injured	49	panic	69	satisfac	56
decision	81	fatigue	69	thinking	64
dslikme	72	mindtask	56	losemind	44
restless	66	pushtodo	72	difftodo	67
starting	69	diffwork	80	irritabl	52
interest	88	timeslow	76	anxious	75
peop e	84	hopeless	66	slowever	83
alone	69	miserabl	82	letdown	56
useless	70	nogood	83	forgiven	57
difficul	56	worthliv	54	slowthin	76
		taskeffo	79		

The normal sample. Factor analyses of the normal sample indicate that there are important factors besides the first. The latter probably should not be disignated a general factor as it accounts for only 20% of the variance in the principal axes solution. In the three factor oblique rotation it can be described as a depressed mood factor in that most of the despondency, guilt, and anxiety items load highly on it.

8. Eigenvalues of the first five factors were 19.4, 3.8, 2.7 2.2 and 2.0.

It could be considered a "core depression" factor, showing the usual close association with anxiety. The second factor is clearly a self-esteem factor. The other factor reflects impairment of practical functioning--inability to work, make decisions or think, and is associated with blue feelings.

The first three factors remain almost identical through the four and five factor solutions (see Table 5.3 and 5.4). In the latter a fourth factor which could be described as "trouble getting started" is extracted. The major distinguishing characteristic of the fifth factor for normals is the 0.9 loading on "losemind".

Total combined sample. Results for the total sample are very similar to those for normals. Presumably this occurs because there were twice as many normal subjects as patient subjects. The first four factors remain very similar to those for the normal sample. However, the fifth factor for the total sample is quite clearly a retardation/apathy factor. (In the normal sample these items load on several different factors.) This difference is probably attributable to the influence of the patient sample in spite of the fact that no such factor emerged when that sample was factored separate from the normal sample. (A retardation cluster was evident in the cluster analysis described earlier.)

The five factor solution of the total sample is reported in Table 5.3 since it is the most interpretable of all the factor analyses undertaken. The five factors could

Table 5.3

Factor Loadings for the Five Factor Varimax Rotation of the Total Sample

ANXIOUS/GUILTY DESPONDENCY		DIFFICULTY WORKING		SELF ESTEEM		APATHY/ RETARDATION		TROUBLE GETTING STARTED	
worthliv	.66	diffwork	.91	sex	.64	people	.54	satisfac	.57
housepho	.65	decision	.72	dslikme	.93	slowever	.52	pushtodo	.87
thinking	.63	blue	.66	notice	.75	interest	.51	starting	.71
despise	.75	fatigue	.60	hopeless	.74	slowthin	.45	(taskeffo	.38)
letdown	.59	mindtask	.58	standard	.78	timeslow	.42		
forgiven	.58	restless	.52	useless	.50	nogood	.41		
diffcope	.56	health	.48			(taskeffo	.37)		
panic	.56	*(relaxing	.33)			(miserabl	.43)		
anxious	.51	(losemind	.39)			(losemind	.39)		
suicide	.52					(mindtask	.36		
(restless	.44)								
(miserabl	.43)								
(relaxing	.38)								
appetite	.34								
crying	.34								
interest	.33								
eigenvalue=	10.1		3.1		2.7		1.7		1.5

* brackets indicate that the item also loads on another factor

Table 5.4

Factor Loadings for the Five Factor Varimax Rotation of the Normal Sample

ANXIOUS/GUILT		DIFFICULTY WORKING		SELF ESTEEM		TROUBLE GETTING STARTED(APATHY)		?	
thinking	.71	fatigue	.87	dslikme	.98	pushtodo	.92	losemind	.90
housepho	.68	diffwork	.85	notice	.91	starting	.70	(fatigue	.69)
suicide	.64	blue	.75	standard	.84	satisfac	.60	mindtask	.62
diffcope	.61	health	.68	hopeless	.81	alone	.39	slowever	.43
panic	.60	restless	.57	sex	.71	difficul	.34	(diffwork	.42)
anxious	.54	starting	.54	useless	.45	waking	.31	(diffcope	.38)
interest	.38	(mindtask	.39)					nogood	.33
appetite	.35							irritabl	.32
*(restless	.33)								
relaxing	.31								
eigenvalue=	7.9		4.0		3.5		2.1		2.0

* Brackets indicate that the item also loads on another factor

be characterized as: anxious/guilt, difficulty working, self-esteem, apathy/retardation and trouble getting started.

5.3 Internal Consistency Analysis of the Normal Sample

Internal consistency analysis provides insight into the meaning which each item possesses for the subjects by relating items to one another. Hopefully the patterns created by these relationships will delineate concepts or dimensions which are components of depression. Internal consistency analysis attempts:

a) to define groups of items which are closely related to one another and

b) to describe useful concepts or dimensions.

The analyses described below attempt to establish the degree to which the dimensions reported in previous factor analytic studies in the literature are confirmed by interrelationships of items in the data of the present study.

In the case of the patient sample, all but two items (HEALTH and SUICIDE) have correlations greater than 0.4 with total score and all but nine items have correlations greater than 0.6 with total score (these correlations are significant at the .001 level). In this study the factor analyses of the patient sample revealed one major source of variance reflected in a very large first factor. These results can only be interpreted in one way. The total set of items loads on a general distress factor which is the

single greatest source of variance in the scores of all patients.[9]

Examination of item answering patterns in the patient sample was not likely to provide additional information about the patient sample due to the high average intercorrelation of items (.39). However, internal consistency analyses of the normal sample should clarify subpatterns of symptom items which occur in it. If, as some authors suggest, pathological depression is an exacerbation of normal depression, such analyses should demonstrate the similarity between patterns in the normal sample and those reported for depressed patients.

Original analyses were performed on sets of items determined by assigning each symptom item to the theoretical dimensions delineated in Table 4.1. The process of modifying these groupings by addition and deletion of items is outlined in detail ifor the first (ANXIETY) group of items. A similar procedure was employed for all other groups of items.

The composites. Judging by face validity alone, the items that would be expected to measure anxiety are PANIC, HOUSEPHO, PHOBIAS, and ANXIOUS. The item IRRITABL was added to these as being likely to be related to anxiety. The items RESTLESS and RELAXING were included in the absence of an agitation grouping to which they would otherwise by attached. These formed the original anxiety grouping and had an internal

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9. It could be called a general depression factor only if it had been shown to be independent of other factors of abnormal behaviour.

consistency of .67. Internal consistency analysis showed that PHOBIAS and IRRITABL had trivial correlations with all other items and clearly did not belong in this composite. They were deleted with the result that the internal consistency was raised to .76. It seemed possible that the fear of losing one's mind would be related to anxiety so the item LOSEMIND was added to the composite. It proved to have zero correlations with the grouping. (The situation might be quite different in the patient sample.) The correlation matrix and cluster analysis indicated that the item HEALTH might be related to this grouping. (It actually asks "do you worry about your health".) It was added and retained when it proved to have medium-sized correlations with several other items, even though it did not raise the internal consistency appreciably. The final composite is shown below.

Table 5.5

Internal Consistency Analysis of the ANXIETY Composite

Original Scale		Derived Scale	
Item	Item-total Correlation	Item	Item-total Correlation
panic	.56	panic	.54
housepho	.62	housepho	.47
anxious	.54	anxious	.47
restless	.42	restless	.31
relaxing	.36	relaxing	.25
phobias	.06	health	.32
irritabl	.18		
Internal Consistency = .67		Internal Consistency = .76	
Average Interitem Correlation =.23		Average Interitem Correlation = .32	

The cognitive impairment composite had an internal consistency of .56 which was raised to .63 by deleting THINKING which has low correlations with the other three items. The high correlation between MINDTASK and LOSEMIND (.64) suggests a subjective cognitive deficiency directly related to work. Addition of the specific work item DIFFWORK, and FATIGUE raises the internal consistency to .85.

Table 5.6

Internal Consistency Analysis of the COGNITIVE IMPAIRMENT Composite

Original Scale		Derived Scale	
Item	Item-total Correlation	Item	Item-total Correlation
decision	.32	decision	.49
thinking	.15	diffwork	.79
mindtask	.53	mindtask	.70
losemind	.40	losemind	.54
		fatigue	.78
Internal Consistency = .56		Internal Consistency = .85	
Average Interitem Correlation = .24		Average Interitem Correlation = .53	

The first four items of the apathy composite indicated in Table 4.2 had an internal consistency of .59. The best subset of all possible apathy items includes PUSHTODO and STARTING and has an internal consistency of .69. Addition of one or more of the other items does not raise the internal consistency appreciably. However, the addition of a group of three related items reflecting generalized inadequacy (and thus conceptually related to apathy), DIFFICUL, DIFFCOPE, and TASKEFFO, raises the internal consistency to .70.

Table 5.7

Internal Consistency Analysis of the APATHY Composite

Original Scale		Derived Scale	
Item	Item-total Correlation	Item	Item-total Correlation
interest	.25	interest	.23
satisfac	.34	satisfac	.46
alone	.47	alone	.46
people	.44	people	.28
		pushtodo	.59
		starting	.52
		diffcope	.28
		difficul	.29
		taskeffo	.31
Internal Consistency = .59		Internal Consistency = .70	
Average Interitem Correlation = .27		Average Interitem Correlation = .21	

The first five despondency items had an internal consistency of .64. Addition of the four guilt items (DESPISE, INJURED, FORGIVEN, and LETDOWN) raised it to .77. The guilt items are clearly related to the despondency items (at least in this sample population) as the average interitem correlation is .27. The best subset of these (9) items has an internal consistency of .84. The two items THINKING and DIFFCOPE have high intercorrelations with all items in this group. Their addition raises the internal consistency to .88. (The internal consistency analysis of this composite is shown in Table 5.8.)

The items included in the final despondency composite (see Table 5.8) represent a close approximation to those considered to reflect the "core" symptomatology of depression. Therefore, in order to determine if Spitzer et al's (1967) finding that anxiety and depression were very difficult to

separate, was reflected in this data, the anxiety items were added and a further internal consistency analysis undertaken. Although the internal consistency of the total group was only slightly higher than that of the despondency items alone (.89), the average interitem correlation of .39 and the item-total correlations indicate that the entire group of items is highly interrelated (see Table 5.9).

Table 5.8

Internal Consistency Analysis of the DESPONDENCY Composite

Original Scale		Derived Scale	
Item	Item-total Correlation	Item	Item-total Correlation
suicide	.56	suicide	.56
hopeless	.16		
worthliv	.66	worthliv	.71
miserabl	.47	miserabl	.41
blue	.27		
despise	.68	despise	.77
injured	.14		
forgiven	.48	forgiven	
letdown	.66	letdown	.56
Internal Consistency = .77		Internal Consistency = .84	
Average Interitem Correlation = .27		Average Interitem Correlation = .27	

The factor analysis of data collected from normal subjects (see Table 5.4) defined a very strong self-esteem factor which includes the five items suggested in Table 4.2 and also SEX and HOPELESS. The internal consistency of this group is .85. Contrary to expectations, the work-related items are not highly correlated to this group (see Table 5.10).

Table 5.9

Internal Consistency of the DESPONDENCY/ANXIETYComposite

Item	Item-total Correlation
suicide	.54
miserabl	.45
worthliv	.64
despise	.76
letdown	.66
forgiven	.56
thinking	.69
diffcope	.67
housepho	.68
panic	.56
anxious	.52
relaxing	.42
restless	.45

Internal Consistency = .89
Average Interitem Correlation = .39

Table 5.10

Internal Consistency Analysis of the SELF-ESTEEM Composite

Original Scale		Derived Scale	
Item	Item-total Correlation	Item	Item-total Correlation
notice	.73	notice	.81
nogood	.38	nogood	.30
useless	.61	useless	.55
dslikme	.72	dslikme	.82
standard	.70	standard	.74
		hopeless	.57
		sex	.62
Internal Consistency = .83		Internal Consistency = .85	
Average Interitem Correlation = .49		Average Interitem Correlation = .46	

In this sample there was no relationship between the five items related to physical complaints (WAKING, FATIGUE, HEALTH, SEX, and APPETITE). A composite composed of these

five items has an internal consistency of .25. Only HEALTH and FATIGUE had an appreciable intercorrelation (.32). Some of these items are included in other scales because the patterns of their intercorrelations indicated appropriate alternative placements.

There is not a well defined retardation composite in this data. Various combinations of the three specific retardation items (SLOWTHIN, TIMESLOW, and SLOWEVER) with apathy, cognitive and work items failed to produce any composite with a high internal consistency. However, the retardation items were related to the work and apathy items as shown by moderate intercorrelations. The failure to find a clear retardation grouping may be partially attributable to the absence of psychomotor items in the pool.[10]

The items. All but 11 of the 45 items are included in one of the composites described above (see Table 5.11). The remaining 11 items have low communalities and/or simply do not seem to belong to any composite. (Their correlations with the entire set of items as a whole are listed in Table 5.12.)

Possible explanations for the low communalities are readily apparent in the case of several of these items. The

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10. Internal consistency analyses equivalent to those which were performed on normals were performed on the patient sample for purposes of comparison. All composites had internal consistencies greater than 0.8 except the somatic complaints composite which had an internal consistency of .71. The internal consistency of retardation items was greater than 0.9.

Table 5.11

Final Allocation of Items to Composites by Internal Consistency Analysis

DESPONDENCY GUILT	ANXIETY	SELF ESTEEM	APATHY	COGNITIVE IMPAIRMENT/ DIFFICULTY WORKING
suicide (6)*	health (4)	sex (2)	diffcope (10)	decision (15)
diffcope (10)	housepho (9)	standard (8)	satisfac (14)	fatigue (16)
thinking (17)	relaxing (11)	dslikme (18)	pushtodo (22)	mindtask (19)
miserabl (34)	panic (13)	hopeless (31)	starting (24)	losemind (20)
worthliv (40)	restless (21)	useless (36)	interest (27)	diffwork (25)
letdown (35)	anxious (29)	nogood (37)	people (30)	
forgiven (38)		notice (44)	alone (33)	
despise (43)			difficul (39)	
			taskeffo (42)	

* numbers in brackets refer to the item's order position in the questionnaire (see Appendix I)

retardation items are characteristic of severe depression and it is not too surprising that they do not fit in composites based on a normal sample; the behavioural items (WAKING, APPETITE, CRYING) may be separate because they are a different type (i.e. not subjective reports of feelings and concerns as are most of the other items); PHOBIAS is a very specific and rare type of anxiety.

Table 5.12

Correlations Between Those Items not Included in any Composite and the Total Set of Items (Normals)

waking	.12
appetite	.25
crying	.12
phobias	.04
injured	.16
difftodo	.24
irritabl	.38
slowever	.37
slowthin	.27
timeslow	.12
blue	.55

Except for the pioneering work of Foulds (1962) and the work undertaken in the context of developing inventories for the measurement of the full spectrum of abnormal behaviour (see Section 2.7), there appears to have been remarkably little item and scale analysis done with depression items. Instead investigators have tended to make many assumptions concerning the meaning of particular items. However, a perusal of the literature reveals that individual items are subject ot almost as many interpretations as there are investigators (see Appendix H).

In the present study there are several pairs of items whose high intercorrelations indicate that they are virtually identical to one another. This aspect of the relationship of items to one another has been virtually ignored in the literature in spite of the fact that it has a significant effect on results of scale analyses and factor analyses. On the other hand most scale items are chosen on the basis of face validity and some of the correlations in this study indicate that particular items are not correlated to the items which would seem to have very similar menaings if judged by content alone. For example there are virtually zero correlations between the item pairs BLUE-MISERABL and HOPELESS-WORTHLIV. This failure of face validity points up the need for empirical analysis of the meaning and associations of depression items. Some attempt should certainly be made to identify those items which ask the same question in different ways.

Similarly a start should be made on the related problem of determining the specifity level of the various items in use. Little work has been done on the specificity level of depression items or on their relationship to the specificity level of psychiatric symptom items indicative of other disorders with which they often overlap. Kendall's (1968) monograph in which he used very specific items and did second and third order factor analysis is an exception in this regard.

Analytic work specifically aimed at delineating the relationship between symptom items and psychiatric disorders is badly needed. Background research for the present study revealed considerable overlap of items used in depression scales with those in scales which measure general health (e.g. The Cornell Medical Index, 1956), general distress (Kellner and Sheffield, 1973) and psychoticism (Eysenck and Eysenck, 1968). Foulds' (1962) work confirms the non-specificity of psychiatric symptom items. These findings imply limitations on the usefulness of these items. Such limitations are generally ignored by current research in the area.

Composite scores. Mean composite scores for patient and normal groups are recorded in Table 5.13. All differences in means are significant at the .001 level. These consistent differences in scores confirm that the questionnaire used in this study is sensitive to differences in severity between the two groups, but that normal subjects as well as patients have appreciable scores on all of these "typically depressive" patterns.

The composite-total correlations and the intercorrelations of individual composite scores (see Tables 5.14 and 5.15) confirm the results of the factor and cluster analysis. In patients all scores are highly correlated. In normal subjects the low correlations indicate that the composite scores measure substantially independent dimensions of subjective

distress. The independence of the self-esteem composite is especially marked.

Table 5.13

Mean Composite Scores for Patients and Normals

Scale	No. of Items	Mean for Normal Subjects	Mean for Patient Subjects
ANXIETY	6	7.0	36.1
APATHY	9	8.0	62.7
DESPONDENCY/ GUILT	6	2.7	32.3
COGNITIVE IMPAIRMENT	5	7.4	31.8
SELF ESTEEM	7	6.9	43.4

Table 5.14

Intercorrelation of Composite Scores in the Normal Sample

	Total	Anxiety	Apathy	Despondency	Cognitive Impairment
Anxiety	51				
Apathy	60	40			
Despondency	28	46	30		
Cognitive Impairment	68	41	33	09	
Self Esteem	51	15	15	23	12

5.4 Comparison of Total Frequency Scores with Total Duration and Extensity Scores in Patients and Normals

As outlined in Chapter 3, each item of the questionnaire included a question which was designed to yield a duration score ("How long did you have the symptom?"). The five alternative answers to the question on duration were weighted

one to five. A total duration score for each subject was calculated by multiplying the total number of answers in each of the five categories by the weight for that category and adding the resulting five scores.

Each item also asked if the symptom under consideration interfered with the subject's work, or leisure activity, or with his relationship to his family or friends. Thus there were four extensity scores for each item. Each was scored 1 or 0 and the four scores were added to give a total extensity score for each item. A total extensity score for each subject was calculated by adding extensity scores over items.

Tables 5.16 and 5.17 display the matrix of intercorrelations of total scores for the two samples. All correlations but two are significant at the .001 level.

Table 5.15

Intercorrelation of Composite Scores in the Patient Sample

	Total	Anxiety	Apathy	Despondency	Cognitive Impairment
Anxiety	86				
Apathy	95	78			
Despondency	84	66	77		
Cognitive Impairment	93	87	88	69	
Self Esteem	89	61	84	81	79

The intercorrelations of the three major total scores (frequency-duration=.39; frequency-extensity=.43; duration-

Table 5.16

Correlations of Total Scores (Frequency, Duration, Extensity) in the Normal Sample

	Total Frequency	Total Duration	Total Extensity	Extensity Work	Extensity Leisure	Extensity Family
Total Duration	39					
Total Extensity	43	70				
Work	34	42	55			
Leisure	38	73	90	46		
Family	24*	38	73	35	53	
Friends	37	51	77	34	61	47

Table 5.17

Correlations of Total Scores (Frequency, Duration, Extensity) in the Patient Sample

	Total Frequency	Total Duration	Total Extensity	Extensity Work	Extensity Leisure	Extensity Family
Total Duration	67					
Total Extensity	38	25*				
Work	66	65	50			
Leisure	51	57	50	82		
Family	40	51	56	65	62	
Friends	49	61	44	75	57	69

* significant at the .01 level (all others significant at the .001 level)

extensity=.70) indicate that in normals approximately the same information is obtained from extensity and duration scores, but that frequency scores are likely to provide

some additional information. In the patient sample it is the duration and frequency scores which are most highly correlated.

Intercorrelations among the extensity categories (work, leisure, family and friends) indicate that patients are likely to endorse all if they endorse any. They also indicate that in both samples the effects of symptoms on leisure and friends are more likely to co-exist than any other pair of effects.

The observations made above cannot be taken as conclusive results but must await the confirmation of further studies. However, they do seem to indicate that there is appreciable utility in attempting to obtain data which is of a different form than the questionnaire responses (common in previous research) which are simple but confound considerations of frequency and duration. The extensity of the symptoms has usually been ignored although the impairment of role functioning would appear to be aspect of severity which is most important both from the point of view of the patient and from that of therapeutic intervention. Considerations of frequency and duration cannot be considered to be as important, at least practically speaking, since a given number or duration of symptoms can have such different effects on different people, depending on their personality and environment.

5.5 Discussion

The average total frequency score is low for the normal sample (43), higher for patients whose primary diagnosis is not depression, and highest for patients whose primary diagnosis is depression (320). This pattern is consistent with the assumption that the questionnaire measures the kind of distress reflected in the diagnosis of depression.

The mean score for normal subjects indicates that this group experience a significant number of depressive symptoms. However, it is the case that some (and perhaps most) symptoms of depression are normal experiences e.g. increased irritability, feeling unable to cope) as long as they do not become persistant or very intense. The separation between experiences which could be called depressive but which are nonetheless within the range of normal variations, and conditions which are considered to be clinical disorders of depression is not clearcut.

In a parallel fashion the overlap between scores of depressed and non-depressed patients is so great that the large difference in mean scores is not statistically significant. This result supports the contention that depressive symptoms are a common concomitant of other psychiatric disorders. However, the possibility that some portion of the overlap may be due to the unreliability of psychiatric diagnosis, with the result that some depressives are diagnosed not-depressed and vice versa, cannot be ignored. Regardless of this qualification, the difference between the mean score of normal subjects and that of the two patient groups indicates that patients

experience more distress than the normal population.

The factor analysis of the patient sample resulted in a single large factor which is best interpreted as a factor of subjective distress. It is therefore not surprising that factors after the first were not well defined.

As would be expected (Cronbach, 1951) this high saturation of items on the first factor is reflected in the high internal consistency (.96) of the total group of 45 items.

These results can be interpreted as providing some support for substantial similarity of symptomatology across diagnosis. This in turn suggests the appropriateness of a general model which employs dimensions of abnormal behaviour which cut across traditional diagnostic categories (see Chapter 6 below). However, the possibility that the factor is largely a methodological artefact (since all items were of one type i.e. subjective reports of feelings and concerns) must not be overlooked.

The presence of a single large factor in the data could be interpreted as support of the unitary theory of depression. Indeed it is likely that there is a relationship between the symptom groups which define the traditional conception of depressive illness (despondency, guilt, anxiety, apathy/retardation, cognitive impairment, lowered self-esteem). In normal subjects, where these groupings were distinguishable, they are intercorrelated. In the patient sample, distinguishable (if highly correlated) subgroups of symptoms were delineated by

a simple clustering technique (see Section 4.4). This suggests that a follow up which:

a) had more subjects who were reliably diagnosed as depressed and

b) used more specific items,

might reveal symptom patterns similar to those found in normal subjects.

Factor analysis of the normal sample extracted five factors which account for 44" of the variance in the data (see Table 5.4). These factors were identified as anxious-guilty-despondency, difficulty working, self-esteem (lowered), apathy/retardation, and trouble getting started. These factors all have similarities to the factors derived from previous studies of patient sample (see Table 2.3). The close association of despondent (or depressed) mood with anxiety and guilt is not universal in the patient studies but it does occur. Factors identified as impaired functioning loss of self-esteem, apathy/retardations, and loss of interest and satisfaction are very similar to the factors of this study. These correspondences support the hypothesis that pathological depression is an exacerbation of a normal condition, in other words these results support a dimensional model of depression.

The internal consistency analysis of the normal sample defined five groups of items each of which had high internal consistency and defined a dimension (or concept) traditionally associated with depressive disorders. Three of these were

similar to the factors described earlier (self-esteem, apathy and cognitive impairment/difficulty working). A combination of the remaining two groups of despondency/guilt items and anxiety items produced a composite of high internal consistency which was very similar to the first factor from the factor analysis of the normal sample. This similarity of the two sets of results is not surprising (since both analyses are based on the correlations between items) however, it confirm the stability of these composites and thus their potential usefulness.

5.6 Summary

In this study factor analysis of the data for patient subjects failed to reveal separable subpatterns of depressive symptoms. This is not surprising in that the patient groups contained both depressed and non-depressed subjects. Normal subjects showed five distinguishable patterns of symptoms. These patterns were similar to those reported in the literature for depressed psychiatric patients. Although the factor analysis of the patient sample resulted in a single large factor, it is possible that separable patterns would occur in a study with a better data base.

The relatively high internal consistency of the full set of items in both samples provides some support for a unitary theory of depression. However, since there are clear subpatterns in the normal sample, a multidimensional model may be more appropriate at a more specific level of analysis (see Section 2.7).

The results give a strong indication that there are distinguishable patterns of depressive symptoms in normal subjects and that these patterns correspond to the patterns already demonstrated in patient groups. The line of research should be pursued in an attempt to ascertain if, as is suggested by these results, pathological depression may be interpreted as an exacerbation of a normal mood state and whether such an interpretation is more appropriate than the concept of depression as a disease as defined by the medical model.

Chapter 6

Summary and Conclusion

Using the description of depression provided by traditional psychiatry and based on Kraepelin's (1896) original work, this thesis has attempted to examine the relationship between subjective reports of depressive symptoms in normal subjects and such reports in patient subjects. Through the use of factor analysis and internal consistency analysis, it has described the patterning of these symptoms and the correspondence of those patterns to traditional and modern models of depression. The study must be regarded as a preliminary pilot investigation. Any conclusions drawn from the results must be tentative. This limitation is partially the result of the methodological shortcomings of the study itself. It is due in large part, however, to the virtual absence of recent, first quality, empirical research on the nature and symptomatology of depression.

Sound research has not been possible in the absence of a consensus on a definition of depression which could serve as its focus. Although there have been many papers published in the area in recent years, there has been little attempt to define depression empirically, to describe its various forms, to delimit it from normal sadness and apathy or to outline its place in a general scheme of mental illness.

Recent research has assumed that there is a valid model of depression (usually a dichotomous disease model) and that

there is a recognized syndrome of depression defined by a specific group of symptoms. The present study has attempted to show that these assumptions are groundless.

An adequate model of depression must be elaborated in conjunction with a theory of its nature and origin. The absence of both a useful model (i.e. one which fits the facts known about the disorder and delineates the important areas for future investigation) and an adequate description can be traced to the lack of a coherent theory of the nature of depression which places it solidly within a model of mental illness. Such a theory, model and description are necessary as starting points for research.

The present study has attempted to demonstrate that the research literature does not support either a dichotomous model of depression or a categorical (disease) model.

The increasingly widespread acceptance of the fact that many depressive disorders have a reactive component (i.e. they originate, at least in part, as a reaction to environmental circumstances), has brought an alternative model to the fore. A dimensional model appears to be more consistent with research and observation. This model assumes a basic continuity of symptomatology between neurotic and psychotic disorders. It also assumes that the differences between normal and abnormal behaviour are quantitative not qualitative. This view is elaborated by Bowman and Rose (1951):

There are no such differences in the fundamental nature

> of psychogenic disorders as to warrant the present rigid and meticulous distinction between psychoses and neuroses... there is an unbroken line from the 'normal' through the neuroses to the psychoses. (p. 163)

Conceptualization of depression as a single dimension of abnormal behaviour suggest a multidimensional model of depressive disorders and of mental illness.

Although there are many different presenting pictures of depression (i.e. many symptom patterns), there is little support for the position that there are several separate diseases. However, these different conditions are appropriately grouped under a general category such as depressive disorders, since they have basic similarities to one another. It is this similarity which has led to attempts to defend the position that depression is a unitary phenomenon. In fact only a basic core cluster of symptoms is common to all depressive disorders. This core can be conceptualized as a dimension of abnormal behaviour characterized by depressed or despondent mood, sadness, and feelings or worthlessness, helplessness, and hopelessness. These have been the core of depressive symptomatology since it was originally described (see Wittenborn, 1966).

Under a multidimensional model all the clinical disorders which have been labelled depressive are accounted for by postulating combinations of the "depression"* dimension

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* Quotation marks will be used to distinguish depression as a dimension from depression as a generic term including all depressive disorders.

with other dimensions of abnormal behaviour such as anxiety, hostility, and apathy.

Such a model would be consistent with mixed symptom pictures. For example, the conditions now diagnosed "schizo-affective disorder" would be described as a combination of the "depression" dimension with a dimension referring to disturbed reality testing (and possibly others). However, it is the essence of this model that such specific diagnoses, implying specific distinguishable disorders, are considered to be convenient labels only. Under this model:

> the diagnoses do not refer to a group of individuals qualitatively differentiated from all other individuals in any particular respect, rather they refer to a core group which shades gradually into other groups without any particular boundary which could be drawn on any but an arbitrary basis. (Eysenck and Eysenck, 1968, p. 19)

Of the many possible dimensions of abnormal behaviour suggested by the research literature, guilt and anxiety appear to be the most closely associated with depression (Overall and Klett, 1972; Spitzer et al, 1967, 1970). However, it is not uncommon for a patient with a diagnosis of depression to show marked signs of apathy, retardation, impairment of cognitive functioning or somatic disturbance. Psychotic depressions are characterized by delusions and hallucinations. In short, virtually every commonly recognized

aspect of abnormal behaviour may occur in conjunction with depressive symptoms.

Considerable research will be necessary to establish the theoretical and empirical validity and utility of the particular model of abnormal symptomatology outlined above. Discriminant and convergent validity of dimensions can be established by the use of Campbell and Fiske's (1959) multimethod-multitrait matrix. Item analysis, scale analysis and factor analysis are appropriate techniques. Many different kinds of data could be useful e.g. subjective reports of feelings and concerns, psychiatrist's ratings, ward behaviour ratings, reports by significant others, dreams, free associations, physiological measures, personality tests, analyses of environmental stress factors and role performance ratings. Most of these have already been used in investigations of depressive disorders. Their failure to significantly increase understanding of depression may be attributed to the failure to guide data collection by an adequate model and to measure results against hypotheses arising from a coherent theory.

The multidimensional model outlined above "accounts for" psychiatric symptoms in the sense that it provides a useful, accurate and parsimonious way to talk about them. Thus it serves as a starting point for investigations of depressive disorders (and mental illness in general). However, it is a model of symptomatology and it cannot

be assumed that symptoms have a direct relationship to the underlying structure of these disorders. Symptomalogical dimensions may have no implications for the origin or treatment of depression.

Therefore, the important direction for future research is the investigation of the meaning of these dimensions. The research which investigates this issue will do so by elaboration of a "nomonological net", "an interlocking system of laws which constitute a theory" (Cronbach and Meehl, 1955). Symptom dimensions may prove to be useful theoretical constructs which can be linked to one another by this theory.

Appropriate investigations could fail to reveal any meaningful relationships between symptomatology and underlying structure of depressive disorders if:

a) particular symptom dimensions have several possible origin

b) the same events or conditions produce different symptom dimensions in different personalities or under different environmental circumstances.

Such a failure would imply the need to pursue research aimed at establishing a conceptual framework other than one based on symptom dimensions.

At the present time little progress is being made toward the goals of elaborating a coherent theory of depression and establishing a useful model. This situation may be largely attributed to the failure of individual

investigators to plan their research on the basis of a clear view of the significance of their work with respect to the goal of understanding psychiatric disorders. This implies that the investigator cannot usefully work in isolation. He must realize that solid foundations for studying depressive disorders have yet to be laid, that until this is accomplished no progress can be made and that this will only occur when ongoing research is integrated with sound theory.

Individual investigators must communicate effectively with one another so that their work is complimentary and contributes to progress in the area as a whole. Instead of investigating individual notions of depression with little or no proven validity, they must agree on an appropriate course of action for empirically establishing a valid model of depression. They must realize that a lot of the confusion in the area is due to their own failure to be clear on the assumptions they are using and the levels of analysis at which they are operating. They must understand the implications af their results and the purposes for which they are useful.

Until individual investigators are clear what they are talking about and on the relationship of their work to that of others in the area, no progress can be made.

When a coherent course of action has been chosen on the basis of a preliminary theory and model of depression, a useful empirical definition may result. A description of depressive disorders based on a set of reliable and valid dimensions of abnormal behaviour could pave the way for investigation of the nature and origin of the phenomena. Useful investigation cannot begin until some order is brought to the general area through an appreciation of the complexity of the issues involved and an effort at cooperation among individuals.

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Appendix A

Kraepelin's Description of Depression[1]

Kraepelin attempted to establish the natural history of depressive disorders. He emphasized etiology and diagnosis and followed his patients for many years in order to determine prognosis. He emphasized hormonal, metabolic and physiological etiology in an attempt to unite psychiatry with medicine. He believed that "the essential feature of mania was excitement and excitability and of depression or melancholia, inhibition and depression of function" (i.e. physiological characteristics).[2] His work has been deprecated as being "only" descriptive. However, very little was known of depressive disorders in his day and sound description is the first step to increased knowledge of the nature of the disorder. His description has been considered good enough to form the basis of much of the current literature on the subject.

Kraepelin included all varieties of depressive disorders in a single class. He divided the functional psychoses[3] into dementia praecox (schizophrenia) which inevitably led to permanent dementia, and manic-depressive psychoses, which involved only the emotions and from which recovery was possible. The latter group included all

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1. Most of the material included in this appendix is a condensation of Kraepelin's long descriptive account in Manic Depressive Insanity and Paranoia, translated by M. Barclay, 1921. All quotations are from this book unless otherwise noted.
2. From the editor's preface to Manic Depressive Insanity and Paranoia.
3. Functional psychoses are contrasted with organic diseases. In the former cases there is a pathological change in functioning, but no (detectable) organic change. According to Arieti (1959), "no matter what the complex causality of the disorder may be, it is the particular form of functioning (or of operating)...that constitutes the predominant and primary...essence of the disorder".

depressions, all melancholic and manic disorders and a variety of milder mood swings whose mildest forms differed only slightly from normal mood states, as well as the circular type manic-depressive disorders. Kraepelin believed these were all "manifestations of a single morbid process". They all had certain "common fundamental features". He observed that "all the morbid forms brought together here as a clinical entity, not only pass over the one into the other without recognizable boundaries, but...may even replace each other in one and the same case". In spite of there being "slight and severe attacks which may be of long or short duration, all have a uniform prognosis of virtual complete recovery". He also claimed support for a hereditary factor in manic-depressive insanity.

In grouping these disorders, he did not reject the idea that subgroups within this domain might be separated from one another but he felt that no adequate criterion was available at that time.

He discussed psychic symptoms and bodily symptoms. These two groups will be summarized below.

Psychic Symptoms[4]

1) Perception - slowing and sluggishness of recognition and understanding (e.g. of written material). Facility of attention is disordered-the patient is not able to voluntarily pay attention (distractibility) or to turn away from ideas suggested from within or without (obsessive and compulsive thoughts).

2) Consciousness - clouding of consciousness up to complete oblivion

4. Though only symptoms of depression are discussed here, Kraepelin's discussion entwined the discussion of manic and depressive symptoms and actually emphasized the former and its contrast with depression.

with failure of accuracy of orientation and recognition.

3) Memory - often incapable of recollecting the simplest things. The patient has to consider a long time before he can narrate an experience.

4) Hallucinations - although they occur they are less common than illusions which are favoured by impairment of perception. Patients reinterpret ordinary sounds or sights as being particularly relevant to their own thoughts and moods (e.g. murmuring and whispering becomes the crackling of Hell). Auditory and visual hallucinations and illusions predominate. The content is usually related to the patient's "badness". Voices reprehend the patient or abjure him to punish himself for his sins (e.g. commit suicide).

5) Flight of ideas - occurs not infrequently (although it is much more common in mania), but is often not readily recognizable due to scanty speech in taciturn patients.

6) Inhibition of thought - (opposite of 5) observed in almost every depressed patient, although it may be more or less strongly marked; incapacity to order their ideas (which is often consciously and painfully felt); dullness and marked retardation of thought; poverty of ideas. Patients complain of being totally "apathetic" or "mentally dead". Thought and expression become very difficult. On the other hand, once developed, ideas persist with great tenacity and the patient may be troubled by obsessions (e.g. of having killed someone) against their better knowledge.

7) Mental efficiency - "the feeling of mental inhibition...is often greater than the actual lowering of efficiency." This may be

because the inhibition can be overcome by effort on the patient's part but this effort makes his condition very apparent to him.

8) Delusions - "are...very frequent...They are connected with the feeling of mental inefficiency and are hypochondriacal in content. Ideas of sin are also frequent and ideas of persecution somewhat rarer".

9) Insight - "a clear understanding of the morbidity of the state is, as a rule, present only in the slightest states of depression." Absence of insight is often reflected in the patient's idea that his condition is hopeless.

10) Mood - a sombre and gloomy hopelessness (despondency) accompanied by inhibition of the emotions is most common. The patients feel indifferent to everything, even their families. They cannot weep. They feel no satisfaction. They have lost all feeling.

More rarely, anxiety is the principal feature of the mood. This can take several forms:

a) inward anxiety and despair

b) restlessness which may lead to suicide attempts

c) irritability and dissatisfaction with everything [the latter Kraepelin considers are often transitions between depression and mania].

The torment of the depressed state engenders a weariness of life in almost all patients at least from time to time.

11) Inhibition - The most striking disorders are found in the realms of volition and action. Performance of actions is made difficult or even impossible. Slighter degrees are seen as indecision or loss of will. The patient cannot carry out the simplest actions; he

doesn't know how he'll manage (he is inadequate). Even when he does get going, nothing is carried through or done correctly. Movements are slow and without vigour; the bearing is weary; the expression immobile. The inhibition of will is felt very strongly by the patient, often before it is noticeable by others. Failure (inability) to work is seen as a moral offence and he berates himself as lazy. The difficulties lead to restriction of activity and often withdrawal from society. Some patients feel a continual need for rest and eventually take to bed.

Kraepelin draws a distinction between habitual actions, which are often unimpaired, and those which require voluntary resolve, such as new enterprises or responsibilities, which are greatly affected.

Expression is often inhibited and gestures lose vivacity. The patient speaks very softly, hesitatingly, monotonously, and sometimes becomes mute in midsentence.

Instead of this general picture of "retardation" patients sometimes show "anxious excitement" (agitation). They are restless. They whimper, wring their hands, beg for mercy, cling to people, etc. Kraepelin suggests two possible interpretations of this behaviour:

a) that it is attributable to mixed states

b) that instead of being inhibiting, inward tension and outflow of anxiety is expressed in excitement.

Bodily Symptoms

1) Sleep - is encroached upon in spite of great need. Although worn and weary patients lie sleepless in bed. They stay in bed though they are not refreshed.
2) Appetite - little inclination to eat; take food with reluctance and persuasion; coated tongue; constipation.
3) Weight loss - accompanies slight forms of depression (little consistency is apparent).
4) Disorders of metabolism
5) Blood and urine - specimens reveal no consistent changes.
6) Circulation - examinations of blood pressure and pulse find them raised but along with respiration seem to reflect general health.
7) Temperature - reported to lower.
8) "Nervous disorders" - of all kinds--headaches, palpitations, fatigue, feelings of oppression, heaviness in the limbs.
9) Menses - stop at the beginning of the depression but return on the eve of recovery. During menses morbid phenomena are aggravated.

Appendix B

The APA Diagnostic Classification

Current psychiatric practice in North America is based on the American Psychiatric Association's "Diagnostic and Statistical Manual" (Second Edition, 1968, referred to hereafter as DSM-II).

According to DSM-II, there are at least ten varieties of depressive disorder which are grouped under three main headings--"Major Affective Disorders", "Other Psychoses", and "Neuroses", but, in fact these three could be collapsed to two, psychotic and neurotic, since the "Major Affective Disorders" are considered to be psychoses.

In making distinctions between these groupings, "patients are described as psychotic when their mental functioning is sufficiently impaired to interfere grossly with their capacity to meet the ordinary demands of life. The impairment may result from a serious distortion in their capacity to recognize reality...Alterations of mood may be so profound that the patient's capacity to respond appropriately is grossly impaired (DSM-II, p. 23). This description makes it clear that a diagnosis of psychosis may be made in the absence of delusions or hallucinations (the symptoms traditionally associated with the label psychotic).

"Major Affective Disorders" are "characterized by a single disorder of mood, either extreme depression or elation" the onset of which "does not seem to be related directly to a precipitating life experience" (DSM-II, p. 35-36). Under this heading are listed "involutional melancholia", the varieties of "manic-depressive illness", and "others". Manic depressive illness is the preferred diagnosis when there is a history of previous episodes.

The chief characteristic of neuroses is anxiety, which "may be felt and expressed directly, or it may be controlled unconsciously and automatically by conversion, displacement and various other psychological mechanisms. Generally, these mechanisms produce symptoms experienced as subjective distress from which the patient desires relief (DSM-II, p. 50).

"Psychotic Depressive Reaction", which is listed under "Other Psychoses", is "distinguished by depressive mood attributable to some experience". "Depressive Neurosis" is diagnosed when the disorder is the result of "an excessive reaction...to an internal conflict or to an identifiable even" (DSM-II, p. 52) but the patient is not psychotic.

Appendix C

Historical Origins of the Dichotomous Classification Systems for Depressive Disorders

While the traditional schools of European psychiatry looked for organic causes in accordance with Kraepelin's theories, Freud and his followers were developing a purely psychic explanation for depression.

Because the two schools based their theories on very different subject populations (the traditionals on institutionalized psychotics, and the Freudians on the wealthy and neurotic leisure class), it was almost ineveitable that psychotic and neurotic depressions would be considered to be separate disease entities.

Kendall (1968) suggests that the rise of the psychoanalytic school of thought and the necessity of distinguishing patients who "required" hospitalization from those who did not, contributed to the entrenchment of the series of dichotomies which included the psychotic-neurotic designation, and also to the tendency to treat all dichotomies as if they were equivalent. However, there were other, more specific factors influencing these developments.

In 1893, Moebius introduced the terms "exogenous" and "endogenous" into the psychiatric literature. Kraepelin separated exogenous and endogenous illnesses on the basis of external and internal causes. According to his definition, exogenous illnesses were those caused by bacterial, chemical or other toxins. He included all depressions in the category of manic-depressive psychoses and he believed that these were of internal cause, i.e. degenerative or hereditary disorders, and he therefore called them "endogenous". He considered them to be virtually independent of external influences. This led to the confusion of

Kraepelin's descriptive observations with a concept of etiology.

Although Kraepelin considered all depressions to be endogenous, his successors accepted the existence of psychogenic and/or exogenous depressions.

Lange elaborated on Kraepelin's description. In addition to the endogenous, manic-depressive illnesses he defined three other diagnostic categories "a group of psychogenic depressions; a group of reactive melancholias; and a third group of physically provoked melancholias, identical to the endogenous melancholias in all but pathogenesis" (Kendall, 1968, p. 3). Lange was attempting to salvage "the concept of a purely endogenous melancholia" (Kendall, p. 3) but he was forced to admit that the differentiation between his four groups was not clearcut.

Several years later, Gillespie, a leading British psychiatrist, studied a group of depessed patie- ts and proposed that there were three types of depression: reactive; autonomous (independent of environmental stimuli); and involutional. There was no difference in the frequency of precipitating factors between the reactive and autonomous groups. The main differentiating factor was reactivity: reactive patients showed emotional response to environmental chagnes, contrasted with the lack of responsiveness shown by autonomous patients. (see Kendall, 1968, p. 5).

Gillespie did not attribute any etiological significance to the term reactive. However, when his proposals became integrated with those of Kraepelin, the autonomous group was equated with the endogenous or manic-depressive group, and the reactive group with the exogenous group. Here again, etiological and descriptive concepts were confused, and were used interchangeably, with the result that diagnoses based on observable behaviour or subjective reports of how the patient felt came to include unsubstantiated implications as the cause of the depression.

This confusion was compounded in the 1940's when the increasing use of electroconvulsive therapy (ECT) for depression led to the practice of classifying depressed patients according to whether they responded to this kind of treatement or not, and with this practice came a changing concept of endogenous depression. It was argued that patients with endogenous depression responded much more favourably to ECT than did patients with reactive depression. The latter group responded best to psychotherapy, thus "ipso facto", endogenous depression was an organic disorder and reactive depression a psychological disorder. Thus the therapeutic and phenomenological classifications assumed major etiological implications, adding considerable to the confusion (see Kendall, 1968, p. 7).

Although the dichotomous systems discussed above became the accepted classification of depression, their validity was never convincingly established. As a result the validity of the dichotomous classification system has been repeatedly challenged. Specific shortcomings of such systems are discussed in Appendix F.

Appendix D

A Comparison of Historical Usage with the Current Status of the Dichotomous Category Labels

Moebius' introduction, in 1893, of the terms endogenous and exogenous into the psychiatric literature probably marked the beginning of formal discussion of depressions as dichotomizable into two types. Up until this time, classification of mental disorders made a primary distinction on the basis of changes being visible in tissues after death (organic disorders) or not (functional disorders).[1] Kraepelin rejected this distinction but he also rejected the etiological classification which Moebius adopted in its stead. He "insisted that the one indispensible condition for developing an endogenous disorder was a certain innate proclivity: 'if this is present, very varied circumstances can invoke the illness'" (Lewis, 1971, p. 193). He recognized the difficulty created by multiple and subsidiary causes. "If a main cause is demonstrated which must impinge on the individual from without if the disease is to ensue, then we have an exogenous disease before us" (Ibid). Kraepelin felt that all possible mixtures can occur in the relationship of internal to external causes.

As the "endogenous-exogenous" dichotomy came into common use, endogenous was equated with "hereditary" and closely linked to

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1. This distinction is also retained in the 1968 APA Diagnostic and Statistical Manual (DSM-II).

"degenerative". Exogenous came to refer to disorders resulting from injury external to the brain. It therefore did not easily include psychogenic disorders, especially if exogenous was equated with organic. However, Kraepelin classified psychogenic disorders as exogenous.

The words did not appear in English writing until the late 1920's, at which time Gillespie (see Kendall, 1968) used endogenous as though it was synonymous with autonomous. In the meantime, Meyer (1905) had begun to use the concept of reaction types with regard to depression and to play down their hereditary nature. "From this time it was unusual for 'exogenous' to be paired with 'endogenous'...The commonest paris were 'endogenous-reactive,' 'endogenous-neurotic,' and 'psychotic-exogenous'" (Kendall, 1968, p. 6).

Modern usage of the terms is quite different from the original and consequently gives rise to considerable confusion. This is largely because, as Mendels and Cochrane (1968) have pointed out, "Kraepelin's descriptive and phenomenological contributions to psychiatry...have become linked with...theoretical and etiological concepts" (p. 2). In other words, subsequent investigators have acted as if Kraepelin's manic-depressive category, which was a descriptive one, corresponds to the etiological category of endogenous depression. This practice has caused a tremendous amount of confusion of the terminology and the conceptualization of the classification of depression.

Endogenous depression has become a descriptive category, implying a specific symptom pattern, often contrasted with the pattern of "neurotic" depression. At the same time, it has retained the implication of internal etiology. This is a marriage

that Kraepelin did not imply. Although he believed that manic-depressive illnesses would, in time, be shown to be endogenous.

Exogenous has been redefined as a synonym of reactive in Lange's (see Appendix C) sense, and far from being a subtype of endogenous depressions, exogenous are now considered to be a separate and contrasting category equivalent to reactive depressions in modern usage. Thus, the wider significance of the term exogenous within the disease model as Kraepelin used it, has been forgotten. Table 1 shows the relationship between the original use of these terms and modern use.

Table 1D

Historical and Current Use of the Dichotomous Category Labels

Historical (original)	Modern
reactive (Kraepelin)	reactive (responsive to environmental conditions)
reactive (Lange)	reactive (caused by an event in the patient's life)
endogenous	? no term without surplus meaning attached
psychogenic	? (roughly) neurotic
exogenous	none

Since both neurotic and reactive (in Lange's sense) depressions have been contrasted with endogenous ones, it follows that the differences between the original meanings of the terms has become blurred. It is now common for the descriptive category "neurotic " to be considered synonymous with the etiologic category "reactive," althoush there is no conclusive empirical support for the association. The word "neurotic" is now used more often to discribe an etiological type of depression than to indicate the general nature of its symptomatology. The equating of the neurotic and reactive depressions is in contrast with the official APA classification which recognizes both a neurotic depressive reaction and a psychotic depressive reaction.

At the same time, the word "reactive" has retained (for some authors at least) the Kraepelinian implications of reactivity to the environment and has been contrasted with autonomous depressions which are in turn equated to endogenous ones. (Presumably this association originates in Kraepelin's belief that manic-depressive psychoses were endogenous and in his description of them , autonomous).

To confuse the picture further, depressions which are characterized by psychotic symptoms are frequently distinguished from those which are not, and this descriptive category is equated with the etiological category "endogenous." Through this association, since psychotic depressions are generally considered to be more serious, comes the tendency for endogenous depressions to be considered more severe. But, once again, there is no sound empirical evidence for the identification of psychotic and endogenous depressions.

The purely symptomalogical dichotomy of "retarded-agitated" is considered by some authors to be equivalent to those mentioned above.

This use of the subtype labels as if they were equivalent and interchangeable has two major effects:

a) confusion of the terms, which results in none of them having meanings specific enough to be useful;

and b) the use of unsupported conceptualisations about the etiology and nature of depression, as if they were established facts.

The dichotomies most commonly used in the literature are the reactive-endogenous and endogenous-neurotic. Investigators actually present these as diagnostic subtypes although it is seldom clear how much of the surplus meaning implied by the various possible equivalences is assumed to exist in an individual study.

This situation makes it virtually impossible to compare across studies.

Appendix E

A Typical Endogenous Depressive Pattern (Rosenthal and Klerman, 1966) and a Contrast with Neurotic Symptoms (Kiloh and Garside, 1963)

ENDOGENOUS[1]	NEUROTIC
increased depth or severity of depressive affect	feelings of self-pity and
feelings of guilt, remorse and unworthiness	blaming the environment
insomnia (middle night and early morning waking)	initial insomnia
retardation (of speech, thought and motor	worse in evening
activity	reactivity of depression
visceral symptoms (constipation, anorexia)	(to environmental changes)
decreased sexual potency and desire	precipitation
weight loss	variability of illness
loss of interest and satisfaction	hysterical features
depression worse in the morning	inadequacy
duration one year or less	irritability
lack of reactivity to environmental changes	hypochondriasis
age 40 and above	sudden onset
	obsessionality

The position taken by Rosenthal and Klerman is that the term endogenous depression has come to imply:

a) a particular pattern of clinical signs and symptoms
b) a relatively stable and non-neurotic premorbid personality
c) an environmental precipitant to be found less often than in the case of neurotic depression, and less reactivity to the environment in the course of the depression.

They do not make any reference to the family history data that some authors have considered to show the contribution of a genetic component to the etiology of this disorder. Rosenthal and Klerman found no relationship in their analysis, between positive family history of depressive disease and presence of the endogenous pattern described above. These authors also reject the work autonomous as an appropriate description

1. These descriptions are examples drawn from research studies by the particular authors noted above. There is a marked lack of consensus across the research literature as to which symptoms should be assigned to which pattern (see Appendix H).

of this depressive pattern because it implies knowledge of etiology which we do not possess. Their definition omits any mention of previous episodes. Absence of these is sometimes considered necessary to the diagnosis of endogenous depression. In fact it is very hard to find in the literature, any other parameter that distinguishes this syndrome from that called by some authors "manic-depressive disease".

Appendix F

Specific Problems in the Dichotomous Classification of Depressive Disorders

The Basis of Dichotomization: Reactive vs. Endogenous Features

Historically, many attempts have been made to support the division of depressive disorders on etiological grounds, (i.e. to separate those which are caused by environmental stress factors--reactive depression--from those which appear to be the result of constitutional or hereditary factors--endogenous depressions).

In his classic study of sixty-one patients from the Maudsley Hospital, London, Lewis (1934) found that the more closely he scrutinised patients, the harder it was to justify simple qualitative distinctions between them. In a follow-up (1936) he also failed to observe any pattern of outcome associated with particular clinical features. He concluded that the endogenous-reactive dichotomy was false. In his view:

> Every illness is the product of two factors--of environment working on the organism; whether the constitutional factor is the predominant and determining influence, or the environmental one, is never a question of kind, never a question to be dealt with as an "either/or" problem; there will be a great number of possible combinations according to the individual inherited endowment and training, and the particular constellation of environmental forces. To set up a sharp distinction "in the interests of academic accuracy," when the distinction is not found in nature, is no help to thought or action.

Garmany (1958) studied five hundred and twenty-five consecutive outpatients and found that both stress factors and constitutional predisposition were very common[1] in both reactive and endogenous depressions. He concluded that the distinction between the two forms was "an unreal one." He further suggested that "the designation reactive or endogenous was in practice determined not so much by the form of the illness as by the liability of the patient's mood to fluctuate in sympathy with the examiner's on the one hand and the examiner's judgement as to whether or not the depression would respond to ECT on the other." (Kendall, 1968).

Kendall (1968) sums up with these remarks:

> Those who maintained that the division was artificial and unjustified examined series of consecutive cases and demonstrated, at least to their own satisfaction, that...endogenous and reactive features were inextricably mingled on both sides of the dividing line. Those who were convinced that the division was valid and necessary tended to argue from the general basis of their clinical experience, at best illustrating their thesis with selected cases, and, significantly, the proposition that the distinction was necessary almost invariably preceded the claim that it was demonstrable.

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1. 95% of reactive and 79% of endogenous cases showed stress factors, and 55% of reactive and 70% of endogenous cases showed constitutional factors.

> Any dispassionate evaluation of these conflicting opinions and the evidence presented to support them could only have led to the conclusion that the case for a valid distinction between endogenous and reactive depressions remainedd unproven.

The mixture of endogenous and reactive symptoms in individual cases may be due to an interaction between constitutional or genetic predisposition and stress factors, e.g. presumably less stress will precipitate a worse depression in a highly predisposed individual. This possibility should be borne in mind when discussing models which attempt to distinguish patients on the criterion of predisposition or precipitation. No categorisation should be attempted on the basis of either criterion alone. All persons may in fact be on continua of degree of predisposition and susceptibility to stress. (Although another possibility is that predisposition may be a genetic endowment specific to a subpopulation). The situation is considerably complicated by the fact that the nature of predisposing factors is still unknown and no one has been able to define which events "qualify" as precipitating stress factors.

An additional problem is presented by the fact that there is a disagreement as to the role of precipitating (stress) factors in the genesis of depression. Some authors maintain that truly unprecipitated depressions do occur. Others feel that stress probably plays a role in all depressions. They may concur with

Kraepelin that the precipitant is merely a "spark" which sets off an incipient illness in a predisposed individual. In the latter case it is difficult to distinguish the depression from a reactive depression which is, theoretically at least, caused by the precipitating event. A precise criterion for making this distinction has never been delineated, probably because there is no clear division.

An alternative to this model suggests that all persons may be possessed of varying amounts of a tendency to react to stress in a depressive manner. In some, this may be the characteristic response amounting almost to a personality type (Chodoff, 1972). This tendency may also be in balance with tendencies to react to stress in other neurotic ways (e.g. anxiety, obsessiveness). In other words, the appearance of depressive symptoms may depend on the relative prominence of other patterns of symptoms in the individual's personality.

The Influence of Premorbid Personality

Kiloh et al (1972) suggest that certain people may react to endogenous depression with symptoms of neurotic depression. This might account for the positive correlation observed between the endogenous and neurotic factors in this study. The whole question of interaction with premorbid personality deserves much more attention than it has received to date. The tendency to respond with neurotic symptoms (not just neurotic depression) is an interesting one. Some reaction of the organism to illness (if such it can be called) or to distressing environmental circumstances is very likely (at psychological and physiological levels) even if it is nothing more than a general stress reaction (Selye, 1956).

Most investigators in the area give token recognition to the interplay of premorbid personality characteristics and environmental events (stresses) in the genesis of depression, but little definitive research or theorizing has been done in this area. Studies have been done which suggest that neurotic depression may be more closely related to other neurotic symptoms or to a neurotic depressive personality than to endogenous depressions (Pilowsky, Levine and Boulton, 1969; Chodoff, 1972).

Appendix G

Subjects and Methodology of Factor Analytic Studies of Depression

Author	Year	SUBJECTS									METHODOLOGY				
		#	Sex		Consec-utive Sample	Status*	Diagnosis†				Age Range	# of Items	Type of Factor Analysis	Type of Rotation	# of Factors Reported	% Variance Accounted For
			M	F			R	E	O.D.	O						
Carney, Roth & Garside	1965	129			yes	in	63	53				35			3	
Fahy, Brandon & Garside	1969	126	both			out		mixed				43	prin comp	varimax	4	
Garside et al	1971	269	both		yes	in					<60	15	prin comp		1	25
Hamilton & White	1960	64					41	23				17			4	
Kear-Colwell	1972	203	89	114	yes		42	60		101		54	prin comp	oblique	6	
Kiloh et al	1972	145			no	in						35	prin comp		2	
Kiloh & Garside	1963	143				out	90	53				35	simple summation	none	2	

* In=inpatients; Out=outpatients; Day=day hospital patients

† R=reactive, neurotic; E=endogenous, psychotic, manic-depressive; O.D.=other depressed, schizo-affective; O=other diagnosis (i.e. not depressed)

Author	Year	SUBJECTS								METHODOLOGY				
		#	Sex		Consec-utive Sample	Status	Diagnosis				Age Range	# of Items	Type of Factor Analysis	Type of Rotation	# of Factors Reported	% Variance Accounted For
			M	F			R	E	OD	O						
Kay et al	1969	104	62	42		in		mixed		15	45	14	prin comp		1	
Lorr, Sonn & Katz	1967	131	43	88		in		mixed		28	$\bar{X}$=40	30	prin comp	promax	5	
McConaghy et al	1967	100				in & out						40	prin comp		2	
Paykel et al	1970	220	163	57		day, in & out						28	prin comp		3	30
Pilowsky et al	1969	200	121	79		mostly out	38	38	30	94					3	
Rosenthal & Gudeman	1967	100	0	100	yes	in & out		mixed			35-65	25	prin comp		1	
Rosenthal & Klerman	1966	50			yes	in					22-70	25	prin comp		1	

Appendix II

The Depression Items: their meaning and relationship to factors

Very few authors define the meaning of the terms they use to label the items measured and included in their factor analyses. A careful perusal of the relevant literature reveals that definitions of the same terms by different authors are obviously contradictory. This situation is undoubtedly responsible for some of the discrepancies in the literature. It is imperative that terminology be standardized if investigators hope to have comparable, consistent and therefore useful, results.

What follows is an attempt to (1) clarify the meanings of the terms used for items frequently considered to be indicative of the presence of depression (in general or a particular subtype of depression), (2) indicate differences of usage of terms and (3) state the differing relationships that have been reported in the literature between these items and depressions of the neurotic and endogenous varieties.

Atthough meanings can be clearly delineated, there is no way of knowing to what extent considerations of severity of presenting symptoms entered into the various authors' assessment of patients. (This is true in most but not all cases as some authors clearly state the part that severity plays in the rating). This factor also is undoubtedly responsible for some of the differences between studies.

Kay et al (1969) discuss a particularly interesting aspect of this problem. They claim that "the attempt to score a symptom on a scale which seems convenient and supposedly represents a quantitative measure may actually obscure a qualitative change which takes place at some point along the scale". They found this with their symptom, "hallucinations"

which they scored on a three point scale. When they eliminated their fifteen paranoid subjects, they found that the relationship of this item to some of the others changed radically. All those subjects who had scored 3 (the most severe rating) on the item had dropped out and its nature had apparently changed. They felt that the same thing might be likely to occur "in the case of retardation (subjective feelings of inertia versus objective slowing), self-reproach (regrets about inadequacy versus ideas of sinfulness or worthlessness), and hypochondriasis (commonplace bodily preoccupations versus bizarre somatic delusions)". They concluded that "if these distinctions are not made, features given the same name may show diametrically opposite relationships in studies on different groups".

The attempt at a partial glossary of terms (which follows) was considerably aided by several authors who did some defining of their items (Carney, Roth and Garside, 1965; Kay et al, 1969; Kiloh and Garside, 1963; Lorr, Sonn and Katz, 1967; Overall, 1963; Rosenthal and Gudeman, 1967 and particularly Hamilton, 1967). There is sufficient confusion in the literature to preclude the assumption, by any author that the meanings of the terms he uses are obvious. All studies should include brief definitions at least until usage is standardized.

1. Depressed mood=severity of depressed mood=sad affect=constant depression

Hamilton (1967) says: "depressed mood is not easy to assess". For most authors this item is simply a measure of the <u>degree</u> of depressed mood. It is interesting to note that Hamilton assesses this characteristic throught the use of other symptoms which are included as separate items in many analysis by different authors. For example he uses hopelessness, tendency to weep and pessimism about the future.

Several authors found that this item loaded on the endogenous end of their bipolar factor. However, for at least two (Paykel, Prusoff, and Klerman, 1971 and Hamilton, 1967) it loaded highly on the general factor and since in both cases this factor extracted most of the variance for that item, it did not load on subsequent factors lathough they were bipolar (endogenous-neurotic) in both cases. When depressed mood does not load on the bipolar factor is is hard to support an argument that that factor represents a contrast between two types of depression.

2. Suicide

Suicide is an item that seems to be treated very differently and inconsistently by different authors. This is mainly due to the consideration of different aspects of this symptom. Some of the categories that have been considered in the studies reported in the literature are:

(a) morbid thoughts
(b) feeling that life is not worth living
(c) feeling that people would be better off if one were dead
(d) wishing oneself dead
(e) suicidal thought or/and ideas
(f) persistent suicidal ruminations
(g) hysterical or half-hearted, non-serious suicide attempt
(h) serious suicide attempt.

3. Guilt

This is one of the few items which all authors seem to agree is an indicator of depression (i.e. almost all of them included it in their analysis. In most studies the guilt item(s) loaded on the endogenous pole of the bipolar factor but in three cases it loaded on the general factor.

Hamilton notes that the rating is concerned with pathological guilt; actions which are a basis for rational self-blame (regret) are not to be considered. Hamilton suggests that feelings of self-reproach might be

scored 1, "ideas of guilt"-2, belief that the illness might be a punishment-3, and delusions of guilt, with or without hallucinations-4 points.

Other authors have assumed that many different symptoms indicate guilt:

e.g. (a) obvious anxiety associated with persistant daily concern over wrong-doing
(b) daily concern with self-blame
(c) feelings of unworthiness, being sinful

4. Anxiety

This item seems to be treated differently by every different author. Hamilton (1967) considers somatic and psychic anxiety. The former consists of "well recognized effects of autonomic over-activity in the respiratory, cardiovascular, gastro-intestinal and urinary, systems. Patients may also complain of attacks of giddiness, blurring of vision and tinnitus". Psychic anxiety includes "tension, and difficulty in relaxing, irritability, worrying over trivial matters, apprehension and feelings of panic, fears, difficulty in concentration and forgetfulness, 'feeling jumpy'." Hamilton notes that an attempt should be made to eliminate the effects of a previous anxious personality.

Some authors rate 'specific anxiety' i.e. anxeity associated with particular objects or events (Lorr, Sonn and Katz, 1967) others seem to have called this 'phobic anxiety' or simply 'phobias' (Carney, Roth and Garside, 1965). Lorr, Sonn and Katz also rate "vague anxiety' which seems equivalent to the concept of free-floating anxiety. The patient is constantly anxious but cannot say exactly why.

Anxiety has been considered a neurotic item and this assumption seems to find some support in the factor analytic studies. However, some authors (Overall, 1963) seem to favour a different conceptualization of the interplay

of anxiety and depression. Clinicians have long recognized the mixed anxious-depressed diagnosis. It may be that anxiety is not a symptom of depression. Instead when anxiety is involved in the depression, the depression itself takes on a different quality and requires different treatment than when anxiety is not a prominent part of the syndrome. This is similar to talking about depression and anxiety as dimensions of abnormal behaviour rather than as specific illnesses. The anxious depression may be treated most successfully with major tranquilizers, while non-anxious depression is treated most effectively with anti-depressants (Overall, 1963). Anxiety may be the prominent feature of the depression or it may be present with varying degrees of importance.

5. Hypochondriasis

This is another item (similar to guilt in this regard) for which many authors seem to have failed to distinguish between normal symptoms (in this case, real somatic complaints) and pathological symptoms. This is also an item, similar to anxiety in that it is probably important to distinguish to what extent the patient was premorbidly hypochondriacal and to what extent these tendencies have been exaggerated in connection with the depression. According to Hamilton (1967) "excessive" preoccupation with bodily function is the essence of hypochondriacal attitude. He suggests a heirarchy of severity of symptoms:

(1) trivial or doubtful symptoms

(2) much preoccupation with physical symptoms and with thought of organic disease

(3) strong conviction of the presence of some organic disease which accounts for the patient's condition

(4) severe states, concerning delusions and hallucinations of rotting and blockages.

Here we notice an aspect of Hamilton's rating scale that is different from the methods of other authors. Hamilton includes symptoms of delusional intensity as the highest ratings for the particular symptom in question. Many other authors use delusions as a separate item or symptom of depression and some include several items relating to different types of delusions For example Carney, Roth and Garside (1965) included an item called "somatic delusions" (delusions of bodily change or disease, usually of a bizarre nature) and also nihilistic and paranoid delusions as well as delusions of retribution. Hamilton's approach seems to make more common sense as it binds the delusional symptoms directly to symptoms of depression. Delusions, after all, are often presetn without depression.

6. Irritability

Irritability is the tendecny to be upset by things that normally would not be upsetting and to snap in response to questions and statements (e.g. in a clinical interview). Irritability and hostility are separated by some authors and combined by others.

7. Hopelessness=pessimism

Some authors use an item called "hopeful outlook".

8. Loss of self esteem=self-depreciation

9. Indecisiveness=doubt and perplexity

10. Retardation

Hamilton (1967) suggests that slight flattening of affect (=lack of emotional response) or fixity of expression (=immobile facies), which are considered to be separate items by some authors, may be score 1. Carney, Roth and Garside (1965) consider that stupor is a sign of retardation.

Kiloh and Garside (1963) use the term inclusively to describe "subjective experience of slowness of thought or action and objective psychomotor slowing". Kay et al (1969) scored only objective psychomotor retardation--subjective feelings of inertia, listlessness or fatigue were not considered to be symptoms of depression. The word retardation is used to refer to slowed body movements, thought processes, speech, or any combination of these. Many authors do not specify which of these they are using.

This item was one of the few for which agreement in terms of factor affinity was very high. Almost all studies included it and it had many high loadings on endogenous patterns. It also loaded highly on one general factor and had no neurotic loadings.

11. Work and Interests=loss of interest in former activities and inability to work=apathy(?)

Hamilton (1967) claims that although it might be preferable to rate loss of interest separately from decreased performance, in practice this has been impossible. Therefore the item is concerned with rating loss of efficiency and the extra effort required to do anything. Other authors appear to have attempted to rate loss of interest separately in the form of an item with a slightly different shade of meaning. Beck (1961) and a few other authors use an item called "loss of satisfaction". Beck suggests that feeling bored most of the time or not enjoying things the way one used to be scored 1, not getting satisfaction from anything anymore be scored 2, and dissatisfaction with everything be scored 3.

Hamilton says that "care should be taken not to include fatiguability and lack of energy".

If this item is considered to relate specifically to work and activities, its meaning remains fairly clear. If it is generalized slightly it may be

confused with apathy, symptoms of social withdrawal and even retardation. It seems likely that some authors have confounded some of these different considerations with loss of interest due to failure to define the item carefully.

This item was included in six of the factor analytic studies considered. It loaded highly on three endogenous poles and high or intermediately on three general factors.

12. Feelings of inadequacy=helplessness(?)

Few studies included this item. One found it to load highly on a general factor.

13. Inability to concentrate

The name of this item suggests that it overlaps with Hamilton's description of retardation and other author's descriptions of the symptoms designating loss of interest (particularly--lack of ability to initiate or maintain interest in activities). This item may or may not be equivalent to "impairment of intellectual functioning" used by some authors. The latter might also be interpreted as "slowed thought processes" and therefore be part of the symptoms of retardation. All of these items lack clear definitions which delineate them from other symptom items.

14. Social Withdrawal

This item may be equivalent to isolation, preoccupation with self or feelings of alienation. It seems that these could be combined in some way to represent a more useful item indicative of a tendency to shut oneself off from other people and be concerned with oneself. This item seems related to loss of interest and to apathy.

15. Visceral symptoms=somatic symptoms=gastrointestinal symptoms

Loss of appetite and constipation are called somatic gastrointestinal symptoms by Hamilton (1967). He says that symptoms of indigestion, wind and pain are rated under anxiety. There seems to be a fairly good case for equating this item to the visceral or somatic symptoms of other authors. However, clear definitions of exactly what is meant by these terms are not available. Kay et al (1969) define somatic complaints as complaints of bodily dysfunction or pain or abnormal sensations unaccompanied by fixed ideas as to their cause or by bizarre elaborations; Rosenthal and Klerman (1966) describe visceral symptoms as "constipation, dry mouth, furred tongue, muscular aches and pains, anorexia loss of appetite , decreased growth of hair and nails"; Sandifer, Wilson and Green (1967) include an item which they call "somatization" which is probably equivalent to somatic complaints. Overall (1963) includes an item "preoccupation with physical health". Heightened body consciousness seems to be one of the best brief descriptions. Obviously there are some psychosomatic aspects and some real physical complaints included within this item and these need to be clarified. The demarcation between this item and the item termed "hypochondriasis" is unclear.

16. Fatiguability=loss of energy=general somatic symptoms=feeling tired

Hamilton (1967) includes two kinds of symptoms under his heading of general somatic symptoms; the first is fatiguability--the patient may feel tired all the time in extreme cases. This symptom is related to loss of energy and difficulty starting up an activity.

17. Insomnia

This item is very confusing because many authors use different words

to denote the same symptom:

(a) initial insomnia=inability to get to sleep=early insomnia

(b) middle insomnia=waking in the middle of the night and not being able to get back to sleep

(c) early awakening=late insomnia=delayed insomnia=waking early in the morning and not being able to get back to sleep

Various authors quote middle insomnia (Rosenthal and Klerman, 1966) and late insomnia (Kiloh and Garside,1963) as indicative of endogenous depression. Initial insomnia is the item most consistently included multivariate studies of depression. Two such studies found large neurotic loadings and one a large general factor loading; four found intermediate endogenous loadings and one an intermediate neurotic loading. Obviously the relationship of this item to these syndromes is ambiguous.

18. Loss of Weight

Some authors set a limit on the number of pounds which must be lost before the loss is considered to be a symptom. This is because some daily fluctuation in weight is normal. Other authors note only weight change which may be in either direction (loss or gain).

Appendix I

Source of the Questionnaire Items

	Item Name	Item	Source
1.	WAKING	Wake up early in the morning and find that you could not go back to sleep.	Rockcliff (1969)
2.	SEX	Find that you were uninterested in sex.	Beck et al (1961)
3.	APPETITE	Find that you had no appetite.	Overall et al (1966)
4.	HEALTH	Worry about your physical health.	Beck et al
5.	CRYING	Have crying spells or feel like crying.	Snaith et al (1971)
6.	SUICIDE	Seriously consider suicide as a solution to personal problems.	Jasper (1930)
7.	PHOBIAS	Become frightened by specific objects (e.g. bugs or snakes) or situations (e.g. flying or heights)	Fahy, Brandon and Garside (1969)
8.	STANDARD	Have difficulty living up to your own standards.	Leckie and Withers (1967)
9.	HOUSEPHO	Feel anxious when you went out of the house alone.	Snaith et al
10.	DIFFICOPE	Doubt your ability to cope with the difficulties that you came up against.	Kellner and Sheffield (1973)

	Item Name	Item	Source
11.	RELAXING	Have difficulty relaxing	Kellner and Sheffield
12.	INJURED	Worry about having said things that injured others.	Overall and Gorham (1962)
13.	PANIC	Get really frightened or have panic feelings for no reason at all	Snaith et al
14.	SATISFAC	Find that you did not enjoy activities that you normally enjoy.	Beck et al
15.	DECISION	Have difficulty making decisions.	Zung (1965)
16.	FATIGUE	Get tired for no apparent reason.	Snaith et al
17.	THINKING	Have difficulty thinking clearly.	Hamilton (1967)
18.	DISLIKME	Dislike yourself.	Beck et al
19.	MINDTASK	Have trouble keeping your mind on a task or job.	MMPI
20.	LOSEMIND	Fear that you were losing your mind.	MMPI
21.	RESTLESS	Find that you were restless and couldn't keep still.	Zung (1965)
22.	PUSHTODO	Have to push yourself very hard to do anything.	Beck et al

	Item Name	Item	Source
23.	DIFFTODO	Find it difficult to do things that you used to do with no difficulty.	Zung
24.	STARTING	Find that it took extra effort to get started something.	Beck et al
25.	DIFFWORK	Have difficulty doing your work as well as you used to.	Pilowsky and Spalding (1972)
26.	IRRITABL	Feel irritable.	Snaith et al
27.	INTEREST	Feel that you had lost interest in almost everything.	Snaith et al
28.	TIMESLOW	Feel time passing more slowly.	Pilowsky and Spalding
29.	ANXIOUS	Feel anxious without knowing the reason.	Snaith et al
30.	PEOPLE	Feel that you had lost most of your interest in other people and had little feeling for them.	Beck et al
31.	HOPELESS	Feel hopeless about the future.	Zung
32.	SLOWEVER	Feel slowed up in everything that you did.	Pilowsky and Spalding
33.	ALONE	Feel alone even when you were with other people.	Leckie and Withers
34.	MISERABL	Feel miserable and sad.	Snaith et al

	Item Name	Item	Source
35.	LETDOWN	Feel that you were letting other people down.	Hamilton
36.	USELESS	Feel useless or unneeded.	Zung
37.	NOGOOD	Feel that nothing you did was really very good.	Hunt, Singer and Cobb (1967)
38.	FORGIVEN	Feel that you could never be forgiven for some of the things that you have done.	Leckie and Withers
39.	DIFFICUL	Feel that difficulties were pilling up so high that you could not overcome them.	MMPI
40.	WORTHLIV	Feel that life was not worth living.	Pilowsky and Spalding
41.	SLOWTHIN	Feel slowed up in your thinking.	Pilowsky and Spalding
42.	TASKEFFO	Feel that the simplest task was too much of an effort.	Zung
43.	DESPISE	Feel that people would despise you if they really knew you.	Leckie and Withers
44.	NOTICE	Feel that people don't take much notice of you.	Leckie and Withers
45.	BLUE	Feel down-hearted and blue.	Zung

Appendix J

An Example of the Final Format of the Questionnaire

Appendix K

Total Frequency, Duration and Extensity Scores for All Subjects, and Diagnoses of All Patient Subjects

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity				
			Non Zero Answers	Total	Missing Answers	Total	Work	Leisure	Family	Friends	Total
psychology undergraduates	normal	001	30	77	0	87	20	16	26	15	77
"	"	002	20	57	0	36	9	8	8	2	27
"	"	003	6	11	0	32	0	2	1	1	4
"	"	004	25	147	0	63	15	18	16	11	60
"	"	005	18	34	2	12	6	7	4	8	25
"	"	006	10	39	2	23	8	5	0	7	20
"	"	007	12	95	1	13	9	10	0	3	22
"	"	008	16	64	0	24	10	12	12	9	41
"	"	009	10	92	1	21	4	2	0	4	10
"	"	010	19	146	0	50	8	12	15	5	40
"	"	011	0	0	6	6	0	1	0	0	1
"	"	012	6	35	3	10	6	5	0	0	11
"	"	013	4	9	0	5	1	0	0	0	1
"	"	014	8	58	0	17	6	3	3	3	15
"	"	015	1	5	0	1	0	0	0	0	0

Subject Group	Diagnosis	Subject Number	Frequency		Duration		Extensity					
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total	
psychology undergraduate	normal	016	12	54	2	18	9	8	0	10	27	
"	"	017	10	63	0	18	2	4	4	2	12	
"	"	018	14	207	0	18	12	7	0	0	19	
"	"	019	1	1	2	5	2	0	1	0	3	
"	"	020	9	24	0	19	4	6	1	2	13	
"	"	021	7	52	0	13	2	0	1	0	3	
"	"	022	13	22	2	36	8	6	6	8	28	
"	"	023	9	15	6	25	7	8	6	3	24	
"	"	024	15	44	0	24	14	6	9	9	38	
			12	56	1	24	7	6	5	4	22	MEAN
Riverview staff	Normal	025	0	0	6	0	0	0	3	0	3	
"	"	026	6	19	0	16	1	5	1	4	11	
"	"	027	1	1	6	17	4	1	2	0	7	
"	"	028	3	11	18	54	13	1	0	5	19	
"	"	029	27	61	0	60	20	22	0	14	56	
"	"	030	1	6	0	0	0	0	0	0	0	
"	"	031	1	2	2	16	0	0	2	0	2	
"	"	032	6	11	0	18	0	1	6	2	9	

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity				
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total
Riverview Staff	Normal	033	21	48	0	36	10	5	0	0	15
"	"	034	8	90	8	10	4	1	3	3	11
"	"	035	4	14	1	19	2	1	2	0	5
"	"	036	18	47	0	44	5	12	9	5	31
"	"	037	6	12	0	13	4	0	1	2	7
"	"	038	20	87	0	41	1	12	0	9	22
"	"	039	11	11	1	29	2	8	3	1	14
"	"	040	21	45	0	43	4	14	3	9	30
"	"	041	2	7	0	2	0	0	0	0	0
"	"	042	1	5	1	2	0	1	0	1	2
"	"	043	26	90	2	69	5	7	2	9	23
"	"	044	6	13	2	11	0	3	1	4	8
"	"	045	3	33	0	3	2	0	0	0	2
"	"	046	14	34	7	32	8	8	0	0	16
"	"	047	0	0	5	8	0	0	0	0	0
"	"	048	19	65	2	38	12	8	10	1	31
"	"	049	8	30	0	17	2	4	4	2	12
"	"	050	25	39	0	84	8	22	8	18	56
"	"	051	16	25	0	25	6	12	6	0	24

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity				
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total
Riverview Staff	Normal	052	4	6	0	10	1	1	1	0	3
"	"	053	6	33	0	26	3	3	3	3	12
"	"	054	1	30	7	52	4	5	2	3	14
"	"	055	15	56	1	44	1	5	2	5	13
"	"	056	14	46	0	42	2	5	1	2	10
"	"	057	15	42	0	43	2	4	0	5	11
"	"	058	22	96	0	46	15	13	5	10	43
"	"	059	15	118	3	39	2	15	15	10	42
"	"	060	1	3	6	20	4	1	1	1	7
"	"	061	8	60	20	35	24	13	2	1	40
"	"	062	0	0	3	1	0	0	3	0	3
"	"	063	23	151	0	30	13	13	12	18	56
"	"	064	1	7	23	36	11	5	4	1	21
"	"	065	12	281	1	30	8	2	5	3	18
"	"	066	8	28	0	13	0	6	7	2	15
"	"	067	13	33	0	25	11	4	3	2	20
"	"	068	1	10	0	1	0	0	1	0	1
"	"	069	31	156	4	141	26	22	0	1	45

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity				
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total
Riverview Staff	Normal	070	0	0	4	12	0	0	2	0	2
"	"	071	1	1	0	4	0	0	0	0	0
"	"	072	7	28	2	1	0	0	0	0	0
"	"	073	3	3	2	24	4	1	5	4	14
"	"	074	2	10	0	1	0	0	0	0	0
"	"	075	7	38	1	42	3	3	0	0	6
"	"	076	7	11	1	46	4	4	0	4	12
"	"	077	23	144	0	57	13	2	13	3	31
"	"	078	7	25	0	13	0	0	1	0	1
"	"	079	0	0	14	22	5	6	5	1	16
"	"	080	3	6	0	8	1	0	0	0	1
"	"	081	8	130	1	12	4	4	0	2	6
"	"	082	0	0	0	0	0	0	0	0	0
"	"	083	1	2	1	3	0	0	1	1	2
"	"	084	1	2	0	1	0	1	1	1	3
"	"	085	8	18	3	44	0	7	3	3	13

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity				
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total
Riverview Staff	Normal	086	10	36	0	15	0	1	0	0	1
"	"	087	3	18	16	45	9	16	2	11	38
"	"	088	9	37	0	11	1	2	4	0	7
			9	42	3	27	4	5	3	3	15 MEAN
Clinic Staff	Normal	089	13	58	0	19	5	2	2	0	9
"	"	090	5	13	7	24	4	8	8	5	25
"	"	091	3	6	0	9	3	0	0	0	3
"	"	092	12	116	0	37	10	0	0	3	13
"	"	093	19	64	0	27	4	13	14	10	41
"	"	094	5	28	12	29	4	0	4	0	8
"	"	095	4	12	0	7	2	1	2	0	5
"	"	096	12	58	8	35	13	13	14	12	52
"	"	097	7	18	0	11	1	2	1	0	4
"	"	098	0	0	24	80	3	10	0	0	13
"	"	099	0	0	23	26	11	8	8	6	33
"	"	100	0	0	12	13	9	10	4	11	34
"	"	101	6	20	0	6	3	1	1	0	5
"	"	102	3	13	0	5	1	1	0	1	3

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity				
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total
Riverview Staff	Normal	103	18	124	0	19	1	6	1	3	11
"	"	104	7	22	0	10	1	1	1	1	4
"	"	105	1	10	0	5	0	0	0	0	0
"	"	106	27	15	1	79	4	14	25	11	54
"	"	107	0	0	9	31	4	4	5	1	14
"	"	108	7	19	0	8	0	0	1	0	1
			7	30	5	24	4	5	5	3	17 MEAN
*comm. care team	schizophrenia	109	29	538	6	100	24	30	6	24	84
*C. M. H. C.	sit. reaction*	110	2	48	30	111	16	32	30	32	110
"	sit. reaction	111	23	126	1	38	5	11	2	10	28
"	pers. disord.*	112	24	226	0	48	5	14	13	11	43
"	sit. reaction	113	9	88	7	21	13	5	10	9	37
"	sit. reaction	114	11	200	1	32	0	3	9	2	14
"	anxiety state	115	11	54	8	41	1	2	13	7	23
"	schizophrenia	116	41	928	1	190	33	8	24	16	81

* C.M.H.C. - Community Mental Health Centre; comm. care team - community care team; sit. reaction - situation reaction; pers. disord. - personality disorder

Subject Group	Diagnosis	Subject Number	Frequency		Duration		Extensity				
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total
comm. care team	schizophrenia	117	10	22	7	40	2	9	2	6	23
"	sit. reaction	118	0	0	1	0	0	0	0	0	0
"	schizophrenia	119	36	920	2	175	18	9	1	8	36
"	"	120	36	458	3	83	33	37	35	35	140
			19	301	5	73	13	13	12	13	51 MEAN
Riverview Outpatients	schizophrenia	121	0	0	0	0	0	0	0	0	
"	"	122	16	142	1	17	9	10	7	7	33
"	pers. disord.	123	30	482	0	116	23	13	26	11	73
"	schizophrenia	124	4	8	3	3	0	1	1	1	3
"	"	125	17	201	0	26	6	10	8	7	31
"	pers. disord.	126	27	237	2	54	18	18	14	13	63
"	schizophrenia	127	11	46	2	26	8	3	6	3	20
"	"	128	4	5	1	12	0	0	0	0	0
"	"	129	35	1073	1	94	24	31	25	28	108
"	"	130	9	50	1	14	1	0	0	0	1
"	pers. disord.	131	34	113	0	92	1	11	6	11	29
"	"	132	33	174	2	98	14	1	1	1	17
			18	205	1	46	9	8	8	7	32 MEAN

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity					
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total	
Riverview Inpatients Not-depressed	schizophrenia	133	17	215	3	24	1	7	0	3	11	
"	"	134	14	288	22	65	29	29	3	0	61	
"	"	135	20	441	12	5	12	4	5	3	24	
"	"	136	2	16	20	5	0	0	0	0	0	
"	"	137	10	25	7	28	0	0	0	0	0	
"	"	138	8	0	30	0	0	0	0	0	0	
"	"	139	21	289	10	58	23	24	29	30	106	
"	"	140	0	0	7	17	0	0	6	6	12	
"	"	141	5	54	15	41	0	3	10	4	17	
"	"	142	27	133	2	71	12	7	0	1	20	
			12	146	13	31	8	7	5	5	25	MEAN
C.M.H.C.	neurotic depression	143	37	361	0	167	22	31	33	20	106	
"	depressed	144	41	438	0	118	36	37	38	38	149	
"	"	145	44	626	0	171	33	30	36	37	136	
"	anxiety. d.	146	6	16	33	114	4	4	36	13	57	
"	depressed	147	18	122	0	18	16	2	16	6	40	
"	"	148	3	74	35	39	2	3	5	3	13	

Subject Group	Diagnosis	Subject Number	Frequency			Duration	Extensity					
			Non Zero Answers	Total	Missing Answers	Weighted Total	Work	Leisure	Family	Friends	Total	
comm. care team	Schizo-Affective	149	1	2	33	98	2	2	15	13	32	
"	depressed	150	32	301	3	104	19	27	18	25	89	
"	"	151	34	378	3	159	16	23	29	12	80	
"	"	152	27	400	1	99	2	4	18	10	34	
"	"	153	27	615	11	161	28	28	28	28	112	
"	"	154	3	9	9	43	6	0	7	1	14	
"	"	155	20	49	0	41	6	4	13	10	33	
			22	261	10	102	15	15	22	17	69	MEAN
Riverview Depressed	depressed	156	26	236	1	82	12	1	20	0	33	
"	Schizo Affective	157	14	43	0	13	6	5	3	2	16	
"	Manic Depressed	158	27	615	6	87	30	26	9	12	77	
"	"	159	29	779	7	81	10	10	11	10	41	
"	depressed	160	25	603	9	43	0	0	0	0	0	
"	"	161	28	419	0	127	2	3	0	3	8	
			23	449	5	72	10	7	7	5	29	

Appendix L

Demographic Characteristics of the Subject Sample

Subject Group	Marital Status			Sex		Mean Age	Living Arrangement*					N
	Single	Married	Div. Sep.	M	F		Family	Relative	Friends	Spouse	Alone	
Students	10	12	-	13	10	26	14	-	-	2	7	24
Riverview Staff	19	36	9	24	40	39	41	-	4	7	12	64
Clinic Staff	6	9	5	5	15	32	12	-	3	1	4	20
All Normal Subjects	35	57	14	42	65	35	67	-	7	10	23	108
Clinic Patients-Not Depressed	6	3	2	5	6	30	6	-	-	-	5	12
Riverview Outpatients Not Depressed	9	2	1	7	5	40	5	2	1	-	4	12
Riverview Inpatients Not Depressed	7	1	-	9	-	30	5	1	-	-	-	10
Patients-Not Depressed	22	6	3	21	11	34	16	3	1	-	9	34
Depressed Clinic Patients	2	7	4	3	10	33	11	-	1	-	1	13
Depressed Riverview Patients	1	2	3	4	2	45	4	-	-	2	-	6
Depressed Patients	3	9	7	7	12	37	15	-	1	2	1	19
All Patients	25	15	10	28	23	35	31	3	2	2	10	53
All Subjects	60	72	28	70	88	35	98	2	10	12	33	161

* Inpatients were asked their living arrangement before entering hospital

Appendix M

Communalities of All Variables in the Patient Sample, the Normal Sample and the Combined Sample

Item	Communality		
	Patients	Normals	Combined
waking	56	35	32
sex	66	71	66
apetite	54	54	39
health	32	67	44
crying	51	38	35
suicide	51	64	56
phobias	76	09	25
standard	80	82	81
housepho	64	64	53
diffcope	81	70	65
relaxing	81	56	64
injured	55	31	35
panic	83	66	71
satisfac	68	51	51
decision	86	76	69
fatigue	76	69	64
thinking	68	58	57
dslikme	80	89	81
mindtask	74	65	60
losemind	70	65	60
restless	81	56	64
pushtodo	75	59	64
difftodo	82	39	45
starting	75	59	64
diffwork	82	74	70
irritabl	62	41	39
interest	86	61	47
timeslow	76	39	40
anxious	83	66	71
people	89	39	47
hopeless	88	88	77
slowever	89	44	41
alone	64	44	40
miserabl	71	46	48
letdown	54	70	65
useless	76	81	74
nogood	85	81	74
forgiven	64	62	57
difficul	81	46	48
worthliv	77	81	69
slowthin	84	53	47
taskeffo	85	37	45
despise	59	81	69
notice	77	89	71
blue	88	76	70