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Dimension and hierarchy in the description of psychological disorder

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DIMENSION AND HIERARCHY IN
THE DESCRIPTION OF PSYCHOLOGICAL DISORDER.

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Summary

The study was an investigation of relationships between certain psychiatric categories and personality traits. The Eysencks have argued for a dimensional relationship between the two while Foulds has argued that such a relationship should not be assumed. Also, he has proposed a hierarchical model of psychopathology where less severe pathology is subsumed under the more severe.

110 Neurotics, 98 Psychotics and 52 Non-Psychiatric controls were tested with personality and clinical inventories: the EPQ, HOQ and DSSI. Patients were allocated to psychiatric groups using the Research Diagnostic Criteria of Spitzer et al.

Examination of DSSI responses revealed a close association between DSSI diagnosis and diagnosis by psychiatric subgroup. Examination of subjects who failed to conform to Foulds hierarchy showed that the majority had acknowledged lower-level symptoms but had not endorsed them sufficiently to gain the required level of scoring.

Investigation of personality scores and the hierarchy revealed clear relationships between them, especially in the case of Eysencks factors, P and N. Postulated relationships between E, HOQ, and the categories of dysthymics and Hysterics, failed to appear.

In a Discriminant Analysis of Neurotics, Psychotics and Controls, two functions with loadings predominantly from DSSI sets emerged: Dysthymic States and Clinical Psychoticism. 83% of the sample were reallocated to their original groups on this basis.

A Factor Analysis with rotation to simple structure demonstrated closer relationships between personality and psychopathological variables. Of the five factors which emerged, two (Neuroticism and Clinical Psychoticism) had major loadings from personality and psychopathological variables.

Factor Analysis of P-scale scores revealed three main factors: Affectionless Psychopathy, Paranoid Ideation and Lack of Caution. Psychotics endorsed items on the Paranoid Ideation factor more frequently than did non-psychotics. When these items were removed from the P scale, Psychotics no longer gained significantly higher scores than non-Psychotics.

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Chapter One
Psychiatric Classification - A Reappraisal

- Section I - Introduction
- Section II - Purposes of Classification
- Section III - Criticisms of the Psychiatric Nomenclature
- Section IV - Misconceptions and Methodological difficulties
- Section V - Where the variability really lies
- Section VI - The Reliability and Validity of the TCS
- Section VII - Conclusion

Section I: Introduction

The field of psychiatric classification has been an area of conflict for many years. The more genuine problems encompassing psychiatric classification have been confounded by misconceptions that have without doubt prolonged the debate. The way in which ways of thinking evidently derived from some medical model have influenced attitudes towards diagnosis in mental illness is important, although, of course, the medical model involved is seldom explicitly expounded; but it has resulted in calls for replacing the Traditional Classification System (TCS) with alternatives (Eysenck, 1960, 1975). Kendell (1975) has taken up the debate and noted that in most medical disciplines, the value of diagnosis goes unquestioned insofar as it is a signpost to effective intervention; a certain diagnostic label leads to a certain type of treatment and certain expectancies concerning recovery. Actually, in the early history of Hippocratic medical diagnostics, one of its main purposes (in combination with knowledge of the natural history of the disease) was to prevent premature or inappropriate intervention by someone unable to distinguish conditions requiring certain therapeutic interventions from those requiring another, or no intervention at all (Guthrie, 1945, p.57). In the area of mental health, the situation is quite different, both because the diagnostic treatment relationship is not as clear, and because in practice, diagnoses often straddle different syndromes (e.g. 'schizo

affective illness'). The value of diagnosis in psychiatry is not always apparent and Kendell says psychiatrists seem to react in three ways: i) minimizing or denying the problem; ii) admitting the problem but taking little interest in it, while continuing to use it with the result that usage becomes vague and loose; iii) calling for the abandonment of the TCS altogether (1975 p.2).

Eysenck is vociferous in his calls for the dismantling of the TCS and its replacement with his own, more soundly based, system. His opposition to the 'medical model' of psychiatric disorder upon which the TCS is based, is founded on the argument that the analogy with physical illness is conceptually inappropriate. This view is dependant on the notion that a fundamental difference between psychological disturbance and medical illness is that the latter has a specifiable, unitary cause (such as a space occupying lesion or an invading micro-organism) against which treatment is directed, whereas in most psychiatric disturbances, there is a plurality of causal conditions producing and maintaining pathology (Eysenck, 1960, p.4, 1975, pp.4-5).

However, Eysenck has oversimplified and distorted the logical aspect of causal relations by assuming that medical illnesses are what Kraupl-Taylor (1981) calls monogenic or unicausal rather than polygenic or multicausal. Of course, monogenic conditions such as Down's Syndrome and Phenylketonuria exist, but the principles of multi-causal determination are no stranger in the study, treatment and prevention of many physical illnesses. Even the lay person is nowadays familiar with the idea that some people may have a constitutional predisposition to react unfavourably to a potentially pathogenic agent, where either factor is causally 'necessary' but only their combination is 'sufficient' to produce illness; and with the idea that secondary factors such as diet, working conditions, hygiene and life-style may serve to maintain or exacerbate pathology which

has been produced by other factors now absent, dormant or less virulent. Thus treatment and management (and especially prevention) are, of course, regularly directed not just against the designated "cause" of an illness, but also against these other potentially causal conditions as well. A ~~doctor~~ regularly handles a range of logically different "causal" conditions and "contributory" causes and their probabilistic interactions. It follows from this that plurality of causal factors cannot be made a criterion for marking off an area of non-medical subject matter.

Kendell comments (1975, p.123) that Eysenck's criticism of the medical model in psychiatry may have been more pertinent to the clinical scene of the nineteenth century than to that of more recent years. Other writers, such as Szasz (1957) have argued that psychiatric labels tell us nothing at all. He argues that the term "Schizophrenia" just glosses over our lack of understanding of this form of psychosis. He notes that once the conceptual clarification of the term (in terms of biochemical, behavioural or psychoanalytical explanations) are made, then the need for the word will disappear. Kendell (1975) is in broad agreement with Szasz's conclusions when he argues that the term 'schizophrenia' may cease to be used, as concepts like 'dropsy' and 'monomania' have been dropped, and that this will be because it has been replaced by more useful terms presumably as a result of clinical advances. However, Kendell argues that the concept of schizophrenia is a useful one at present, and that this is amply established by the universality of schizophrenic phenomena.

Regardless of which type of classification process is used, classification is a vital component in the increase of knowledge in a discipline. Skinner (1981) emphasizes the continual interplay between theory development and empirical testing. Unless well specified psychiatric categories are used in research, then no external validation

of those categories is possible. If these categories are shown to be invalid, then the categories can be altered accordingly and so on until the desired shift from a broadly descriptive to an aetiological taxonomy is achieved. The refining and operationalizing of the TCS (for example, Spitzer, Endicott and Robins, 1977) may be viewed as part of this process. As Zigler and Phillips noted (1961) "Systems of classification must be treated as tools for further discovery, not as tools for polemic disputation."

Section II: Purposes of classification

The purpose for which psychiatric classification is used varies according to setting - army screening, legal arguments, psychiatric treatment - and different systems may be used in these different situations (Sasz, 1957). Regardless of the setting, it may be argued that general aims and objectives apply. Blashfield & Draguns (1976) note that one objective is communication within a discipline and, related to this, information retrieval. Quite clearly, once adequate criteria are widely used for psychiatric categorization in research, studies will become more replicable with an ensuing greater degree of certainty that sample groups are similar across studies. It is interesting to note in this connection the conflicting results thrown up by research in specific areas of psychology. For example, possible differences in sample groups that have not been clearly defined in research reports may be one explanation for conflicting results. At least, if specific and widely accepted criteria of sample selection are used across studies, then sampling differences may be outruled as an explanatory variable in contradictory results.

Zigler and Phillips (1961) note that a diagnostic system cannot be described as "true" or "false" but only in terms of its usefulness for attaining goals. This is of course, a reiteration of Bergson (1911, p.240)

who wrote "that which is commonly called a fact is not in reality as it appears to immediate intuition but an adaptation of the real to the interests of practice and to the exigencies of social life". In psychiatry, the main objective of classification is clearly to enable patient recovery. Foulds (1955) has argued that even in settings where classification has been officially rejected in favour of treating each new patient as unique (as no doubt all of us are anyway), it is doubtful whether in practice some form of classification is not being unofficially utilized.

Section III: Criticisms of the psychiatric nomenclature

There have been a multitude of papers and studies written and designed with the aim of assessing the adequacy of the psychiatric nomenclature and many of the conclusions have been negative and critical. For example Ennis and Litwack (1974) have declared that the reliability, and thus the validity (sic.) of psychiatric diagnosis is so poor that it is of very little value in legal situations and they maintain that the opinions of psychiatrists are no better than those of the general public. In addition, Eysenck has said that "the failure of psychiatry to produce an acceptable classificatory system is obvious, not only in the necessity of introducing non-scientific criteria such as popular agreement, but also in the consistent lack of reliability shown in the actual use of the system by experienced psychiatrists" (1960, p.12). To say this is, however, misleading, since what he refers to as popular agreement, is often in fact, a consensus of agreement amongst trained judges and it has been shown by Nathan, Andberg, Behan and Patch (1969) that experienced psychiatrists achieve much higher reliability in diagnosis than inexperienced ones.

Let us, then, briefly look at some of these studies. There have been several comprehensive reviews of these, and other studies, to date (Foulds 1965, Kendell 1975, Zubin 1967, Matarazzo 1983). One technique for assessing the reliability of a classification system is to study observer agreement. Ash (1949) tested observer agreement between three psychiatrists. The sample consisted of 52 white males and diagnostic classification consisted of five major categories: Mental deficiency, Psychosis, Psychopathic personality, Neurosis and Predominant personality characteristics. These were divided again into sixty specific categories. Ash found specific category total agreement to be 20% and total disagreement to be 31.4%. In the major categories, total disagreement was 2.9%. General agreement here for each pair of psychiatrists ranged from 58% to 67% with an overall agreement of 51%. These results are regarded by Ash as discouraging and as support for the non-directivist argument that diagnostic knowledge is not necessary for good therapy (Patterson, 1948). Hunt, Wittson and Hunt (1953) compared diagnostic agreement between a military service screening station and a state psychiatric hospital. They do not state what sort of classification system was used. There was a major category agreement of 54% and a specific category agreement of 33% and the results are viewed as discouraging. Jakubshick and Werner (1973) also reported low reliability in terms of specific agreement on a 10 point rating scale of 98 symptoms in the description of diagnostic stereotypes by fifty two psychologists and psychiatrists. Two thirds of the judgements involved varied to the order of 3.8 units on the scales.

Another method of assessing the reliability of the psychiatric nomenclature is to study the frequency with which diagnoses are made. For example Pasamanick, Dinitz and Lefton (1959) studied the difference in frequency of diagnosis formed by three separate psychiatric teams, on

| Diagnoses | Ward | | |
|-------------------|------|------|------|
| | X | Y | Z |
| Organic | 10.7 | 10.3 | 4.2 |
| Affective | 8.0 | 4.4 | 4.2 |
| Schizophrenic | 29.3 | 22.1 | 66.7 |
| Neuroses | 34.7 | 39.7 | 8.3 |
| Characterological | 12.0 | 16.2 | 6.2 |
| Others | 5.3 | 7.3 | 10.4 |
| Total | 100 | 100 | 100 |

Table 1.1 Showing frequency of psychiatric diagnoses across wards (from Pasamanick et al 1959)

three female wards occupied by patients of similar socio-economic background over a 2 year period. Diagnostic frequencies were found to be discrepant in places (see Table 1.1). As a result they call for the need to eliminate clinician bias and to put more emphasis on objectivity. They note that "the commonly promulgated definitions of mental health and illness are still so vague that they are frequently meaningless in practice." Mehlman (1952) had previously produced similar results when he compared the frequency of diagnostic categories used by 35 psychiatrists. Frequencies were compared for 1) organic and psychogenic groups, and 2) manic-depressive and schizophrenic groups. In both male and female groups there were significant ($p < .001$) variations and he discovered that the reason for this was that different psychiatrists were using different criteria to distinguish between organic and psychogenic conditions, and between schizophrenic and other psychotic conditions. Pasamanick et al conclude that "psychiatric diagnosis at present is so unreliable as to merit very serious questions when classifying studying and treating patients behaviour".

A further technique that has been used to assess the adequacy of psychiatric classification is to check on the stability of diagnoses over time. Masserman and Carmichael (1939) tested 100 patients and re-tested them one year later. They found that 41% of diagnoses had to be revised. In addition they found it necessary to use terms such as "mixed psychoneurotic" in certain cases since their pathology transcended standard nosological boundaries. In particular, they note the shift from neurotic to psychotic diagnoses, from psychogenic to somatic and from one schizophrenic subgroup to another. They conclude that either the psychiatric staff had committed many errors in diagnosis previously or that diagnostic concepts are of little use in terms of prognosis, therapy and heuristics. Kaelbing and Wolpe (1963) produce similar results for diagnoses on entry into hospital and on discharge.

Menninger wrote "we affirm the necessity of cutting the Gordian knot and using no names at all for those conditions of mental illness". Furthermore, he writes, "we deplore the tendency of psychiatry to retain its old name-calling function. Patients who consult us because of their suffering and their distress and their disability have every right to resent being plastered with damning index tabs. Our function is to help these people, not to further afflict them". (1963 p.57). Menninger is not alone in his views. Similar stances have been adopted by Roe (1949), Noyes, (1953), Rogers (1951), Patterson (1958).

More recently, the Eysencks (1974) have described the TCS as a "God-given and immovable shibboleth". They attribute the unreliability of classification to the unreliability of the criteria. Psychiatric categories "are demonstrably not matched to the observations made by clinicians and are notorious for their unreliability"(p.23). Later they write, "we do not regard the present psychiatric system..... as

possessing any scientific validity.... the system is retained for heuristic reasons purely; no underlying theory is postulated, or accepted, by psychiatrists" (p.35).

Section IV: Misconceptions and Methodological Difficulties

From the brief review above, it appears that the traditional psychiatric nosology has little to commend it, and yet it continues to be used. However, many of the studies cited above contain difficulties. When these are examined, the possibility that the system may have its good points increases.

One of the problems involved in most of the studies cited is the level of observer agreement. There are two points to be made here. The first is that, as Eysenck and Eysenck (1976) and Spitzer, Endicott and Robins (1978) point out, disagreements may arise as a result of criterion variance i.e. differences in what the clinician will use in order to diagnose a condition. This can vary with experience (Nathan et al 1969) or with place of training and, in particular, the country in which the training takes place. There is ample evidence that different countries utilise different systems of diagnosis. Leff (1977) found that in Germany, emphasis was on observable phenomena, the threshold for recognition of pathology was high, and the diagnosis of schizophrenia was based on a very narrow set of directly observable symptoms and as a result, the concept of affective disorder was wider. America, on the other hand, emphasises psychological mechanisms, inferred from observable symptoms, with a low threshold for recognition of pathology; and they consequently have a broad concept of schizophrenia with relatively little scope for the affective disorders. As a result the diagnosis of schizophrenia in New York is more frequent than in London and the rate of schizophrenia in New South Wales, Australia (where the U.S.A. has had a

heavy influence) is higher, and the rate of psychotic depression lower, than in England and Wales (Parker 1975). The Muscovite practice is sadly idiosyncratic with emphasis being on the course of illness and social adjustment at the expense of phenomenology (Leff 1977). Mehlman's (1952) article reports on a study that took place over a few years while simultaneously, the APA classification system was undergoing changes. Reliability is likely to be reduced since psychiatrists would no doubt have been using different rules at different times over that period.

A second point relates to the degree of concordance. Most of the studies cited already did not examine how much the different diagnosticians disagreed. If for example a patient is diagnosed as Paranoid Schizophrenic and Paraphrenic by two different clinicians respectively then the degree of disagreement is very small. If on the other hand, the second diagnostician diagnoses obsessional neurosis then a major disagreement has occurred. The disagreements reported by Hunt et al (1953) may be described as reflecting differences between neighbouring categories.

Results of a study by Foulds (1955) give more ground for optimism. He formulated a scale of what constituted complete agreements, for example, 'mania' and 'hypomania', 'paranoid state' and 'paraphrenia'; treated as similar were 'obsessional' and 'anxiety state', 'paranoid schizophrenia' and 'paraphrenia'. He found a 75% agreement among psychologists and concluded that diagnosis is a meaningful activity for them to engage in.

Ward, Beck, Mendelsohn, Mock and Erbaugh (1962) in connection with the tradition for quoting figures for major and specific category agreement, say that researchers often fail to note how many categories they include in the broad and specific diagnostic groups for e.g. a 60% agreement on forty categories is much better than a 60% agreement on only

four categories. The 1949 Ash study used 60 specific categories and so a total agreement of 20% is not so bad. Especially when total disagreement was 31.4% which indicates a partial and total agreement of specific categories of the 50% order. Furthermore, Beck (1962) also noted that there is also a high degree of variability in classification in other disciplines and gives examples from the field of physical medicine. This is to suggest that the problems of classification in psychiatry are not unique to the discipline.

The introduction of the Kappa statistic has further clarified some findings. Kappa takes account of base rates of certain diagnoses and chance agreement by contrasting the observed proportion of agreement with the agreement expected by chance alone and the use of this statistic has rendered previously incomparable studies comparable. Spitzer and Fleiss (1974) have computed the Kappa values for the studies of Ash (1949), Schmidt and Fonda (1956) and Ward et al (1962) and found the levels of agreement to be even lower than previously thought. However, the low reliability reported by Jacobschick and Werner (1974) could be considered in a more optimistic light in view of their use of a 10 point rating on 98 items. It is perhaps rather unreasonable to expect such fine distinctions to be made very reliably, when the antecedent odds against complete agreement are so high.

A further problem arises when psychiatrists are asked to choose one of a number of possible diagnoses for a patient. For example, in the Ash study (1949), several of the categories used were not mutually exclusive (e.g. psychopath, schizoid, constitutional inferiority, drug addict and epilepsy). Of course, these terms may in certain instances be used as terms of comparison, as when, for example, a clinician wants to decide whether a certain fit is hysterical or epileptic. However, having to choose just one category, when the individual may suffer from several of

these afflictions, will automatically reduce observer agreement. Many studies cited in the previous section were guilty of using categories as if they were mutually exclusive (Ash 1949, Pasamanick et al 1959). Foulds likens this situation to asking "Is it an elephant or is it from Africa?" (1955).

Another problem arises when researchers use stability measures in order to assess the reliability of the psychiatric classification systems. For example, Masserman and Carmichael's conclusions are puzzling since the aim of the therapeutic endeavour is to bring about psychological changes in the individual involved, and thus bring about a change in the category label but they claim that their results throw doubt on the reliability of the classification.

In addition to these problems, various other more idiosyncratic methodological problems arose. In the Pasamanick et al study one of the wards in question had three different administrators over the duration of the study, and, as Kreitman (1961) remarks, if one ignores the smallest group of 48 patients, the ward differences are not so bad; the frequency of schizophrenia ranging from 22% to 29%, organic disorders from 7% to 11%, neurosis from 30% to 45% and personality disorders from 12% to 22% certainly seem to be in reasonable agreement. Wilson and Meyer have since done a similar study and found strikingly similar frequencies of diagnostic labels between consultants (1962). In the Ash study there were only 52 patients and not all the classification system was used. The sample was obviously quite unrepresentative since the label of psychosis was only used three times (once by one psychiatrist, twice by another and not at all by the third). This is particularly unusual for America and Kendell (1975) notes that only two thirds of the subjects were psychiatrically ill. Hunt et al, were comparing the diagnoses of a psychiatric hospital and a military screening station. They made little of

the fact that they find a 94% agreement on suitability for service, and concentrate more on the fact that agreement in using the major diagnostic categories was only 54% and, in the case of specific categories only 33%.

There are more recent studies that have tried to overcome some of the methodological difficulties mentioned. For example, Ward et al (1962) tried to fulfil the following conditions: the diagnosticians involved should be equally experienced and equally qualified, be agreed on a single nomenclature (preferably recent and standard), the duration and setting of the interviews should be constant and the time lapse between interviews minimal (to avoid patient change), the amount of ancilliary information available should be constant and assessment should be independent of hospital assessments to prevent administrative considerations coming into play. In this study then, four experienced psychiatrists were involved. Each patient concerned was interviewed by two of the four psychiatrists on the same day in separate interviews. Allocation was random and interviews lasted one hour. DSM 1 (American Psychiatric Association, 1952) was used and some working definitions were added. They found a 54% agreement on specific categories compared to a 15% to 19% agreement on chance alone. These results were seen as encouraging since the patient sample contained very few psychotics and no organics. If alternative diagnoses were included, agreement rose to 82%. Kendell (1973) also found that with adequately trained psychiatrists agreement is more reliable. He notes that with many patients, an accurate diagnosis can be formed within minutes, although Foulds notes that while this is often so, it is not desirable in clinical practice, where more time should be spent with the patient as only a certain amount of information can be gleaned in such a short amount of time. Kendell found, using ICD 8 (World Health Organization, 1967), that diagnostic agreement between raters was of the 70% to 81% order and that diagnostic agreement between the majority of

ratars, using a 5 minute interview technique, and final hospital diagnosis was at the 71% level. With experienced psychiatrists the reliability level seemed to rise.

Kreitman et al (1961) used a structured setting for their reliability study in order to eliminate problems with what constituted a disagreement. They tested for ancillary information as well as diagnostic categories. Their results were 80% agreement for broad categories and 65% for specific categories. These results are certainly not disheartening but it was found that there was nine times as much disagreement over neurotic depression as over some other categories. It is important to note in this respect that major disagreement mostly occurred between the affective psychoses and reactive depression, and between the latter and anxiety neurosis. It seems then that some diagnoses are more problematic than others. Having rejected their clinical research results, because they considered psychiatric diagnoses to be too unreliable for them to derive substantial conclusions (Schmidt, Fonda and Lester, 1955), Schmidt and Fonda (1956) decided to reconsider their views. Using psychiatric trainees from different countries of origin compared with their teachers (so figures for agreement are bound to be reduced) they found a major category agreement of 84% from 426 cases and it is of note that different psychiatrists had different amounts of information provided. These results led to them changing their previous attitude to the system.

Section V: Where the variability really lies

The problems encountered so far relate more to the methodology of reliability study themselves. In this section, some of the problems more intrinsic to psychiatry and its system of classification will be outlined. There seem to be several fundamental sources of variability that are confusing the real issues at stake and these are pinpointed by Doering and

Raymond (1935) and Ward, Beck, Mendelsohn, Moch and Erbaugh (1962).

The first suggested source of variability is (i) the within observer differences. Doering and Raymond had the same observer doing test and retest by diagnosis after sufficiently large gaps of time had passed for the observer to have forgotten the first test. These were in the form of examining patients' case histories. There were marked differences between test and retest results. Foulds (1965) does however point out, that once again, diagnosticians were forced to use categories that were not mutually exclusive as if they were so.

(ii) Another source of variation is between observer differences. This can be seen in some of the studies already cited. Doering and Raymond repeated the above technique with three psychiatrists carefully matched in terms of experience and theoretical orientation and once again found large discrepancies. Kendell, Everitt and Cooper (1968) found disagreements based on separate interviews given by separate clinicians was double that when the clinicians formed their diagnoses on the basis of watching a filmed interview. This suggests a difference in content of separate interviews. Once again, the problem of criterion variance may also arise, and also the problem of the threshold for perceiving behaviour as a problem. As well as this there is a problem of differing levels of clinical expertise. This factor probably had some effect on the study of Schmidt and Fomda in 1956. Nathan et al studied the differences more closely (1969). They had 32 observers, varying in clinical skills, ability and orientation, and one patient. The result of the study was 14 different diagnoses. They note that different levels of experience in psychiatrists leads to different methods and goals in forming diagnoses.

Inexperienced groups, such as medical students, saw mostly psychopathological symptoms and perceptual disorders. They were more eager to find functional dynamic explanations for symptoms despite

being presented with fairly solid evidence of organic disorder. Experienced psychiatrists however noted symptoms of disordered consciousness and were more willing to confer organic labels. It seems that more subtle symptoms, such as altered states of consciousness, may elude the tyro. Watt (1980) maintains that more experienced clinicians tend to make more "high risk" judgments. The accuracy and specificity of these judgments may be increased but on the rare occasion when the judgment is wrong, the consequences may be greater. Thus it seems that the more skilful the perception, the more it will carry in terms of calculated risk. Ward et al who studied diagnostic disagreements between four experienced psychiatrists found 32.5% of disagreements were due to between observer differences.

(iii) A third source of variation is in the patient him/herself. Doering and Raymond and Ward et al both noted this. It may be that patients respond differently to different psychiatrists either as a result of differing interviewing techniques or that they choose to talk of different things (which may be just as important) from those they reported in the first interview. It may even be that patients change and it is likely that they will do so. For this reason it is important that interviews with different psychiatrists must be very close in time if diagnoses are to be compared. This may have been what happened in the Masserman and Carmichael study where it was assumed that changes in the diagnostic label meant that the TCS was unreliable. Part of the argument Foulds has put forward emphasises that recovery in neurotic patients can be detected on symptomatological measures but not on personality measures (1965, 1976) although Ward et al (1962) suggest that this only contributes to 5% of diagnostic disagreements. This brings us to a fourth source of variability.

(iv) The final source of variability is the system itself - criterion variance. Ley (1970) noted that there seems to be poor official agreement on the definition of categories and noted that there are different methods and standards for the diagnosis of schizophrenia in Scotland than elsewhere in the U.K. Furthermore, differences in the American and European systems are well publicised (Kendell 1975). Ward et al, (1962) and Beck (1962) both note that ultra-fine distinctions in the nosological system can lead to discrepancies, and the former, in an examination of the causes of diagnostic disagreements attribute two-thirds (62.5%) of such disagreements to a defective system. Further to this, it has often been assumed in the past that mixed syndrome diagnosis is a sign of defective system. Skottowe (1953) declared that the sub-groups of the neuroses (i.e. syndromes) are not mutually exclusive because a member of one sub-group will, and often does, exhibit symptoms from other sub-groups. This however is to assume that each syndrome should consist of an entirely different set of symptoms from those of other syndromes. On the contrary, several syndromes may all contain common elements, in particular anxiety and depression, but each syndrome may still remain mutually exclusive (Foulds, 1965, p.67). The hierarchical system of Foulds (1965, 1976) develops the notion of syndromes even further. In this system it is possible to obtain high scores on several syndromes simultaneously, but group membership is allocated by the syndrome indicating the severest level of disturbance, so that a weighted symptom in one syndrome may not be a weighted symptom in another. For example, anxiety is weighted in neurotic anxiety but not in schizophrenia where the presence of hallucinations and delusions are weighted. In such a system it is possible for an individual to score full marks in all the neurotic sub-groups but in the end to be classified as psychotic because they suffer from delusions and/or hallucinations. He writes that psychiatrists, while

often adept at detecting symptoms are not necessarily as skilful at assembling them into meaningful wholes. In support of this, Willis and Bannister (1965) found that psychiatrists do not tend to group symptoms or treatment in any organised manner.

Clearly if the problem of criterion variance is reduced then the other sources of variability cited (within observer variance, between observer variance and patient variance) should also be reduced. That is to say that if an exhaustive clearly defined system is specified, and this system is learnt and adopted by diagnosticians and applied in a rigorous systematic way, then within and between observer variability should disappear completely, and so should patient variance except in the case of a genuine change in the symptom picture between interviews. Matarazzo (1983) argued that diagnostic reliability can be raised using specific and operationally defined criteria. Computerizing the diagnostic process should increase the consistency of application. Several studies have shown increased reliability as a result of computerization (Husack and Skoda 1974, Spitzer and Endicott 1974, Duckworth and Kedward 1978). However, some factors reduce the potential of computers. Features such as flattened affect, thought disorder, postural signs and general demeanour may not be detected by a computer (or for that matter by a self report inventory) and this is a special problem in psychiatry.

In America in the 1970's, much work was carried out to try and reduce the amount of criterion variance in the psychiatric classification. The first attempt to be published was the criteria defined by Feighner, Robins, Guze, Woodruff, Winokur and Munoz (1972). This was followed by Spitzer, Endicott and Robins Research Diagnostic Criteria (1978) and this was finally succeeded by the American Psychiatric Association's Diagnostic and Statistical Manual for Mental Disorders (1980). Using the Feighner et al criteria, Helzer, Clayton, Pambakian, Reich, Woodruff and Reveley

(1977) computed Kappa statistics for diagnostic agreements between three psychiatrists (a first year resident, a junior psychiatrist and a senior psychiatrist). Overall agreement ranged from 76% to 96% and the Kappa values ranged from 55% to 85%. These Kappa values compare favourably with those computed by Spitzer and Fleiss (1974) for a number of previous reliability studies (Kappa range = .33 to .77). Reliability studies reported by Spitzer, Endicott and Robins (1978) using their own criteria, and reported in more detail in Chapter Four of this thesis, also give comparably high Kappa values. These values are most frequently between .75 and 1.0 although the occasional lower value is also recorded. Thus it can be seen that by reducing criterion variance, reliability can be raised.

Section VI. The reliability and validity of the TCS

Foulds (1955) has argued that whereas the inadequacy of psychiatric classification is widely recognised, its unsuitability is not. Studies purporting to show the unreliability of the system have already been reported. Despite this, the system has gained support of a validity nature from multivariate research (Paykel 1981). For example Everitt, Gourlay and Kendell (1971), Trouton and Maxwell (1956) and Wittenborn (1950, 1951) have all demonstrated factor analytic support for traditionally recognized groups of pathological phenomena.

Many studies reporting on the reliability of the psychiatric nomenclature (e.g. Ash 1949) have made an assumption that validity and reliability are inextricably related and the distinction between the two often goes unrecognised. It is quite possible for one to occur without the other. For example, it is possible to have three widely differing formulations of a problem - behavioural, chemical, psychoanalytical - which may all be highly valid (although this may be argued) but which have little in the way of between observer reliability. Conversely, it is

possible to have a highly reliable test that has little clinical relevance (Hamburg, Sabshin, Board, Gruker, Korchinz, Basowitz, Heath and Persky, 1958). This is perhaps, the point at issue between advocates of projective tests which plumb the depths but are highly unreliable in terms of observer agreement and advocates of more objective tests where reliability is high and easier to achieve but the question of validity remains.

Of course, the most desirable system is one which has both reliability and validity. Whereas reliability is established by the repeatability of the test (and in the case of psychiatric classification, this is usually repeatability between observers (Kline, 1979)), validity is more difficult to establish. Kline (1979 p.7) writes "tests are... valid with respect to some particular purpose... They are not necessarily valid for all purposes unless demonstrated to be so." Validity is then to be considered in terms of goals, and, in addition in terms of whether it measures what it purports to measure.

Kline goes on to write that "... the demonstration of validity is not a simple procedure. There is no one validity figure that can be obtained for a test. Usually, the validity of psychological tests is attested for by a series of findings which have to be evaluated. To that extent the validity of a test is a subjective matter". (1979 p.7). Such validity may be established by concurrent, face, predictive or construct validity, or preferably, by a combination of these. In the area of psychiatric classification, the validity of a system may be established in terms of aetiology, response to treatment, progress and also in terms of how it relates to other measures of the same group.

Section VII: Conclusion

Negative attitudes to psychiatric classification have led to the belief that the diagnosis of mental disorder is inherently unreliable and as a result doubts have arisen as to whether a classificatory system is in any way useful. Zigler and Phillips (1961) have noted that the negative attitudes to diagnosis have increased with the growth of critical reappraisal within the behaviour sciences. Psychiatric categories have begun to be viewed as irrelevant artifacts with no predictive validity. Some psychologists, as we have seen, have severely condemned the category process. It may be reasoned that an error lies in that what is being criticised is not really the whole system itself but only certain of its aspects, and then in the way it is practised, and not in theory. Zigler and Phillips say that the criticisms are only in essence directed at the "prematurity" and "rarifications" of the system and at "slavish" adherence to them. The situation has been so critical that some workers have felt obliged to introduce new systems, e.g. Eysenck. Other workers have instead tried to rehabilitate the TCS e.g. Foulds (1965, 1975).

Essentially psychiatric classification involves the imposition of classes in order that phenomena can be ordered and this is limited by the perceptual abilities and intended purposes of the classifiers. Class membership may imply no more than description leading to handling facility. The popular and supposed implication that it leads to loss of individuality is a nonsense in practice, where extensive life history case notes are essential. In this way relevant information is not lost (a label can not only tell us what an individual is, it can also indicate what an individual is not) and, at the same time, valuable experience based upon certain similarities a patient may share or not share with others is utilised. The value of the TCS at the moment, seems to lie in

its descriptive side. When tighter definitions of classificatory groups have been generated, the future task will be to extend research to see how valid such definitions are.

Chapter Two The Hierarchical Description of Personal Illness

- Section I - Introduction
- Section II - Personality and Symptomatology
- Section III - The Hierarchical Model
- Section IV - Validation of the DSSI Hierarchy
- Section V - Critique of the Hierarchical Model

Section I: Introduction

G.A. Foulds (1965, 1976) has devised a classification system of psychiatric disorder that uses the well-established but much reviled Kraepelinian type of syndromal nosology (1965, p.78) in an elaborated model of Personal Illness. He coined the term "personal illness" to indicate disturbance of a personal rather than of a physical nature. Within his system, the purely personally ill can be distinguished from the personally healthy, in that they: i) have difficulty in maintaining/establishing Mutual Personal Relationships (MPRs); ii) are so distressed by their difficulties that they, or their friends, seek outside help to alleviate manifest symptoms; iii) are physically well such that medical attention is not required (1965, p.107). Personal illness is described in terms of a continuum of increasing degrees of failure to maintain/establish MPRs, since, he argues, a human being is primarily a person, and personhood is fulfilled in conducting and being involved in MPRs with others (1965, Ch. 5, 1976 Ch. 1). He writes that failure in the maintenance of MPRs signals the onset of personal illness and the more the person fails in these MPRs the more severe the illness is. Of course some failure in MPRs is nearly always associated with personal illness, but these failures are sometimes more contingent on intrapersonal problems rather than being at the centre of the disordered processes. Foulds recognises this when he goes on to say that the nature of deteriorating MPRs must not be seen as a measurement or even a cause of personal

illness. While his system of classification is based on traditional categories, there are nevertheless, significant points of departure from the traditional system and these are illustrated by two distinctive features of his work.

(i) The first feature is the claim that it is important to keep separate what he regards as two logically distinct modes of behavioural description: (a) personality traits and attitudes on the one hand; and (b) symptoms, signs and states, on the other. Like Zubin (1967) and Torgerson (1968), Foulds has advocated the use of a "double-barrelled" classification system where symptomatology and personality are described separately, e.g. a hysteroid personality with an obsessional neurosis.

(ii) The second feature is the hierarchical model of personal illness where, at a given level of psychiatric disorder, symptoms are accompanied by less severe psychiatric symptoms but not by more severe ones. The idea is not entirely new. Charcot and Janet, (cp. Veith, 1965, p.250) both reported finding hysterical symptoms in psychotics. Gruenberg (1969) noted that the APA classification had a logical structure that was hierarchical in nature. Both Chapman (1966) and Maxwell (1973) note that in schizophrenics and psychotics in general, neurotic symptoms of every kind proliferate, and Gittelson (1966) has drawn attention to the presence of obsessional symptoms in psychotic depression.

However, Foulds model of Personal Illness appears to be the first time such a model has been expressed explicitly.

Section II: Personality and symptomatology

Foulds (1976, p.33) goes on to describe the criteria by which this distinction is to be maintained between attributes of personality, on the one hand, and symptoms, signs and states of psychiatric disorder, on the other. Personality attributes, such as traits and attitudes, sustain the

continuity of the person; but symptoms, signs and states of psychiatric disorder represent a discontinuity from the normal state of the person. The latter indicate that the person is what Foulds calls "Personally disturbed" or "Personally Ill". Foulds maintains that personality characteristics can be distinguished from indicators of psychiatric illness in four ways: the former are (a) normally distributed, (b) universal, (c) relatively ego syntonic and (d) relatively enduring over time, whereas the latter tend to be none of these.

Psychiatrists of the nineteenth century showed recognition of the importance of maintaining this distinction. Both Greisinger (1867) and Bernheim (1886) wrote about a personality type that was subject to temporary hysterical attacks. (C.P. Veith, 1965, pp. 195 and 240). Jaspers also draws the distinction between hysteroid personality and hysterical symptoms: "hysterical personality is common enough, but it is not always linked with hysterical mechanisms" (1963, p.443). And, in discussing the neurotic syndromes of anxiety, depression, phobias and obsessions which he collectively called 'psychasthenia', Janet wrote "we have to distinguish between persons of a psychasthenic temperament and persons in whom the typical symptoms of psychasthenia have developed" (1925, p.472). He coined the terms 'obsessoid', and 'psychasthenic' to support the distinction. He similarly postulated a distinction between hysteroid personality and hysteria. Kretschmer (1925) while arguing the notion of continuity of psychotic states with normal states also differentiated them clearly. Thus schizothymia and cyclothymia were distinguished from, but seen as the normal counterparts of, the psychotic states of schizophrenia and manic depression. Schneider (1958) wrote "if there is a relationship between schizoid personality and psychosis, it is certainly not the nature of a transition but of a sort of leap. The leap from personality into schizophrenic psychosis is decisive, and equally

decisive is the leap from personality into manic depressive psychosis. If there is any relationship it is certainly not that where the one is a milder form of the other." And finally, Luxenburger (see Jaspers, 1963, p.656) wrote "... the coldness of affect in schizophrenic patients is something essentially different from the lack of affectivity in psychopaths or the poverty of feeling in relatively normal personality" and again "it will not do to align the self-concern of the psychopath or even the reserve of a Nordic man with the autism of schizophrenia".

Foulds (1976) has outlined five possible relationships between personality and symptomatology. These will be illustrated with reference to Personality Deviance (PD) and Personal Illness (PI). These are illustrated overleaf. The first model is not really a relationship but an identity. It is a view held by Slater & Roth (1969, p.62) who note that there is no fundamental distinction between neurotic symptoms and personality. To a certain extent, this view is in line with Eysenckian thinking (1976). One argument against this view is that the psychiatrically ill often complain that their symptoms are alien to their "real self", whereas the PDs deviant acts will not be perceived as such. The second model illustrates the one adopted by ICD8 (World Health Organization, 1967) and DSMII (American Psychiatric Association, 1968) (although not by DSMIII (American Psychiatric Association, 1980). The position of PD and PI being mutually exclusive is adopted, thereby denying the possibility of seeing them both as being present in a disordered individual. It is a widely held view (Zubin 1967). In the third model, all PDs have PIs but not all PIs have PDs. The model denies the possibility of a symptom free PD which is clearly unlikely to gain support. In the fourth model all PIs are PDs but not all PDs are PI, i.e. only PDs can become PI. This was an early claim of Foulds (1965) but was abandoned when he found that the psychiatrically ill endorsed deviant

traits such as egocentricity and lack of empathy while ill, but ceased to do so on recovery. For PDs, such traits are enduring. In addition, the notion that a high degree of stress can lead to breakdown in normal personalities would lead one to expect disconfirmation of this model. The fifth model is the one adopted by Foulds (1976). It is that PIs and PDs have an 'and/or' relationship; It is possible to be PI without being PD, PD without being PI or both PI and PD:

Model I

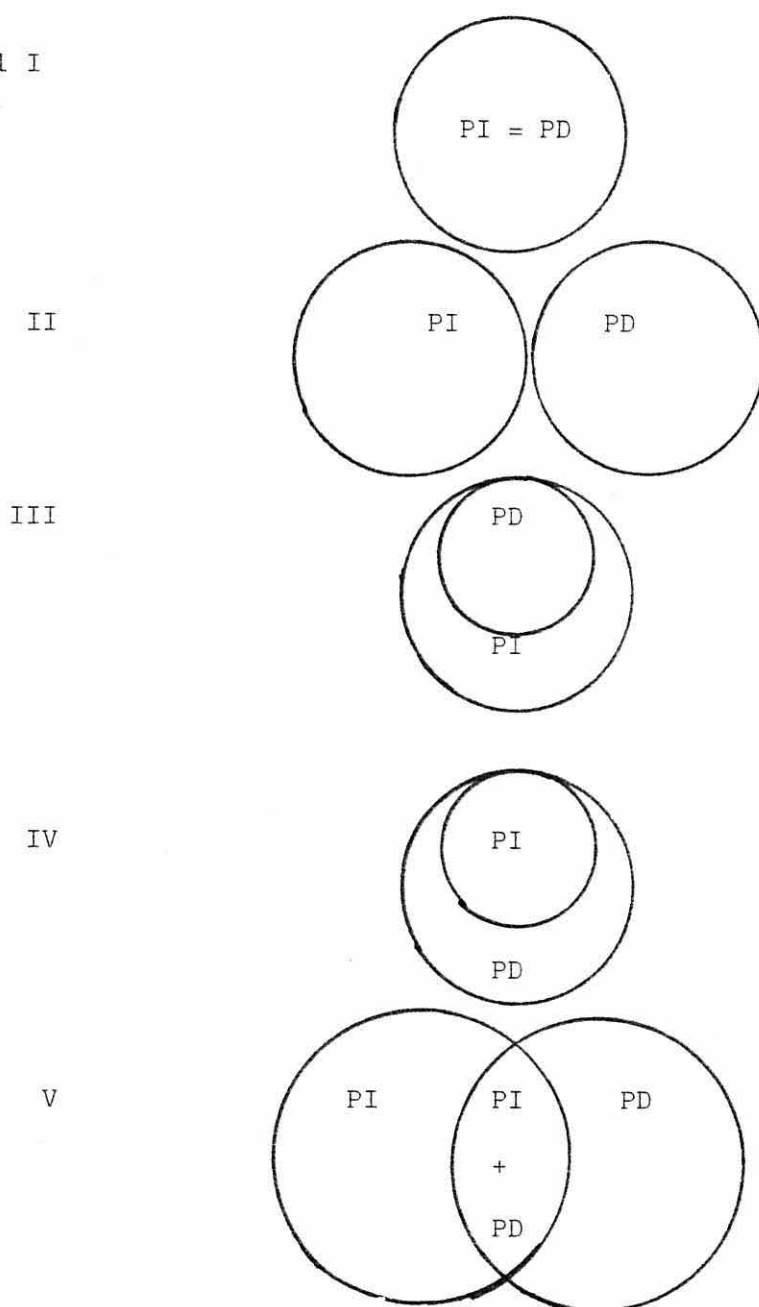


Fig. 2.1. Showing models of the possible relationship between personality and symptomatology.

The assumption is that there is no necessary relationship (1976, p.39). According to this view, a person exhibiting obsessional symptoms need not have an obsessional personality and therefore it cannot be assumed that an individual with an obsessoid personality will necessarily suffer from obsessional symptoms when, and if, they have a breakdown; and, conversely, it cannot be assumed that the obsessional neurotic has an obsessoid personality. This thesis is interestingly reminiscent of the Rorschach folklore to the effect that whereas obsessoid personalities give obsessoid protocols, obsessional patients tend not to. Most psychological tests in this area, notably projective techniques, tell us more about personality than about symptoms (Foulds, 1955b). Piotrowski (1950) showed that it may be possible to infer from a blind T.A.T. that the patient is an hysteric, but not that he has hysterical seizures. Knowing about the seizures may make it possible to advance an explanation of their cause(s) and purpose(s).

Foulds and Caine (1958a, b, 1959) showed the importance of assessing for both personality and symptom variables. With two groups of patients (a male and a female group) and a battery of tests (including the TAT, MMPI, Porteus Mazes and a Tapping test) they showed that the tests which differentiated between Hysteroid and Obsessoid personality (as rated by psychiatrists on a rating scale) were different from the tests differentiating between the diagnostic groups of Hysteric and Dysthymic.

The following section outlines some of the evidence supporting the argument that personality variables and symptomatology should be distinguished from each other.

a) Change Scores

Evidence in support of maintaining a distinction between personality variables and symptoms can be found in the studies showing the relative stability of personality measures and the relative instability of symptom

measures. Foulds (1964) has argued that a symptom may be seen as a change in functioning. Foulds (1959) gave twenty six neurotic patients a battery of psychological tests (TAT , MMPI, Porteus Mazes, Superiority/Inferiority Index, Tapping test and Raven's Matrices). Measures found to be associated with diagnosis (Hysteric/Dysthymic) were Maze distraction, TAT total words and MMPI Depression and Hypochondriasis. Measures associated with personality (Hysteroid/Obsessoid) were Maze time, Maze lifted pencils, MMPI extra-punitive, Superiority/Inferiority index and matrices times. It was found that after a five week retest, measures associated with, diagnosis changed such that Hysterics and Dysthymics could no longer be distinguished on this basis, unlike on initial testing. The measures associated with personality remained stable however.

Mayo (1967) had similar findings but with different tests . He used a predecessor to the Delusions Symptoms States Inventory (DSSI: Bedford & Foulds 1978a), the Symptom Sign Inventory (SSI: Foulds & Hope 1968), the Hysteroid Obsessoid Questionnaire (HOQ: Caine and Hope 1967) and the Hostility Direction of Hostility Questionnaire (HDHQ: Caine, Foulds and Hope, 1970) which measures for Extrapunitivity (Acting out Hostility (AH), Criticism of Others (CO) and Delusional Hostility (DH)) and Intropunitivity (Self Criticism (SC) and Guilt (G)). Twenty four depressed inpatients were tested and retested within six weeks. Psychiatric improvement was associated with change on the SSI, G and general hostility. Other measures showed no significant difference between test and retest.

Foulds has also argued, that symptoms, states and traits may be distinguished by the distributions of measurements of them. Symptom-measures should be positively skewed in a symptom free population and normally distributed or negatively skewed in a symptomatic population. Deviant trait measures should be normally distributed in a non deviant

population and negatively skewed in a deviant population. Normal trait measures should be normally distributed in both types of population. Presly (1971) suggested, on the grounds of distribution and stability, that the SSI Personal Deviance Scale, Intropunitiveness (HDHQ) and three 16PF scales (Cattell & Stice 1957) meet the criterion laid down for symptom/state measures. The three 16PF factors are 'emotionally unstable' (C-), 'Apprehensiveness' (O+)' and 'Tension' (Q4+). The other HDHQ scales and 16PF scales meet the criteria for normal and deviant traits. Horvath, Foulds & Adamowicz (1973) tested fifty three neurotic psychiatric patients on these measures and retested them after three weeks. As predicted, changes in C-, O+ and Q4+ occurred in the psychiatric improvers (n=23) whereas the rest of the 16PF measures remained stable. For the non-improvers there were no changes on the 16PF scales. The SSI/PD scales also showed significant change in the improved group but not in the unimproved group. No differences occurred with any of the HDHQ scales and the authors suggest that the failure of Intropunitiveness to change may be a result of the short test/retest interval. These results were seen as supportive of the view that symptom and state measures change with changes in pathology whereas trait measures do not.

Bedford, McIver and Pearson (1978) examined the test and retest (one week later) scores of forty five neurotic and/or personality disordered inpatients on the Symptom Rating Scale (SRT: Kellner & Sheffield, 1973), the Maudsley Personality Inventory (MPI: Eysenck, 1959) and Taylors Manifest Anxiety Scale (MAS: 1953). Although the SRT scores had high test/retest correlations, they showed a significant amount of change over time. In addition the MAS scores and Neurot^uism (MPI) showed significant change over time whereas Extraversion (MPI) remained unchanged. They

argue for the importance of selecting "pure" scales (i.e. either personality trait or symptomatic) in the assessment of psychiatric patients.

Thus it can be seen that there is an argument for keeping personality traits and symptomatology distinct on the basis of the stability over time of the former and the transience of the latter.

Many studies have tried to assess the relationship between personality variables and psychiatric symptomatology. The early emphasis amongst Foulds and his co-workers was on obsessoid/hysteroid personality and neurotic symptoms. The later emphasis was on the role of hostility in psychopathology. The main findings are summarized below. Psychotic pathology and its relationship to personality is discussed in Chapter Three.

b) Obsessoid Personality and Obsessional Neurosis

One of the earliest pieces of research in this area was that of Slater (1943). He did a monumental study of 2,000 neurotic soldiers. Only one part of Slater's numerous results interests us here and that is the correlation coefficients showing the degree of association between personality traits and symptomatology. The results as assessed by individual psychiatrists in 400 patients are tabled below

| Symptoms | Trait | r |
|--------------|---------------|-----|
| Obsessional | Obsessoid | .76 |
| Hysterical | Hysteroid | .51 |
| Paranoia | Paranoid | .50 |
| Anxiety | Anxious | .40 |
| Depression | Depressive | .39 |
| Hypochondria | Hypochondriac | .19 |

Table 2.1 Showing correlations derived from Slater (1943)

He suggests that for the first three personality traits there may be a predisposition to develop a specific sort of breakdown but that in the last, no necessary relationship exists.

More recently Tyrer, Casey and Gall (1983) have examined the association between personality (assessed by the Personality Assessment Schedule (Tyrer, Alexander, Cicchethi, Cohen & Remington, 1979) and diagnosis (ICD8) in 316 neurotic patients. The personality types were Normal, Sociopathic, Passive-dependent, Anankastic (by which they mean obsessoid) and Schizoid. The diagnoses were Anxious, Phobic, Depressed, Obsessional and Other; 60% of the patients had 'normal' personality. The patient-group least likely to have 'normal' personalities were the obsessivals, 7 of whom were anankastic (which is strong support for Slater (1943)) and one of whom was normal; but little can be confidently concluded from such a small n. They conclude that although a significant number of neurotic patients have personality disorders, the majority do not.

Early researches by Lewis (1934) and Curran and Guttman (1949) were suggestive of no necessary relationship between obsessoid personality and obsessional neuroses. Lewis found obsessoid personalities more prone to depression than to obsessional neurosis - a finding later partly supported by Kendell & Discipio (1970) who found that depressives scored more on an obsessional trait measure (from the Leyton Obsessional Inventory (Cooper, 1970)) than normal controls. However, they also note the prevalence of obsessional symptoms in their depressive sample and it could be argued that their diagnosed depressives should have been diagnosed as obsessivals according to the hierarchical model (see later).

Curran & Guttman found that obsessional neuroses could develop in individuals with little or no evidence of obsessoid personality and Foulds and Caine (1958) found that in a sample of 51 females with a diagnoses of Dysthymic neurosis, over half had Hysteroid personalities (as assessed by psychiatrists using a Hysteroid/Obsessoid rating scale).

An important study here is that of Sandler and Hazari (1960). They analysed the responses of 100 patients (half male, half female) to the Tavistock Self-Assessment Inventory (Sandler, 1954). Forty of the items relating to obsessoid traits and obsessional symptoms were then factor analysed and two independent factors emerged which were then rotated. The first factor was identifiable with obsessoid personality and the second with obsessional symptoms. The descriptions below, from Sandler & Hazari (1960), based on the factors, were thought to be representative of personality and symptomatology respectively.

"Factor A (Obsessoid character traits):

Picture of an exceedingly systematic, methodical and thorough person, who likes a well ordered mode of life, is consistent, punctual, and meticulous in the use of words. He dislikes half done tasks, and he finds interruptions irksome. He pays much attention to detail and has a strong aversion to dirt.

Factor B. (Obsessional symptoms):

Person whose daily life is disturbed through the intrusion of unwanted thoughts and impulses into his conscious experience. Thus he is compelled to do things which reason tells him are unnecessary, to perform certain rituals as part of his everyday behaviour, to memorise trivia, and to struggle with persistent "bad" thoughts. He tends to worry over past actions, and brood over ideas, and finds himself getting behind with things. He has difficulty in making up his mind, and has inner resistance to commencing work."

On the basis of this study, they argue that obsessoid personality traits (the first factor), are quite independent of obsessional neuroses (the second factor). They put forward the view that the second factor could represent a gradation from personality to illness - following from this, they argue that the relationship between obsessional personality and obsessional illness could vary depending on which obsessional traits are defined. It is possible that the Slater study, where the positive correlation between obsessoid personality and obsessional illness was nearly 0.8, was tapping the sort of characteristics to be found in Sandler & Hazari's second factor. The description Slater gives of obsessoid traits could be seen as having a pathological quality to it e.g. traits such as pernickety orderliness, rigidity and unadaptability. (However, it should be remembered that in the Slater study, subjects were classified on the basis of psychiatrists subjective judgements rather than by the use of scales of some sort, and so his results must be interpreted with an appropriate degree of caution). Ingram (1961) following Lewis (1936) discusses the possibility of more than one type of obsessional personality, and the idea that one of Lewis's two types (vacillating, uncertain and submissive) may predispose more to obsessional illness than the other type (morose, irritable and obstinate). Some support for this notion has been provided by Cooper & Kelleher (1973). They performed a principal components analysis with orthogonal rotation on responses from the Leyton Obsessional Inventory. Three major factors emerged over a variety of populations. These were 'Clean and Tidy', 'Checking' and 'Incompleteness'. Two factors of 'Unpleasant Thoughts' and 'Methodical' also emerged repeatedly but these were not so clearly defined. The authors suggest that the 'Incompleteness' factor resembles part of the

symptomatology of obsessional neurosis. Slade (1974) has argued that their factors of 'Clean and Tidy' and 'Checking' support Lewis's (1936) and Ingram's (1961) notion of two different obsessional traits.

Orme (1965) using 13 items from Sandler & Hazari's (1960) symptoms factor found a significant positive relationship between obsessional neurosis and emotional instability as measured by the O scale of the 16PF (Cattell & Stice, 1957). Orme concluded from this that obsessional personality is related to emotional instability. Kline (1967) has criticised this study for various reasons but the most important one here is that Orme has unwarrantedly drawn a conclusion about obsessoid personality from a measure of obsessional symptomatology. Kline examined the relationship between obsessoid traits, obsessional neurosis and emotional instability in a sample of students (n=81) and teachers (n=12). Their responses on the MMPI (used as a measure of emotional instability), the items contributing to the two factors identified by Sandler & Hazari (1960) and an anal test were factor analyzed and rotated to an orthogonal solution. Four factors were interpreted. The first was a general factor of emotional instability with loadings from most of the MMPI scales. The second was an obsessoid trait factor. The third was a Social Desirability Factor and the fourth factor had loadings from Social Introversion (MMPI) and obsessional symptoms. Whereas obsessional traits and anality had low loadings on the Social Introversion factor, they had low or negative loadings on the first factor. Thus, not only was the obsessoid trait/obsessional neurosis distinction vindicated in this study but also, the suggested link between both these and emotional instability was not supported.

Hirshfield & Klerman (1977) also found separation of obsessoid traits from obsessional symptoms in a factor analysis of the scores of 119 neurotic patients on the Lazare Klerman Armor Personality Inventory (Lazare, Klerman & Armor, 1970).

Meares (1971) found further support for the distinction when he found a positive correlation between the Sandler & Hazari symptom items and the N scale of the EPI (Eysenck & Eysenck, 1964) of $r = .6$, but a negative correlation between Sandler and Hazari's trait items and N of $r = -.31$ in patients ($n=32$) with spasmodic torticollis.

Across a variety of samples and measures, the argument for separating obsessoid traits and obsessional illness has been supported. Pollack (1979) in his review of obsessional personality has reached a similar conclusion. It can then be seen that there is a substantial body of support for Foulds' argument of the importance of maintaining a distinction between obsessoid personality and obsessional Neurosis.

c) Hysteroid Personality and Hysterical Neurosis

As is well known, there is a long and varied history of interest in hysteria and hysterical personality. This is chronicled by Veith (1965) who provides documentation of the various theories surrounding the disorder. Charcot was an important figure in introducing a psychological rather than a medical approach to hysteria in the late nineteenth century. Janet's (1925) description of the hysteroid personality is still utilised: affective shallowness and lability, exaggerated and disproportionate emotional display, jealousy and sexual frigidity. This is a rather uncomplimentary view and the label has sometimes been used as something of a 'psychiatric insult', an idea supported by Chodoff & Lyons (1958). They examined the literature on Hysteria and discovered five current usages of the word; (i) behaviour exhibited by hysterical personalities;

(ii) conversion hysteria; (iii) a neurosis characterised by phobias and anxiety; (iv) a particular psychopathological character; (v) a term of opprobrium. Having researched the literature, they found seven relatively consistent demand characteristics of the hysterical personality; (i) egoism, vanity, egocentricity, self centredness and self-indulgence; (ii) exhibitionism, dramatisation, lying, exaggeration, play acting, mendacity, pseudologia phantastica, attention-seeking, dissemblance; (iii) unbridled display of emotions, labile affectivity, inconsistency, irrational emotional outbursts, capricious emotions, deficient emotional control; (iv) emotional shallowness, fraudulent affect, shallow, and pretence of feeling; (v) lasciviousness, sexualisation of all non-sexual relations, obvious sexual behaviour, coquetry, provocativeness; (vi) sexual frigidity, intense fear of sexuality, sexual immaturity and apprehensiveness; (vii) demandingness and dependency. They studied detailed case notes of seventeen individuals with conversion reactions (15 female and only 2 male) and assessed them for personality type using DSMI (American Psychiatric Association, 1952) criteria except in the case of Hysteroid where they used the above criteria. The results were as follows: Personality type placid dependent = 6, placid aggressive = 1, emotionally unstable = 2, inadequate = 2, schizoid = 2, paranoid = 1, hysteroid = 3. They concluded that hysteroid personality and hysterical neurosis were two separate conditions.

Further evidence in support of this separation has come from Ingham and Robinson (1964) who found that although hysterical personalities were more extraverted than a normal sample on the M.M.P.I, conversion hysterics were more introverted than the normal sample. Such a finding suggests that it is not a good idea to assume a strong relationship between hysterical

personality and symptoms; and they also write, "there is no evidence that the occurrence of classical hysterical symptoms is associated with extraversion".

In addition, evidence for the separation of hysteroid personality from hysterical symptoms, such as dissociation and conversion symptoms, comes from Crown and Crisp (1970) who found that the Hysteroid scale of the Middlesex Hospital Questionnaire (Crown and Crisp 1966) did not discriminate outpatients with symptoms of hysterical conversion from a normal sample and they argue that measures of hysteroid personality are not a valid measure of even the liability to develop conversion symptoms. In support of this Gadd & Merskey (1975) also found that patients with symptoms of conversion had similar scores on the Hysteroid scale of the MHQ to other neurotic patients. Conversely, Luisada, Pittard and Peele (1974) found no evidence in the case notes of twenty seven males with Hysteroid personality of conversion symptoms.

Liskow, Clayton, Woodruff, Guze & Cloninger (1977) compared hysteroid personalities with patients who had hysterical psychopathology (as defined by Briquet's syndrome) on the MMPI. Briquet's syndrome which is presented as a separate form of hysterical disorder from the traditional conversion reaction, is described in the following way: "Characteristic features of the clinical history, most of which are to be seen in all patients, include many and varied claims, anxiety symptoms, gastrointestinal disturbances, urinary symptoms, menstrual difficulties, sexual and marital maladjustment, nervousness, mood disturbances and conversion symptoms. Frequent visits to physicians, the use of a large number of medications, excessive hospitalisations, and excessive surgery are also seen in the florid symptom picture" (Guze, 1975). They found that the hysteroid personalities were significantly younger, while the clinically hysterical individuals scored significantly more on the Hypochondriasis

and Lie scales. They suggest that sufferers from Briquet's syndrome may be a subgroup of the hysterical personality group. It may be the case however, that those classed as suffering from Briquet's syndrome may not, in fact, be suffering from traditionally defined conversion or dissociation symptoms. From the description of the syndrome above, it seems that it is a mixture of symptoms and traits. In terms of interaction with *doctors*, we can see general aspects of the type of personality Chodoff and Lyons isolated: attention-seeking, exaggeration, pseudologia phantastica and self centredness as well as the more extreme aspects such as a preoccupation with bodily functions, masochistic passivity and the wish to seek secondary gain by being ill. It is no wonder, then, that authors such as Kaminsky & Slavney (1976, 1983) conclude in their reappraisal of Briquet's syndrome sufferers that hysteria is not an illness but just a tendency to report every single physical symptom they can recall, whilst most patients would be more selective in their response. Certainly, it seems that Briquet's syndrome is more akin to Hypochondriasis than the symptoms of Conversion Hysteria or Dissociation.

Some authors such as Slavney (1978) and Chodoff & Lyons (1958) have argued that the conceptual fusion of hysteroid personality with, hysterical neurosis occurs because of the common, even indiscriminate, use of the label 'hysterical'. It is of interest to note here how dissociative symptoms have played little role in research on the relationship between symptomatology and personality. Pollack (1981) in his review of the hysterical personality concludes that while there is no necessary relationship between hysterical traits and hysterical symptomatology, there is a higher incidence of hysteroid traits in such patients.

While there is evidence in favour of supporting the distinction between traits and symptomatology where obsessional neurosis and obsessoid traits and hysterical neurosis and hysteroid traits are concerned, this approach can be criticised. Many of the studies noted do not include non-psychiatric controls and so the incidence of certain personality traits within a psychiatric population cannot be compared with the incidence of the same trait in a non psychiatric population. In addition the approach has been criticised (Walton & Presly, 1973) for using a single category with which to describe the personality of patients instead of using, as they advocate, a multidimensional approach to describing personality such as that pioneered by Eysenck and Cattell. In support of this Walton & Presly (1973) found that psychiatrists, in assessing the personalities of one hundred and forty psychiatric patients indicated a wish to use more than one trait label to describe individual patients. The findings of Kaminsky & Slavney (1983) illustrate this point. They found that Briquet's syndrome sufferers scored just as 'hysteroid' as hysterical personality disorders, but also scored as significantly more 'obsessoid' on the Lazare Klerman Armor Inventory (1970). However, this particular finding is problematic in that they use Briquet's syndrome sufferers as examples of hysterical neurosis, and it also raises the issue of whether hysteroid and obsessoid are best viewed as separate entities or at either end of one dimension.

Rather more illustrative of the point is a study by McAllister (1968) who examined the scores of 300 psychiatric patients on the SSI Inventory (Foulds & Hope 1968). He compared the SSI class members with a normal sample of 100 in terms of factors on Cattell's 16PF. He found that with increases in class membership, there were significant differences from the normal sample on an increasing number of personality traits. Neurotics (class 2 of the SSI) were more emotional, casual, insecure, dependent,

tense, anxious and uncontrolled than Controls; Integrated psychotics' (class 3 of the SSI) were more dull, emotional, reticent, tough, anxious, confident and conventional than Controls; Disintegrated Psychotics (class 4 of the SSI) were more aloof, dull, emotional, eccentric, simple, confident, tense and anxious than Controls. McAllister interprets these results as confirming the idea (Catell, 1957) that in mental illness, there is a functional imbalance of personality traits that is not present in the nonpsychiatric individual, and that this functional imbalance increases with increases in SSI class level.

Recently there has been a shift away from trying to establish the degree of relationship between discrete personality traits and discrete diagnostic categories. Odegard (1964) suggested that the implied affinity between certain trait and symptomatological labels has been superficial. The more recent emphasis amongst those who worked with Foulds has been on hostility and its expression in relation to psychiatric illness. The link between hostility and psychiatric illness is not idiosyncratic to Foulds and his coworkers. Freud (1917) has already suggested a link between depression and introjected hostility, and behaviourists such as Ferster (1973) noted the suppression of aggressive responses in depressed individuals. Fenichel (1945) has written that feelings of hostility and guilt are important determinants in the psychoneuroses.

In 1960 Foulds, Caine and Creasy investigated hostility and its direction in a psychiatric sample of 100 neurotics and psychotic patients (consisting of twenty of each of the following hysteroid hysterics, hysteroid dysthymics, obsessoid dysthymics, melancholics and paranoid states) and thirty one psychopaths. They used a predecessor of the HDHQ consisting of five scales made up from MMPI items. The scales were Acting out Hostility (AH), Criticism of others (CO) and Delusional Hostility (DH)

on the Extrapunitive Scale; and self criticism (SC) and Delusional Guilt (DG) on the Intropunitive scale. The psychopaths obtained significantly higher scores on AH and CO than other groups. Paranoid states scored the highest on DH with Psychopaths scoring the next highest. Both these groups showed signs of DG. Melancholia scored highly on DG. The obsessoid dysthymics were noted for their high SC scores and the authors concluded that what individuals say about themselves and others in terms of punitivity may be central to the understanding of mental illness.

The scales used in that study (Foulds, Caine & Creasy 1960) were developed into the HDHQ but, as the scales labelled DH and DG imply, symptom like items were included. In an attempt to overcome this problem, the Personality Deviance Scales (PDS: Bedford & Foulds 1978b) were developed. In the PDS, the Extrapunitive scales consist of Hostile Thoughts and Denigration of Others, and the Intropunitive scales consist of Lack of Self Confidence and Over Dependency, both of which imply self criticism. A third scale of Dominance assesses for Dominance and Uninhibited Aggression.

Foulds and Bedford (1977a) administered the PDS and the DSSI to three hundred and twenty five psychiatric inpatients. They found an increase in scores on Extrapunitivity, Intropunitivity and Dominance with increases in DSSI class membership. Using a Maladjusted Personality Deviance (MPD) score derived from the three PDS scale scores, they examined the frequency of MPDs, in terms of the DSSI classes.

The Delusions of Disintegration class members contained five times more MPDs than were found in a normal sample and the Personally Healthy (class 0). Psychiatric patients were seen to contain nearly three times more MPDs than the normal non-psychiatric sample. Over all, psychiatric patients were $3\frac{1}{2}$ times more likely to be MPDS than non-patients and these personality measures were stable over time, unlike DSSI scores (see

Foulds, Bedford and Csapo 1975) and did not co-vary with symptom measures. They suggest that personality measures may be useful in terms of predicting outcome and length of time needed for improvement from psychiatric state, and they also note the possibility that personality-features may change with intensive therapy (Martin and Caine 1963, Malan 1980). Foulds argues that it is possible that the MPD is less likely to have developed a successful defence system than the integrated, mature individual and for this reason, MPDs may constitute a large proportion of the psychiatric population.

Further to this, Foulds (1976) reports on scores in the same sample when divided within each class into Affective, Non-Affective and Mixed. Intropunitivity scores were higher for the Affective groups within each class. No such clear cut relationship emerged with Extrapunitivity scores.

Thus it can be seen that by assuming a position of no necessary relationship between personality and symptomatology, it enables the possibility of studying the relationship between a variety of personality variables and symptoms.

Section III - The Hierarchical Model

In order to measure Personal Illness, Foulds (1976) conceived of a classification running from normality through to florid schizophrenia. The model is hierarchical in nature and consists of five classes. At the bottom of the hierarchy is the Personal Health class which represents those individuals who have no psychiatric disorder. The first psychiatrically disordered class, Dysthymic states, represents changes in affective state where an individual can be described as "personally disturbed." The remaining three classes represent states of "personal

illness." They are the Neurotic Symptoms class, the Integrated Delusions class and the Disintegrated Delusions class. These classes are made up of various states, symptoms and delusions and these are described below.

| Class | Description | Sets contributing to class (notation in brackets) |
|---------|-----------------------------|--|
| Class 0 | Personal Health | |
| Class 1 | Dysthymic States | State of Anxiety (sA) State of Depression (sD) State of Elation (sE) |
| Class 2 | Neurotic Symptoms | Conversion Symptoms (CVs) Dissociative symptoms (Ds) Phobic symptoms (Ps) Compulsive symptoms (CPs) Ruminative symptoms (Rs) |
| Class 3 | Integrated Delusions | delusions of Persecution (dP) delusions of Grandeur (dG) delusions of Contrition (dC) |
| Class 4 | Delusions of Disintegration | (dD) |

Table 2.2 Showing the Hierarchical Model

Foulds argued that failure to maintain and establish MPRs increases from class 1 to class 4 as the severity of the personal illness increases. The model has the characteristic of a hierarchy in the sense that members of every class can, and invariably do, have symptoms belonging to classes beneath it in the hierarchy, but not to the classes above it. A person is classified diagnostically according to the highest class of their symptoms. It follows from this hierarchy that the scales of the actual test (the Delusions Symptoms Signs Inventory - DSSI, Bedford & Foulds, 1978a) are unidirectional. The DSSI is described in more detail in Chapter four. Suffice it to say here that the DSSI is scored in terms of the twelve sets represented above, and that membership of a set entitles to membership of the class to which the set belongs. The Personally Ill (Classes 2, 3 and 4) and Personally Disturbed (Class 1) individuals are to be differentiated from the Personally Healthy by the items on the test

denoting the Dysthymic states of class 1 (namely sA and sD), but not necessarily by sE (as we shall see later). To differentiate the Personally Disturbed from the Personally Ill, the Neurotic symptoms of class 2 are used (CVs, DS, Ps, CPs and Rs). To differentiate Neurotics (class 2) from Psychotics (class 3 and 4) the differentiators are the Delusions of classes 3 and 4. To differentiate Integrated psychotics (Class 3) from Non-Integrated psychotics (class 4), the delusions of Disintegration are used - an idea recognised by Bleuler when he wrote: "The symptomatological differentiation of schizophrenia from manic-depressive psychosis can only be based on the presence of the specific schizophrenic symptoms.... all the phenomena of manic-depressive psychosis may also appear in our disease; the only decisive factor is the presence or absence of schizophrenic symptoms" (1950). Thought disorder and incongruity of affect are not picked up on the test. The psychotic items on the DSSI are concerned with loss of awareness of the self as agent, loss of boundaries and loss of self-concept and these are clearly more easily ascertained on a self report inventory such as the DSSI than other schizophrenic features such as flattening of affect, thought disorder and emotional incongruity.

Foulds does not see his class differences as quantitative ones but views them instead, as somewhat analogous to a sequence of developmental stages such as we are familiar with in Abrahams psychobiological scheme (which Freud adopted) or in Piaget's account of cognitive development.

Symptoms are seen as a breakthrough, in disguised form, of previously repressed impulses, thus leading to a disruption of personal continuity, since the defensive mechanisms of the personality are no longer adequate. With movement up the hierarchy, there is an increase in the power of unconscious wishes such that while dysthymics may be quite aware of the external stimuli causing their depression, the neurotic person is less so,

and the emergence of neurotic symptoms may serve to relieve the dysthymic mood (Foulds 1976, Ch.4). Thus the higher up the hierarchy one belongs, the more one is a victim of the unconscious processes unchecked by reality, and this sort of idea is often validated by the inability of psychotics to distinguish fantasy from reality or to make a good use of insight.

The hierarchy, as noted before, uses traditional categories (1976, Ch.5). Class 1 represents the prolonged mood changes of anxiety neurosis, depressive neurosis and hypomanic elation. In class 2, neurotic symptoms are involved; obsessional compulsions and ruminations, hysterical conversions and dissociations, and phobic reactions. In class 3, symptoms include the traditional categories of paranoid reaction (i.e. the individual is paranoid but does not suffer from schizophrenic symptoms), endogenous depression and manic psychosis. This class is to be contrasted with class 4 in that members of class 3 still retain a certain amount of personal control whereas class 4 members suffer from delusions concerning their autonomy - delusions of passivity, influence and control, as well as visual and auditory hallucinations. Class 4 members are, of course, traditionally known as schizophrenics.

The DSSI hierarchy then is based upon the King Lear principle of "where the greater malady is fixed the lesser is scarce felt". This principle, as well as that of the dichotomy between symptomatology and personality, may explain past diagnostic confusion where an individual may be cast below their hierarchy membership class. This can be as a result of the patients not mentioning their phobic fears or obsessional rituals (the diagnostician may never have asked about them) or because the

depression, for example, is so severe that it merits immediate attention, even though the presence of ritual hand-washing is an indication of a greater degree of mental disturbance.

Section IV: Validation of the DSSI Hierarchy

Foulds & Bedford (1975) attempted to validate the hierarchical nature of the model. A sample of 480 male and female inpatients and outpatients, (excluding organics and illiterates) were tested in Canada, Scotland and England. The control group consisted of 234 non-psychiatric U.K. residents. State of Elation was not scored for in the normal sample, since it was thought to reflect optimism rather than pathology. Elation in psychiatric patients, on the other hand, can be viewed as discordant. The percentages of groups conforming to the hierarchy pattern ranged from 91.6% to 97.5%, with a mean of 93.3%. Gilleard (1983) has presented further evidence in support of conformity to the hierarchy. She tested a hundred English and a hundred Turkish psychiatric patients roughly matched for diagnosis. She found 93% of conformity in the English sample and 87% in the Turkish sample.

In Foulds and Bedford's non-psychiatric sample, similar results were obtained but there was a tendency for younger non-psychiatric individuals to produce more Personal Illness patterns than did the older people in the sample. This was mostly confined to the lower classes of illness. Male patients were more likely to score in class 4 than females in all psychiatric groups, and the reverse is true for class 3. Class 2 seemed to show similar percentages for male and female psychiatric patients, and Class 1 showed a predominance of female outpatients. (Foulds 1976, Ch. 5).

An investigation within the personal illness classes for frequency of mixed syndrome scoring (i.e. scoring on more than one set in the class to which one is allocated) revealed mixed syndromes at the 42% level. Mixed

syndromes in the classes below the class to which the patient was allotted were far more frequent than in the class to which the individual was assigned. When the divisions between classes in the hierarchy were ignored, mixed syndromes were raised to the 87% level. (Foulds and Bedford 1975).

The class 1 syndromes of anxiety (sA) and depression (sD) seemed to be almost universal in psychiatric patients. In order to separate out clearly those suffering from sA and sD from the neurotic groups (class 2), Foulds and Bedford investigated the frequency of these syndromes in neurotic groups (1976). They found that whereas all Ruminatives, Compulsives, Phobics, Dissociatives and Conversion neurotics suffered from sA and sD, the converse did not hold. That is to say that Anxious and Depressed Neurotics did not suffer from R₃, CPs, Ps, Ds and CVs. The relationship was inclusive and non-reflexive. Without a hierarchical model, it would be hard to diagnose these class 2 neurotic groups since they all score in sA and sD, and this would lead to the sort of low interjudge reliability for specific categories that was reported in Chapter One. Note here that Foulds & Bedford (1975) have reported that class 2 members have often previously been diagnosed as anxiety neurotics or neurotic depressives. Application of the hierarchical model would increase reliability in this matter.

Other workers have also assessed the validity of the DSSI. McPherson, Antram, Bagshaw and Carmichael (1977) tested out the hierarchical nature of the test. Out of one hundred neurotic and psychotic patients, 96% conformed to the hierarchy. This, they say, is significantly more than the degree of conformity that would be expected by chance. This was assessed for each patient by reallocating the proportion of obtained item scores of three, two and one randomly to the 84 items. The tests were then scored as usual. Thus each patient had two sets of scores, the genuine

one and the one based on a random redistribution of the same number of threes, twos and ones. 73% of the random DSSI patterns conformed to the hierarchy. This is significantly lower than 96% at the $p < .001$ level (McNemar test). Thus, the hierarchy model was supported.

Further work with more specific groups has shown mixed support for the hierarchy. Bagshaw and McPherson tested thirty manic and hypomanic patients on the DSSI (1978). This sample did not conform as well to the hierarchy (73%) as the general psychiatric groups. This was thought to be mainly due to a failure to endorse class 2 items such that patients scored on Dysthymic states (class 1) and Delusions (class 3 and 4) but not on Neurotic symptoms (class 2). The relationship between sE and dG however was found to be inclusive and non-reflexive thus conforming to the hierarchy. Agreement in this study between DSSI score and clinical diagnosis was low. Whereas all thirty patients had been diagnosed by a consultant psychiatrist as manic or hypomanic, only twelve were diagnosed as such by the DSSI. Whether the problem here lies with the clinical or the DSSI diagnosis remains to be seen. The authors of the study have doubts as to the validity of the self-report inventory with manic and hypomanic patients.

Another study by Foulds and Bedford (1976) investigated the relationship between neurotic and psychotic depression with the DSSI. A group of sixty eight psychotic depressives (those scoring nothing in class 4 and on dC in class 3) and forty seven neurotic depressives (those scoring only on sD, or on sD and sA in class 1 and not scoring in any of classes 2, 3 and 4) were compared. They discovered that 90% of the psychotic depressives suffered from class 2 symptoms mostly Rs and that 97% suffered from sD, or sA and sD. Psychotic depressives, then, were found to be suffering from a mixture of psychotic and neurotic depressions. The discriminator for these two types of depression, then, is

presence or absence of dC. Bagshaw (1977) replicated these results with seventy eight patients diagnosed as depressed, of whom 92.3% fitted the hierarchy. The relationship between dC and sD was again shown to be inclusive and non-reflexive and thus fulfilling the requirements of the hierarchy. Psychotic depressives were, also again, found to suffer mostly from Rs in class 2, rather than CPs, Ps, Ds and CVs.

A more recent study by Bedford and Presly (1978) has investigated chronic schizophrenics (medium length of hospitalisation 9.7 years) and the hierarchy. 81% of cases fitted the hierarchy, although only 18% fell into class 4 (where schizophrenics are expected to be classed). 3% fell into class 3, 6% fell into class 2, 21% fell into class 1 and 33% fell into class 0. 43% of patients had scores spanning most of the syndromes, 24% scored positively on one set only and, as already seen, 33% of patients claimed to be symptom free. It is clear from this study that acute and chronic schizophrenics score differently on the hierarchy. They suggest that these individuals represent the "burnt out" cases free from the more severe symptoms but not free from social and personal handicaps, especially the non-symptomatic 33%. sE showed a relatively high incidence (42%) compared to that in acute patients (21%) (Foulds and Bedford 1975).

The relationship between the DSSI classes and traditional psychiatric classification has been investigated. Two such studies are reported here. The first involved sixteen senior psychiatrists and nine experienced clinical psychologists. The study was to find the agreement level between the twelve sets of the DSSI and those of traditional psychiatry (Bedford and Foulds 1977). Each of the twelve DSSI sets consists of seven items. All of the eighty four items were printed on individual cards and then allocated to the twelve traditional categories. There was also an "other" category label. Out of the 84 items, 17 were not allocated as expected. For half of the sets, dP, dC, CPs, sA, dD and Rs there was complete

agreement with the traditional categories. The following table shows the number (out of seven) of items allocated to the expected categories for the remaining sets:

| Items | Number | Category |
|-------|--------|-----------------------|
| CUs | 6 | Conversion Hysteria |
| IG | 5 | Mania |
| Ps | 5 | Phobic Symptoms |
| sE | 4 | Hypomania |
| Ds | 4 | Dissociative Hysteria |
| sD | 1 | Neurotic depression |

Table 2.3 Showing items allocated to DSSI sets (from Bedford & Foulds, 1977)

Seventeen of the items not allocated as expected in this first session were reallocated again by a second set of judges to the DSSI sets and most of these were reallocated to the correct DSSI set. The sD/Neurotic depression relation had obviously not fared well. Most of the sD items (six) were assigned to psychotic depression although four of these only had a small minority and this, perhaps, reflects the confusion surrounding the distinction between psychotic and neurotic depression. When they were reallocated to the DSSI sets, the verdict was almost unanimously in favour of the sD sets. Over all the psychiatrists reallocated 80% of the items to the correct category and this was 88% for psychologists.

In a second validation study (ibid), raters were psychiatrists of varying levels of experience. They rated 96 patients on a 4-point scale on the DSSI sets. There was a certain amount of confusion over class 4 items due to the unfamiliarity of the terms used e.g. delusions of passivity was often included in the ratings for passive personalities. The delusions of Disintegration class was split into three, (autochthonous delusions, hallucinations and delusions of passivity) because the term

delusions of Disintegration was not familiar. As a result, the subsequent Analyses of Variance omitted the delusions of passivity rating. Significant relationships between ratings and DSSI sets were found in all except CPs, Rs and Ps. In these three cases, the results were in the hoped for direction. However, when the ratings of senior psychiatrists were considered alone, they were seen to be much closer to the DSSI sets. It seems to be that the main problem areas are with the allocation of class 2 members to traditional syndromes. As already noted there is a tendency for psychiatrists to diagnose patients with class 2 neurotic symptoms as depressive, or anxiety neurotic. This may be seen as a result of disregarding the concept of a hierarchy of psychiatric symptoms.

Finally, a study by Foulds, Bedford and Csapo (1975) has shown that even when DSSI scores change over time they still conform to the hierarchy. It has previously been shown that personality scores of psychiatric patients are relatively stable over time, while symptoms scores change with recovery (Foulds 1959). In a one month test-retest study with the DSSI, in order to see if scores did change with recovery, they showed that 72% of the sample (N = 68) improved and moved down the hierarchy, usually by one class, but still conformed to the hierarchy pattern in 91.2% of cases. On the third test, 91.6% still conformed to the hierarchy. They suggest that the symptoms higher in the hierarchy remit before, or perhaps together with, symptoms lower in the hierarchy. There is no evidence in the study for lower class symptoms remitting first. This idea gains some support from Roth (1970) who notes the presence of depression after schizophrenic symptoms have subsided. This has, they say, implications for the treatment of patients and assessment of recovery. They suggest using different types of treatment at different class levels. It is, for example, possible to commence a treatment with

chemotherapy in order to reduce severe symptomatology thus enabling the clinician to gain rapport and introduce one or more types of psychological therapy.

Section V: Critique of the Hierarchical Model

The DSSI and the hierarchical model of Personal Illness has received little in the way of criticism. McIver (1979), however, has objected that it does not include a range of psychiatric disorders such as alcoholism, drug addiction, anorexia, and organic illnesses. In addition, Forbes (1978) has criticised the model for being an anachronism at a time when most clinical psychologists have abandoned their interest in psychiatric classification. In defence of this, it may be argued that it is important from the point of view of clinical research to be precise about the psychiatric nature of the groups employed in order that replication may occur and accurate interpretations be made. Of course, to enable this to occur, models such as that of Foulds, and tests such as the DSSI, are necessary.

Surtees and Kendell (1979) tested out the hierarchy model using the results of the Present State Examination (PSE: Wing, Cooper and Sartorius, 1974) on 397 psychiatric patients. Overall, 79% of patients conformed to the hierarchy model. However, for Schizophrenic and Manic patients, the rate of conformity ranged from 48% to 70%. They put this down to an absence of neurotic symptoms. They argue that the PSE more than adequately covers neurotic symptomatology, that inadequacy on the part of the interviewers is unlikely, and that their findings reflect a genuine absence of neurotic symptoms in psychotics rather than methodological problems.

Sturt (1981) also found evidence of a failure of psychotics to admit the presence of neurotic symptoms. In a study of a non-psychiatric sample (n=310) and a psychiatric sample (n=775) using the PSE as a measure, roughly half the psychotics showed no evidence of neurotic symptoms although 96% of all subjects with psychopathology also suffered from non-specific symptoms. However, while Sturt has not given details of symptoms included in the neurotic and non-specific symptoms groups, she does state that they do not correspond to DSSI classes so this study may not be viewed as a test of the Foulds hierarchy itself.

The argument of Surtees and Kendell gains some support from Kendler and Tsuang (1982) who noted the progression of identical twins from depression through manic psychosis to schizophrenia. In both twins schizophrenic symptoms persisted while affective symptoms disappeared. This can be seen as somewhat damaging for the hierarchical model. Partial redemption can be found in the report of Donlon and Blacker (1973) who observed the schizophrenic disintegration and reintegration of thirty chronic psychotics. By withdrawing anti-psychotic medication and replacing it with placebos, they observed four stages of decomposition. Stage one was characterized by anxiety, sleep disturbances and concentration problems while the second stage was characterized by agitated depression or projection and obsessional compulsive defence mechanisms. Stage three was characterized by feelings of loss of control and overt psychotic symptomatology. Stage four contained some relief in that it was characterized either by autistic ruminations about a psychotic world of harmony and love, or by a retreat into hebephrenic silliness. This is a similar process to that described by Kendler and Tsuang (1982). Once anti-psychotic medication was reintroduced, patients passed through the same stages in reverse order. Thus an argument may be made that the hierarchical principles are upheld during the regression to florid

psychosis, and during the progression back to normality; but that the hierarchical principle is not upheld once the state of florid psychosis (the ultimate retreat) is reached.

More recently, de Jong, Giel, Lindeboom, Slooff and Wiersma (1984) have studied the hierarchical principle in a sample of eighty two Dutch functional psychotics. They used a similar procedure to Surtees and Kendell (1979) with the PSE except that each patient was assessed on three occasions. Sixty five of the PSE profiles were incomplete leaving one hundred and seventy seven interviews for analysis. 86% of these interviews (percentage not given for patients) conformed to the hierarchy principle. Failure to conform was found, once again, to be due to a failure to endorse neurotic symptoms. Those interviews that did not conform were inspected to see if interviews from the same patient taken at a different time conformed. Nineteen out of the twenty one patients involved showed conformity at a different point in time. Two patients never conformed across the three occasions but one is reported to have demonstrated the presence of neurotic symptoms at times other than those of the PSE interviews.

Finally, the DSSI is subject to criticisms that apply to self report inventories in general. That is to say that DSSI responses may be subject to determinants of responding other than pathology, such as Social Desirability.

O'Neill (1976) has strongly criticised the results obtained by Foulds and Bedford (1975) supporting the DSSI hierarchy and re-interpreted them in terms of response-bias. He argues that a person responding to DSSI items on the basis of an implicit social desirability criterion will obtain a pattern of scores that conforms to one or other of the types defined by the hierarchical model as legitimate. O'Neill collected (unreported) data on the social desirability of each of the DSSI items.

He found that, with the notable exception of the scales sE and dG (which received high desirability ratings), desirability ratings were lower on average for items belonging to the more seriously disturbed classes. O'Neill carried out a study of fifty five males and fourteen females in-patients on an alcoholic and drug addiction ward. All but five of the patients were referred for alcohol rather than drug abuse. The patients were given a psychological test battery including the DSSI and MMPI.

The results obtained fitted the hierarchial model well: 100% for the females and 82% for the males. The results were, of course, also consistent with the response bias model. O'Neill found that the DSSI set score means were higher for more seriously disturbed individuals than for a less seriously disturbed individual. This was true regardless of whether the set was critical for discriminating the types being compared. This finding fits the response bias position, but O'Neill has argued that it is more difficult to accommodate the finding within the hierarchical model. He used the MMPI to obtain a measure of faking (F score minus K score). He found that positive fakers ($F - K = \text{more than } 11$) were likely to be in the Not Personally Ill class or in the Dysthymic states class. However, the negative fakers ($F - K = \text{less than } 11$) were found to be predominantly in the Integrated Delusions or Delusions of Disintegration class. The non-fakers ($F - K = \pm 11$) were unevenly distributed across all five classes; the number within each class decreased as the hierarchy was ascended. O'Neill also examined the correlation of factors derived from a Principal Components Analysis of the DSSI sets and other variables. He found correlations between the first factor, which had high loadings (mostly in the region of .7 and above) from all DSSI sets (except state of Elation and delusions of Grandeur) with MMPI L(-.3), F(.5), K(-.43), F-K(.6). On this basis, he interprets the factor as one of defensiveness, exaggeration, denial and

dissimulation. The second factor, which consisted of state of Elation, delusions of Grandeur, Compulsions and Ruminations correlated significantly with K (.24). On this basis, he interprets the factor as one of Social Desirability.

O'Neill's results may appear to have serious implications for the DSSI but several methodological considerations need to be taken into account. The sample (alcoholics and drug addicts) was not typical of the samples for which the DSSI was intended. In support of this, he found that delusions of Contrition were significantly associated with youth in his sample whereas psychotic depression is traditionally associated with middle age in the psychiatric literature. For reasons not given by O'Neill, the delusions of Disintegration set was expanded by nine items and the other sets expanded by one item each. The extra items are not listed. O'Neill makes use of data on the Social Desirability of each item but this data is not presented and is therefore difficult to assess. Finally, he computed a Principal Components analysis but interpreted the factors only on the basis of relatively unimpressive correlations with scales not included in the analysis rather than on the basis of the factor loadings. Had examination of the factors on the basis of their loadings led to similar interpretations, then the correlation of the factors with the other scales may have been viewed as concurrent validity. This was not the case. Support for O'Neill's Response Bias Model also falls down when consideration is taken of the results of Foulds, Bedford and Csapo (1975) showing that patient recovery can be tapped in terms of movement down the hierarchy while personality scores on the PDS remain stable. Thus O'Neill would need to explain why fewer socially undesirable items on the DSSI are endorsed on retest while the same amount of socially undesirable items are endorsed on the PDS at test and retest. This, of course, assumes that items relating to extrapunitivity and intropunitivity are

socially undesirable. However, Foulds and Bedford (1977b) tested the hypothesis that membership of the higher DSSI classes reflected positive responses to socially undesirable items. Seventy eight patients with class membership covering all the hierarchy classes were given a Tapping test. The hypothesis was that the more Personally Ill would respond in a less socially desirable way by slower and more diffuse tapping. The tapping speed decreased with increasing severity of Personal Illness, but this may have reflected psychomotor retardation, rather than social undesirability. The degree of scatter of tapping also decreased with increasing symptomatology such that members of the delusions of Disintegration class tapped slowly but the least diffusely. They argue that it would be difficult to interpret such results in terms of emulating socially undesirable responses. To conclude, Foulds and Bedford noted that "Patients going into a psychiatric unit to have their depression relieved would not need to feign surprise if told that it was actually a hospital for relieving their willingness to endorse socially undesirable statements."

Chapter Three

The Eysenckian Dimensional System

- Section I - Introduction
- II - The Medical Model
- III - The Methodology of the Dimensionalists
- IV - The Neuroticism/Psychoticism Dichotomy
- V - The Eysenckian Dimensions
- VI - Construction and Validation of the P scale
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Section I: Introduction

The theoretical basis of the Eysenckian Dimensional scheme has been well publicised and utilised in psychology. It was founded upon the belief that psychiatric abnormalities are essentially continuous with normality and are not to be distinguished from normality in any absolute, qualitative manner. Eysenck (1970) writes that he believes dimensions to be nearer reality in this matter than are categories. In the main, the call for dimensional revisionism has come from psychologists, but it is certainly not the case that the protest has been theirs exclusively (Kendell 1975 p.122). Eysenck is, without doubt, the main proponent of a dimensional system of psychiatry in Britain today, but such a system has a distinguished collection of supporters in psychological and psychiatric history. Hoch (1914) and Kraepelin (1913) both observed that schizophrenics often had psychic abnormalities prior to breakdown. Bleuler (1950) and Kretschmer (1925), expanding the notion of pre-morbid personality abnormalities, noticed that affective psychotics had different types of pre-morbid personalities. They postulated the schizoid personality for schizophrenics, and the cycloid (Kretschmer) or syntonik (Bleuler) personality for affective psychotics. The schizoid were characterised by suspiciousness, solitariness, coldness, violence, affectionlessness and apathy; and the cycloid or syntonik personality was either warm, jovial and kind, or doleful and sensitive (Kretschmer 1925).

Both Bleuler and Kretschmer developed their theories to include non-pathological personalities. Kretschmer called his cyclothymes and schizothymes, with cycloid and schizoid personalities describing transitional states en route route to affective and schizophrenic psychoses respectively. Bleuler, on the other hand, proposed that everyone had a schizoid and syntonetic component, and that one or both of these may be grossly exaggerated; so that either cases of pure affective psychosis and pure schizophrenia arise, or alternatively, cases that are mixtures of both. Kretschmer's types were postulated to belong to the same continuum running from affective psychosis through cycloid personality and cyclothymic personality to schizothymic personality, schizoid personality and finally to schizophrenia. This hypothesised continuum was later challenged by Eysenck (1952) and Brengelman (1952) in studies which will be described in more detail later in this chapter. In the field of psychiatric dimensions, Wittenborn's work was among the first significant contributions to be backed up by statistical analysis. He discovered that a system of factors in psychiatric illness could replace the Traditional Category System (TCS). With his co-workers, Holzberg & Simon, he discovered nine dimensions as the result of factor analysis on 800 neurotic and psychotic patients, and he was able to replicate these results with a further sample of patients (1953).

Section II: The Medical Model

Eysenck (1960, 1975 ch. 1) has suggested that psychiatric illness be divided into two sections. One small section dealing with disturbance of psychological functions which are the result of tumours, lesions, infections and other physical complaints. These patients would be under the care of physicians. The larger section of the psychiatric population would consist of psychological disorders, which are acquired through what

he calls the "ordinary processes of learning": and these patients should be under the care of psychologists using a dimensional approach and behaviour therapy. A similar view is endorsed by Rachman and Clare (1978, pp. 149-150).

The main empirical difference between categories and dimensions focuses on the question of continuity. For example, are psychotic patients different in a qualitative manner from 'normals' so that they possess something not possessed by the latter, or are these psychotic characteristics infinitely graded. Traditional psychiatry seems to endorse the continued use of category labels which imply discontinuity. Of course, it may be argued that the choice between categories and dimensions depends upon the phenomena observed. Although the TCS has already been discussed in terms of its shortcomings in Chapter One, Eysenck's reasons for seeking to establish a new system are outlined below.

The present system, the TCS, is not based upon any known aetiology (although some disorders such as presenile dementia clearly are). There are many theories of aetiology and Eysenck declares that their very number proves that none of them has enough support to make it more plausible than the others. In addition to this, he notes that the present system is unreliable and so poorly co-ordinated and codified that "over the whole range of psychiatric cases there is no agreement", although he notes that this excludes the relatively high agreement rate noted in Chapter One differentiating the neurotic and the psychotic categories. As a result, there is little connection between diagnosis and treatment (Eysenck 1970, p.169).

Another source of weakness is the methodology of past workers who are noted, in general, for a lack of concern with empirical testing in the diagnostic field, and with failure in most instances to state fundamental

hypotheses. This vague, non-empirical mode of approach has led to such unreliable, nebulous and invalid forms of testing such as projective tests. He notes that clinicians utilising such tests consider scientific evidence and proof to be secondary to "faith" and "belief". This "faith" and "belief" is so strong he argues, that psychotherapy is recommended uncritically, and is unwarrantedly assumed to ameliorate illness permanently. This failure to treat appropriately is a strong argument against the value of diagnostic procedures (Eysenck 1970, pp.169-170).

Factor analytic studies have failed to reveal the clustering assumed by the disease entity model, and have shown instead a continuous distribution of individual scores on all factors (Eysenck, 1960, pp.9-11). However, early factor analytic studies also confirmed the traditional distinctions in psychiatry between Neurosis and Psychosis (Trouton & Maxwell, 1956). Eysenck has devised a technique of Criterion Analysis that can demonstrate the continuity/non-continuity of mental illness and mental health (Eysenck, 1950). Results using this technique have suggested that the difference is quantitative and not qualitative. For this reason, Eysenck recommends a dimensional representation of mental illness as desirable for research, theory and practice (Eysenck 1960). Another supporter of the dimensional view is Cattell, whose work with factor analysis led him to similar conclusions. Over many variables (objective test and questionnaire results) he has claimed to have elicited similar factors from normal and abnormal groups (Cattell, 1970). However, he has said that there may be what he calls "quantitative deviation" in terms of extreme scoring on some factors - for example on anxiety. In addition, Cattell adds that certain factors are specific to abnormal groups such as Psychasthenia, General Psychoticism, Hypochondria and Depression (1970, p.21).

Eysenck has painted a very dismal view of the TCS and, as a result, lays down several principles that his new system should fulfil. It must be testable and, therefore, hypotheses must be clearly stated. Empirical and experimental methods must be used in order to verify and falsify. The system must relate to aetiology and treatment, and must show recovery rates over and above that of spontaneous recovery. Results should relate to general psychological theory (especially learning theory), and it should be possible to deduce predictions as to the diagnostic use of objective, reliable and valid laboratory tests which would aid in diagnostic procedures (Eysenck 1970, p.171).

Section III: The Methodology of the Dimensionalists

As already mentioned, a Factor Analytic technique known as Criterion Analysis was developed to investigate the dimensional structure of neurosis and later of psychosis in a study refuting Kretschmer's theory (Eysenck 1950, Eysenck 1952). This is where the Eysenckian concept of Psychotism may be said to have originated. The Eysenckian system differs from the Kretschmerian theory in that the latter postulates a continuum from schizophrenia, through normality, to manic depressive psychosis. Either side of normality are mildly pathological personality variations, consisting of schizoid and cycloid personalities respectively, with the range of normality itself taking in cyclothymic and schizothymic personality variations.

Eysenck & Eysenck (1976, Ch. 1) liken the Kretschmerian system to the Jungian extraversion/introversion continuum in that both authors had overlooked the idea that they needed a second dimension independent of the already established one; for example, Kretschmer's group, to be labelled

psychotic, must be in comparison to another group that are not psychotic and who do not score highly on a psychotic dimension but who do score highly on a dimension of normality.

Criterion analysis is a variant of factor analysis. It involves two groups of people, e.g. normals and psychotics, and their scores on objective tests. The power of each test to differentiate the groups is expressed in a biserial correlation, i.e. the correlation of each test with the normal/psychotic dichotomy. The results of the various test scores are then intercorrelated for each group. If the two groups differ only quantitatively, then their within-group covariances will be similar. Likewise after separate factor analysis of the two groups test scores, if the two groups differ only quantitatively, they will give rise to similar factors.

Eysenck (1952) used this technique to test whether psychosis and normality were qualitatively or quantitatively different, and to test out the Kretschmerian continuum idea. One hundred normals, fifty schizophrenics and fifty manic depressives were tested on fifteen objective tests. The intercorrelation matrices of test scores for the normals and psychotics respectively were similar. When the scores were factor analysed for each group, the extracted two factor solutions were highly similar and the correlations between the factors from the separate analyses were .87 and .77 respectively. The initial factors extracted from each analysis correlated .90 and .95 with the criterion. Thus the notion of a continuum between normality and psychosis was supported. When the criterion groups were manic depressives and schizophrenics, the tests showed little differentiating power and the correlations of the initial factors from the factor analytic solutions were .01 and -.09 with the criterion. Thus there was little support for the notion of a Kretschmerian continuum.

In the same year Brengelman produced additional evidence against Kretschmer's continuum. Objective tests that according to Kretschmer should distinguish the schizothymic personality from the cyclothymic personality (personal tempo, tremometer tests, Muller-Lyer detection, colour/form tests and tachistoscope reading tests) were administered to 100 normals. Of the intercorrelations between tests only one was significant at the 1% level. and that was in the direction that was contrary to expectations (1952).

Eysenck's 1950 study using Criterion Analysis had shown similar results with regard to neuroticism and stability. Cattell, Dubin and Saunders (1954) also showed psychotics and normals tested on the same set of tests to have similar correlation-patterns generating the same major factors.

Section IV: The Neuroticism/Psychoticism Dichotomy

Having thus shown psychosis and mental health to be on a continuum, and having invalidated Kretschmer's type of continuum, Eysenck then addressed himself to the problem of whether neurosis and psychosis were related or independent. The Eysencks note that the hypothesised independence of these two dimensions is in contradiction to the Freudian notion where the development of schizophrenia is, they say, functionally related to the neuroses (1976, pp.7 & 15), and S. Eysenck (1956) ^{*misleadingly asserts*} notes that the psychoanalytic school thinks psychosis to be just a more severe form of neurosis. "More modern opinion, in the analytic school, holds that the only difference between the two major mental states (i.e. neurosis and psychosis (I.H.)) is in degree of severity" (p.518). Wolpe (1970) using Arieti (1956) as his representative of the psychoanalytic school, refutes this one dimensional argument with evidence from genetics, physiology and behavioural studies. He also found differences between neurotics and

psychotics on selected performance tests. He claims that his findings lead to a conclusion that schizophrenia has its origin in processes that are distinct from those that cause neurosis. According to Wolpe, this is in opposition to the psychoanalytic view, but it is in fact almost exactly what Freud himself writes in his short paper on 'Neurosis and psychosis' when he says "neurosis is a conflict between the ego and its id whereas psychosis is ... a disturbance in the relations between the ego and the ~~external~~ world". (1924 p.213).

The Eysencks provide further evidence for the independence of neuroticism and psychoticism when they note (1976, p.7) that between-group reliability for diagnoses of neuroticism and psychoticism is in the .80 region whereas within-group reliability is in the .50 region.

Studies utilising Factor Analysis and Discriminant Function Analysis (DFA) have provided more support for the independence of neuroticism and psychoticism. Lubin (1951) tested 50 normals, 50 psychotics and 50 neurotics on a general aptitude test, and by means of DFA, extracted two significant functions. The scores of the groups were plotted in two-dimensional statistical space, and showed clear-cut distinctions between the three groups.

S. Eysenck (1956) used six objective tests with 123 normals, 53 neurotics and 51 psychotics, and she also extracted two significant functions by DFA. When the scores according to these functions were plotted, 71% of subjects could be identified by their position in statistical space. She suggested that the 29% that could not be identified thus had been misdiagnosed in the first place. Devadasan (1964) replicated these results with an Indian sample.

The now famous Trouton and Maxwell study (1956) used Factor Analysis instead, and is often cited in arguments for the independence of neurosis and psychosis. They selected 45 of the more salient items from a 500-item

clinical questionnaire, and factor-analysed the results of these from 819 male patients. The first two factors (out of six) that emerged were Psychoticism and Neuroticism. Neurotics and psychotics could be clearly distinguished on the graph of factor scores.

In the genetic field, Cowie (1961) has also found evidence for this independence. If the hypothesis of independence is true, then children of psychotic parents should not show greater neuroticism than children of normal parents, whereas the unidimensional theory would imply that children of psychotic parents show higher neuroticism (according to Cowie's argument). Her study showed that children of psychotic parents were less neurotic than children of normal parents. These results are also thought to show that neurosis is not importantly affected by environmental factors, such as the stress of living with a psychotic parent (Eysenck and Eysenck 1976, p 15)

In conclusion to the two dimensional versus one dimensional debate, we must note the overall triumph of the two dimensional theory (which is consistent, as we have seen, with the two mechanism theory proposed by Freud). However, Eysenck and Eysenck write "we must conclude that the unidimensional theory, in spite of its widespread and almost axiomatic acceptance by psychoanalysts, found no support in the experimental or statistical literature" (1976, p.15).

Section V: The Eysenckian System of Dimensions

Eysenck subscribes to a dimensional theory of personality structure (Eysenck 1970) which provides three higher order major type factors of personality. These are E (Extraversion/Introversion), N (Neuroticism/Stability) and P (Psychoticism/Normality). While Eysenck would maintain that human personality may be best described in terms of these three "super factors" (1972). Cattell has argued that description in terms of

primary factors is preferable (e.g. Cattell, Eber and Tsatsuoka, 1970). These primary factors of personality are contained in his test, the 16PF (Cattell & Stice 1957, Cattell et al. 1970). On higher order factoring, eight second order factors emerge two of which, Exvia and Anxiety are akin to Eysenck's Extraversion and Neuroticism.

H.J.Eysenck and S.B.G.Eysenck (1969) invited Cattell & Guilford to select items they thought to be representative of their personality factors for a joint analysis. They examined the Promax rotated factorial solutions of the responses of 600 men and 600 women separately on Cattell's scales (with the exception of factor B), the EPI (Eysenck & Eysenck, 1964) and on Guilford's scales. At first order in both analyses, two clear factors of E and N emerged. (The P scale was not published at that time). Other factors emerging at first order were of little interest. At second order, three factors (E, N and acquiescence) emerged in the female sample and four factors (E, N, L and an unidentified factor) emerged in the male sample. At third order the two superfactors of E and N (or Exvia and Anxiety) emerged. None of Cattell's fifteen primary factors emerged.

When the EPI items were analysed on their own, eight main primary, seven secondary and two clear third order factors of E and N emerged. When the Cattell items were analysed alone, although 20 factors were extracted (ten of which were similar across sexes) the 16PF factors failed to appear at first order. The factors that emerged consisted of items from a variety of scales. The second order factors were dissimilar across sexes but three third order factors emerged similar for both sexes. These were Extraversion, Neuroticism and Socialization. In addition, they found partial support for the Guilford factors in a separate analysis of the Guilford items.

When the correlations between the factors that emerged from these separate analyses of the three tests were factor analyzed, two third order factors of Extraversion and Neuroticism emerged in the male and female samples. Additional extra third order factors emerged (one in the case of males and two in the case of females) made up of items from the Cattell and Guilford tests.

The Eysencks, needless to say, regard these results as favourable to their position espousing higher order factors, and as unfavourable to Cattell and Guilford. However, Kline (1979, pp.150-152) and Cattell & Kline (1977, p.99) are critical of the study. They argue that part (but not all) of the reason for the failure of Guilford's and Cattell's scales to emerge may be due to the number of items per hypothesized factor (i.e. 48 each for E and N, and between 6-8 for Cattell's and Guilford scales). In addition, they doubt if simple structure was reached in the analyses and note that no test was applied to the number of factors rotated. In addition, they note that it is difficult to evaluate the role played by Eysenck's first order factors on the EPI since many of them are bloated specifics (where items seeming to be rephrased versions of others make up the same factor). This would perhaps reduce the importance of such factors. Eysenck (1972), on the other hand, has argued that Cattell's primaries are "chance aggregations of items" that lack specificity.

Further support for the E and N factors comes from a study by Saville and Blinkhorne (1976) where 2000 undergraduates were given (amongst other tests) the EPI and the 16 PF to complete. The aim was to see if Cattell's inclusion of first-order factors added anything over and above the second order factors of E or N; and indeed they did not add much to N. Only 16% of the variance for C (ego strength), 4% of the variance of O (guilt-proneness) and 9% of the variance of Q4 (ergic tension) were not accounted for by N. In addition these scales were not clearly distinct from each

* insert

More recently Barrett and Kline (1982) have factor analyzed the responses of five hundred subjects on the 16PF using Direct Oblimin rotation to simple structure. They failed to find the sixteen Cattell factors at primary level. At best they managed to extract nine factors at this level, but these were composites. They conclude that the Cattell factors are not stable enough to be viewed as basic personality dimensions.

other or from second order Anxiety. In the case of E, Cattell's view that primaries should be included in the tests is supported. The following factors had considerable independent variance of E; A (Sizia/Affectia) 69%, E (Submissive/Dominance) 68%, H (Threctia/Parmia) 29%, G (Superego Strength) 81%, Q2 (Group Adherence/Self-Sufficiency) 68%. Only one primary, F (Desurgency/ Surgency) had most of its variance accounted for by E. These results are supportive of Eysenck (1972) when he found that Cattell's Anxiety primaries intercorrelate highly (after correction for attenuation due to reduced reliabilities). This tendency was not so marked for the Exvia primaries. Thus while the primaries relating to N seem to add little to the description of personality, the primaries relating to E appear to be important. A reanalysis of this data by Krug (1975) however demonstrates that, the Anxiety primaries of the 16PF have more unshared, reliable variance than Saville & Blinkhorn suggest and that the primaries of the 16PF do give information over and above the information given by the EPI.^{*} However, in general, there is support from Cattell's primary factors for Eysenck's higher order E & N factors.

The Psychoticism scale or P scale is relatively new to the dimensional scheme. In published test form, it was not added to the already established E and N scales until 1975 in the Eysenck Personality Questionnaire (EPQ). The word Psychoticism, according to the Eysencks, simply refers to an underlying personality dimension present in all persons. If there is a lot of it present, it predisposes that person to the development of psychiatric abnormality, but the Eysencks hasten to add that the presence of such a predisposition is a far cry from actual psychosis and few high P scorers are likely to develop clinical psychosis. "We suggest that for practical purposes it might be better to call N emotionality and P tough-mindedness" (Eysenck and Eysenck 1975, p.5). Clinical psychosis is seen as a pathological exaggeration to a high degree

of some underlying trait of Psychoticism. Psychopathy is thought to be a half-way stage between normality and psychosis (1976 p.203). Indeed, it has been found that a large percentage of close relatives of psychotics were psychotic themselves, or psychopathic, alcoholic and criminal. Eysenck claims this phenomenon is apparent even when environmental variables are ruled out (Eysenck 1964a). However, it must be noted that criminals who may possibly be classed as psychopaths, score more on the P scale than actual psychotics. Interestingly, recent research has shown that high P scorers condition relatively poorly (Frcka, Beyts, Levey and Martin 1983) and this no doubt ties in well with Eysenck's theory that psychopaths show deficiencies in learning social mores.

Support for the three dimensional model (E, N and P) can be found in a study by Wakefield, Yam, Bradley, Doughtie and Cox (1974). They compared the three dimensional model with the MMPI scales. Conceptually, the Neuroticism scale resembles the MMPI scales of Hypochondriasis (Hs), Depression (D) and Hysteria (H); Psychoticism resembles Paranoia (Pa), Psychasthenia (Pt) and Schizophrenia (Sc) and Extraversion is related to Sexual Identity (Si). In addition mania (Ma) is thought to be related to Extraversion and Neuroticism and Psychopathic Deviate (Pd) is thought to be related to Extraversion and Psychoticism. This conceptual scheme may be represented thus:

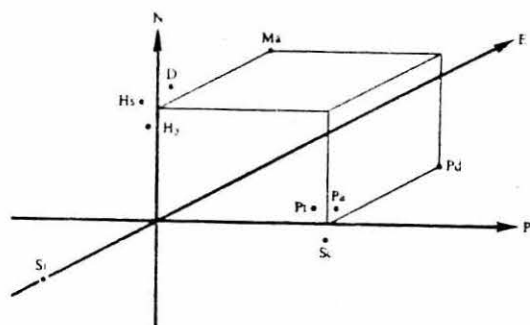


Fig. 3.1 Conceptual position of MMPI scales with Eysenck's three dimensions of personality (from Wakefield et al 1974).

This conceptualization was tested by factor analysing the MMPI scores of 205 married couples and plotting the positions of the resulting factors in statistical space. By showing that the three neurotic related scales (Hs, D and H) are relatively close to each other and relatively distant from the psychotic related scales (Pt, Pa, Sc), and that the converse also obtains, they argue that the Eysenckian personality dimensions are supported.

More recently, Wakefield, Sasek, Brubaker and Friedman (1976) have compared the scales of the EPQ with measures from the Adjective Checklist (Gough and Heilbrun 1965) scored according to Murray's Manifest needs (1938). The sample was college students. The P scale was positively correlated with needs for Autonomy and Aggression and negatively correlated with needs for Nurturance and Deference. Extraversion was positively correlated with needs for Dominance, Heterosexuality, Exhibitionism, Autonomy and Change and negatively correlated with needs for Succorance, Abasement and Deference. Neuroticism was positively correlated with need for Succorance and Abasement and negatively correlated with need for Dominance. The Lie scale was positively correlated with the need for Deference and negatively correlated with the need for Aggression.

These results are interpreted as consistent with the Eysenckian notions of the Psychotic, Neurotic and Extraverted personality types.

More recently Berger, Wrobel and Lycacki (1980) have claimed results favouring the Eysenckian three dimensional solution. They identified fourteen items thought to represent the problems motivating psychiatric patients to ask for help and the diagnostic concerns of clinicians. The case notes of 400 psychiatric patients (diagnoses unspecified) were examined and rated on the fourteen characteristics. A factor analysis with Varimax rotation revealed four factors, three of which were interpreted as

corresponding to the dimensions of N, P and E. The factor thought to represent N had high loadings from Anxiety and Worry, Depression, Suicidal Ideation, and Sleep Disturbance. The P factor had loadings from Deviant beliefs, Deviant thinking and experience, and Deviant behaviour. The E factor was bipolar with a positive contribution from Somatic concerns and Neurological Screening and a negative contribution from Drug/Alcohol Abuse and Antisocial Attitude. This is interpreted as representing a continuum from introverted anxiety to psychopathy (extroversion) and they argue that, due to the psychiatric nature of their sample, their factors tended to reflect severe pathology. The remaining factor of 'family trouble' and 'problematic anger' was dismissed as not representing an Eysenckian dimension although it could be argued as being relevant to P. This study is problematic in terms of the interpretation of this last factor and the factor which they regard as similar to E which may also be interpreted as relevant to P and N. Little detail is given of the factor analytic method but it is possible that they extracted too many factors. It is likely that these problems with labelling the factors may have been resolved had they extracted only three factors.

Eysenck, White and Eysenck (1976) performed a DFA on the EPQ scores of normal controls, criminals, schizophrenics, endogenous depressives, personality disorders, anxiety states and reactive depressives. There were sixty three subjects in each group. Separate analyses were performed for each sex. In each analysis, three discriminant functions emerged that could be described as normality/abnormality, neurotic/psychotic and anti-social/social behaviour. Unfortunately they failed to show the loadings of the EPQ scales on the functions. Thirty one percent of the sample were "correctly" reclassified into their original groups (as opposed to fourteen percent by chance). Although the reclassification figure is not high, it matters not since the authors argue that they were

more concerned to show that their groups could be separated on the basis of personality scores, rather than to replicate the classification into diagnostic categories.

Gourlay (1980) describes a technique for examining the scores on P, E and N in a two dimensional diagram. He used the scores of the Eysencks abnormal groups (1975) and presented them in two dimensional representation. All the abnormal groups except male prisoners were represented within the dimensional space enclosed by P, N and I (or -E). Both male and female prisoner groups were located closer to P than other groups thus supporting the link between P and psychopathy. This may be seen as providing support for the Eysencks' thesis that psychiatric groups may be represented by their personality dimensions since all the psychiatric groups fell within the axes provided by the dimensions (Eysenck and Eysenck, 1976, p.37).

As well as confirming the broad Neurotic/Psychotic differentiation, the Eysencks have claimed that the sub-categories of the neuroses can be related to scores on other dimensions - namely the Extraversion dimension. The Eysencks (1976 ch. 1) claim to support the Jungian position where psychasthenic disorders are typically an introvert phenomenon and hysterical disorders are typically an extravert phenomenon. In support of this, Eysenck and Claridge (1962) found hysterics had high E and high N scores while dysthymics (anxiety neurotics, neurotic depressives, phobics and obsessionals) had low E and high N scores. In a DFA of their sample scores on six objective tests they found no overlap between hysterics and dysthymics.

However, Foulds (1961) has criticised Eysenck since he has used such groups as criterion groups in the development of the Extraversion scale. He has argued that while most Hysterics are Extravert, and most Dysthymics Introverts, the converse does not follow. That is most Extraverts are not

Hysteric and most Introverts are not Dysthymic. Foulds goes on to argue that there may be important differences between Hysterics and Dysthymics other than scores on the E scale. He supports his view that such groups should not be used as the criterion with the findings of Foulds and Caine (1958) reported in Chapter Two. This view has gained further support from Ingham and Robinson (1964) who found hysterical personalities had higher E scores than Conversion Hysterics.

Eysenck and Claridge (1962) found that on the E scale, their Hysteric group was in fact less extravert than their Normal sample, although they were more extravert than the Dysthymics. However, their Hysterics were more extravert in terms of objective test measures than Normals. They draw attention to the distinction between the 'constitutional' and the 'behavioural' extravert and suggest this may explain the results cited by Foulds. By 1969 however, the Eysencks conceded the point that hysterical personalities and psychopaths may be better criterion groups. Since then, Hughes and Johnson (1974) have carried out a study examining the scores of psychopaths and dysthymics on the Extraversion scale and found no significant differences.

Eysenck has postulated causal factors of a constitutional nature for all his dimensions. (Eysenck 1970; Eysenck and Eysenck 1976). Individual differences in Extraversion/Introversion are attributed to the Pavlovian concept of differences in excitation/inhibition balance, and differences in Neuroticism/Stability are related to differences in threshold of emotional activation. Eysenck (1970) suggests that studies should aim to discover a neurological/physiological/anatomical locus for the inherited structures that he assumes to underlie the functions. The excitation/inhibition balance is determined by the threshold-level of the ascending reticular activating system - this determines the state of arousal in the cortex, which possesses a synchronising portion causing

cortical inhibition when stimulated. From such a theory, both physiological and psychological deductions are possible. For example, the greater state of arousal of introverts is borne out by E.E.Gs showing them to have lower alpha amplitude and higher alpha frequency; on the psychological side they have a lower sensory threshold, greater responsivity to stimulation and fewer "blocks" (Eysenck 1970). By relating such findings to learning theory and the greater ease of conditioning for introverts, useful techniques can be adopted. It is believed that dysthymic disorders are due to conditioned autonomic responses to normally neutral stimuli; and that psychopathic disorders (and many types of criminal behaviour) are due to the absence of conditioned responses thought to be the basis of the social structure, leading to a failure to develop a social conscience. Hysterical reactions (regarded by Eysenck as high N and high E scorers) are thought to be the result of abnormally strong stimuli that lead to motor inhibition and thus, conversion symptoms. Extraverts have a higher level of transmarginal inhibition (in Pavlovian terms) than introverts and will, therefore, function best at relatively strong levels of stimulation. Introverts, on the other hand, do not function well under such conditions. Therapeutically, the learning theories of Extraversion/Introversion imply that introverts will respond well to conditioning and can usefully endure long conditioning sessions with weak stimuli whereas extraverts can only usefully endure short conditioning sessions with strong stimuli. Additionally, aversion therapy has been found to be helpful with low or medium N scorers but harmful to high N scorers (Eysenck, 1970).

Evidence relating E.E.G. readings to personality traits has sometimes been equivocal but Gale (1981) has reviewed the findings and argued that the variance in the results is due to a number of methodological difficulties (such as a lack of control over experimenter variables where

interactions between experimenter and subjects of different sexes may produce arousal additional to the arousal under inspection). He concludes that as time progresses, more and more studies are being produced that support the Eysenckian position.

Kline (1983, p.116) and Cooke (1984 p.66) have both pointed out that Eysenck's conditioning theory is weak since a general dimension of conditionability has not been shown. The findings of Lacey (1967) show that autonomic responses do not covary suggesting that several indices of reactivity are needed for each individual. Mangan (1982) has argued that so many different variables impinge on differences in conditionability (such as UCS intensity and intervals) that personality differences alone probably have little impact.

Another caution must be added; the E and N scales of the EPQ are different to those of the EPI. Whereas the N scales are the same with the exception of 4 scale items, the E scale of the EPQ is thought to differ considerably from the E scale of the EPI (Block, 1978a, Stricker, 1978 and Tellegen, 1978). Whereas the EPI E scale consisted of Impulsiveness and Sociability, the EPQ E scale consists mainly of Sociability, the Impulsiveness component having been removed. Block (1978a) has argued that the relevance of the new E scale to, amongst other things, conditioning needs to be demonstrated again. However, Barrett and Kline (1982) demonstrated, in a small pilot study, correlations of .83 for the two versions of the E scale, .90 for N and .68 for L. They note that the E and N scales are comparable whereas the L scales probably are not. Nevertheless, Rocklin and Revelle (1981) have noted that the previously established experimental correlates of extraversion that were seen as supporting the arousal theory of extraversion related more to the Impulsivity part of the EPI E scale (Eysenck and Levey, 1972). Now that the E scale is almost purely a Sociability Scale, its experimental

correlates need to be re-established. The presence of an Impulsivity component in the P scale may, of course explain the findings of Frcka, Beyts, Levey and Martin (1983) where high P scorers were seen to be poor at conditioning like the high E scorers of the pre-EPQ era.

While there are aetiological theories relating E and N to physiological and anatomical structures, the main link between P and basic processes appears to be Maleness. Gray (1973) has linked psychoticism to intra-specific aggression and argues that this is facilitated by male sexuality. The mediating structures in the brain, he suggests, are the amygdala, the medial hypothalamus and the midbrain. It is interesting, in this respect, to note that males tend to score more highly on P, that they tend to become psychotic in young adulthood when male sexuality is at its peak and that women tend to become psychotic in middle to late adulthood when female sexuality in terms of hormones is waning. However, Claridge (1981) has highlighted an inconsistency in this argument. At the time when females are at greatest risk for schizophrenic breakdown, their P scores are decreasing (c.p. Eysenck & Eysenck, 1975).

Claridge has linked psychoticism with arousal (1967). He has proposed a 'dissociation of CNS activity where physiological functions, normally congruent, become "uncoupled" (1981). Two aspects of CNS functioning are particularly implicated - emotional arousal and the regulation of sensory input. He argues that this may account for the incongruous matching of affect to percept traditionally associated with schizophrenia. Claridge and Chappa (1973) were able to test these ideas with the PEN inventory. They found that the correlations between Two Flash Threshold and Skin conductance was negative for high P scorers - a similar relationship to that showed by Claridge and Clarke (1982) with drug free psychotics, and with people under the influence of LSD by Claridge (1972). Low P high N scorers, on the other hand, showed a positive correlation. These results

were replicated by Claridge and Birchall (1978). The rather embarrassing findings of Claridge and Chappa (1973) that low P low N scorers also showed this negative relationship was not replicated. Rather weaker results with high and low scorers on the EPQ have been found by Robinson and Zahn (1979). Claridge (1981) suggests that this weakness may be due to the differences in P scales between the PEN and the EPQ. His stance on the issue is that it may be the case that schizophrenics can at separate times be in opposite states of "dissociated CNS" activity with a tendency to "flip" from one extreme to another. He notes the need to add a dimension of variability into his theoretical model. Much more research is clearly needed in this area.

There is fairly strong evidence that P has a high heritability. Eaves and Eysenck (1974) using the PEN and a Social Attitudes scale estimated the heritability of P as 35%. A more important study by Eaves and Eysenck (1977) using the EPQ scores of 544 monozygotic and dizygotic twins finds no support for the hypothesis that P is mainly due to environmental variation. In a complex statistical analysis using biometrical techniques involving the transformation of the J-shaped data to a normal distribution and calling the new transformed scores P', they firstly calculated an initial heritability score of 46% thus rejecting a purely environmental model. This was viewed as a gross underestimate as it assumed total reliability of measurement. By estimating the average error variance of P scores, they found that 11% of the total variance of P' could be assigned to the environment. Sampling variance accounted for over 40% of the total variance and this left 49% of the total variance which could be assigned to the effects of several and possibly many genes of independent and additive effect. By only considering variation not due to sampling, the potentially genetically identifiable variance of P' was recalculated to be 81% leaving the influence of the environment at 19%. This has been interpreted by the Eysencks (1976, p.156) as sounding the

death knell of psychoanalytic theories which attribute the cause of schizophrenia to the environment and the mother child relationship. Interestingly, since this study, another genetic study of parents and children by Young, Eaves and Eysenck (1980) has found similar results with regard to the inheritance of P. However, they also found that the Junior and Adult P scores had little genetic variation in common.

The Eysencks postulate a polygenic personality trait, mostly composed of genes of small effect whose actions are cumulative. The greater the number of these active genes of small effect the more severe the degree of psychoticism. In addition they postulate a small number of genes of large effect which may or may not be present and which, if present, determine the type of psychosis. The presence of these genes of large effect, which is not common, may generate the clear cut, textbook type cases of psychosis. When the number of genes of small effect is too low for actual clinical psychosis, we may get the schizoid personality. If as well as a small number of genes of small effect one gene of large effect is present, then sub-clinical phenomena may appear such as hostility and suspicion. (Eysenck & Eysenck 1976, p.29).

Section VI: Construction and Validation of the P Scale

The theoretical framework of the dimensional model of personality, described above, led the Eysencks to the task of deriving accurate means with which to measure these dimensions. The basic aims of this work are best described by its authors. "Essentially what we are trying to do, then, is to help build up a dimensional framework within which the major aspects of personality can be located with some degree of exactitude; our scales are intended to locate a given person within that framework, again with some degree of exactitude. Within the limited degree of validity and reliability shown by psychiatric diagnoses, we would expect that groups of

psychiatric patients showing common diagnoses would occupy a relatively limited portion of the N dimensional space which constitutes our system, rather than be distributed at random all over the space. Thus there would be a limited amount of homogeneity associated with some at least of the psychiatric diagnoses; the locus of the mean of all the scores of psychotics (as diagnosed) would lie at a different point from the locus of the mean of all the scores of neurotics (again as psychiatrically diagnosed). Thus we believe that predictions could be made from our general theory as to the position of these loci, with respect to each other and with respect to the framework; such predictions would constitute a partial test of our theories." (Eysenck and Eysenck 1976 p.37).

Earlier work in 1968 had led the Eysencks to work on a new dimension of P (or Psychoticism) that was subsequently added to the already well established dimensions of N (Neuroticism) and E (Extraversion). The envisaged value of such a scale was that of a research tool and as an alternative to psychiatric diagnosis, personality dimensions being seen as important factors in choice of treatment and prognosis (Eysenck and Eysenck, 1968).

The P scale (our main concern here) was developed over a long period of time, starting in the laboratory in 1952 emerging as a final product in 1975. Throughout this period several versions have emerged and various studies of the P scale have involved different versions of it. (Davis 1974, Forbes 1973, Eysenck and Eysenck 1971, Eysenck and Eysenck 1972). As a result, it has been difficult to assess the merits and demerits of the scale until the same version has been used consistently. This has, of course, been possible since 1975 when the official version was published in a test called the Eysenck Personality Questionnaire (EPQ). In 1976, the Eysencks published a book about the P dimension, describing its history, with additional information on experimental findings in the clinical,

genetic and criminal spheres as well as age, sex and class relationship studies. Suffice it to say that the most complete account of the P scale is contained within that book.

The evolution of the scale involved many thousands of people and many Factor Analyses. In 1968, H.J. & S.B.G. Eysenck outlined three major requirements of their P scale: (i) items on the scale must intercorrelate in order to produce one factor; (ii) the scale must differentiate normals from psychotics and criminals; and (iii) the scale must be independent of the N scale. They envisaged the high P scorer as "cold, impersonal, hostile, lacking in sympathy, unfriendly, untrustful, odd, unemotional, unhelpful, anti-social, lacking in human feelings, inhumane, generally bloody-minded, lacking in insight, strange, with paranoid ideas that people were against him" (1976, p.47). This model of a typical high P personality was formulated by the Eysencks as a result of clinical experience with neurotics and psychotics. Given this portrait they set about writing P items, or adapting items from previous tests such as the MMPI. Symptomatological items were avoided as they were thought too stigmatic to be answered truthfully.

The first version of the scale, the derivation of which is described below, was contained in the PEN inventory which consisted of 106 items including N and E items. Sometimes throughout the development of the test, a Lie scale was included on the assumption that psychotics "lacked insight" and that this could be detected by high Lie scores. The Eysencks have since revised their opinion that this scale simply detects dissimulation alone (1975 pp.14-15) but the Lie scale still remains in the final version of the EPQ. The already established E and N scales and items that could possibly eventually contribute to the P scale were psychometrically tested. Responses were gathered from market research samples and submitted to a series of factor analyses. Items loading on P

were retained, items not loading on P were discarded and new ones were tested in an iterative procedure. Psychotics, neurotic and criminal samples were tested with the scale, in its various shapes and forms, to make sure external validation kept pace with internal validation. Male and female scores were kept separate in the analyses since sex differences emerged. A set of items relevant to N, E and P was selected and tested on 1,333 normal market research controls and factor analysed. Twenty primary factors were extracted from the original correlation matrix and rotated by Promax. Seven second order factors were extracted and from this three third order factors were extracted with latent roots of unity or above (E, N and P.) In a separate factor analysis, the three factors were also extracted at the first order.

Twenty P items were chosen from this analysis to be included in the PEN inventory (S.B.G. Eysenck and H.J. Eysenck 1968). A normal sample of 1000 people (gathered by a variety of methods) were used to assess the tests. Product-Moment correlations were obtained and the correlation matrices submitted to a principal components analysis. Three factors were extracted and rotated into oblique simple structure by Promax - this solution is called the three factor solution. This solution tallied with an alternative statistical treatment called the third order solution where 20 factors were extracted by principal components analysis and then rotated into simple structure by Promax. Higher order factors were obtained, extracted and rotated until three third order factors of E, P and N appeared. The results of this study were compared with the results of the previous normal sample and it was found that both samples gave rise to similar factors (H.J. Eysenck and S.B.G. Eysenck 1968; S.B.G. Eysenck and H.J. Eysenck 1968). However at this stage, although the P scale was thought to reliably measure a dimension in a normal population, its relationship to clinically diagnosed psychosis was tenuous.

A modified version of 60 items (20 of each scale, P, E and N) were selected to represent the items. Selected items had to fulfil several conditions:

1. High Loadings on the factor involved.
2. Consistency over sex and sample.
3. Low loadings on other factors.
4. Consistency of loading from three factor to third order solutions.
5. Known loadings in previous analysis on different factors.

A factor analysis of these items demonstrated that three conditions were satisfied. Consistency reliabilities were estimated and for normals were found to be .75, for psychotics .78, and for neurotics .76 (S.B.G. Eysenck and H.J. Eysenck, 1968). The 60 item version was given to a large normal sample and it was discovered that P was high in youth, males and members of lower social classes (S.B.G. Eysenck and H.J. Eysenck 1969). The evidence for a personality dimension labelled P seemed convincing. Further corroborative evidence came from the study of Teasdale, Segraves and Zacune (1971) who found that drug users scored significantly higher on P than non-users. Eysenck and Eysenck (1971) found that criminals scored significantly higher on P than their matched controls - this time however the P scale consisted mostly of items related to sociability (the hypothesis being that criminals are under socialised).

However, the scale on the PEN inventory showed some substantial correlations, that is between N and P. In 1972 the Eysencks, in an attempt to eliminate this, produced a 110 item questionnaire consisting of P, E, N and L items which was given to a non-psychiatric sample consisting of 170 males and 192 females. Product moment intercorrelations were obtained for the male and females samples respectively and a principal components analysis performed. Four factors were obtained and rotated by Promax. Consistency reliabilities were calculated and the P scale was

found to be reliable, although this reliability was lower for males (.57) than for females (.74). A negative correlation was found between L and N, and P and N were found to be orthogonally situated in statistical space and therefore independent.

The final version of the P scale is contained in the EPQ (1975). The scale was by now relatively unrelated to social class but still influenced by age and sex. The final P scale is reported to be "largely identical" (Eysenck & Eysenck, 1976 p. 65) to that contained in the PEN inventory but only the most reliably discriminating items were selected. Items with potential were rewritten and new items introduced where it was thought they would have loadings on the factor. The final version was tested on 1,796 males and 2,565 female subjects. Once again the responses were factor analysed. Four factors were extracted and rotated by Promax. The correlations between the factors were low - the highest being between P and L in the male sample where $r = .23$. The intercorrelations between the scales were similar to those between the factors. In addition the distributions of scores were graphed. P scores are skewed to the low scorers, thus demonstrating that few people have high P scores. The E scores distribution is skewed in the opposite direction showing that many people have high E scores. Male and female distributions of N are almost normal but with slight skews in opposite directions, the male skew towards low scores and the female skew towards high scores. The male and female distribution of L scores are almost normal but with slight skews to low scorers. Test retest reliabilities for the EPQ with normal samples are in the .80 to .90 region with the odd exception (e.g. female students have low reliabilities for P (.51) and L (.61)). Consistency reliabilities in normal samples are in the .80 region but once again with the exception of P where, in the normal samples, the coefficient is .74 for males and .68 for females. The scores were also examined for the effects of age. It

was found that E and P scores decreased with age, and also N scores to a lesser extent. L scores increased with age and the Eysencks think this may be as a result of people becoming more orthodox and conventional with advancing years (1976 p.77).

The tables 3.1 and 3.2, overleaf (taken from Eysenck and Eysenck 1976, pp.101-103) show the means and standard deviations of various abnormal groups and a normal group on the EPQ. As can be seen, the highest scorers in the male sample are the drug addicts followed by alcoholics, personality disorders and prisoners. Psychotics score the next highest and the normal comparisons score lowest. The same pattern can be seen in the female scores, except that here, prisoners score much more on P than other groups. When the L scale scores are taken into account it can be seen that groups with L scores of over 7 tend to have lower scores on P and N than groups which have scores of 7 or less (see table 3.2). Unfortunately, the scores of the other abnormal groups who score highest on P are not submitted to this treatment and as a result little can be said about P and L in these groups.

Further evidence about the validity of P as a measure of psychoticism can be found in Verma and Eysenck (1973). Their hypothesis was that P would correlate with severity of psychosis. Psychotic in-patients were rated on an interview and ratings on the In-patient Multidimensional Psychiatric Scales (IMPS), (Lorr, Klett, McNair and Lasky, 1963), the PEN inventory, the Hostility Direction of Hostility questionnaire, (Caine, Foulds and Hope, 1970), cognitive tests (IQ and mental control) and a psychomotor test. The results were Factor Analysed and the resulting factors rotated by Promax. Ten primary factors emerged. Five of these were of interest and can briefly be described as Psychoticism (with its main

Normal and abnormal groups: mean and standard deviations

| MALES | n | Age | P | E | N | L |
|-------------|-------|------|-----------|------------|------------|------------|
| Psychotics | 104 | 35.1 | 5.66+4.02 | 10.67+5.22 | 13.39+6.06 | 9.62+5.12 |
| Neurotics | 216 | 34.7 | 4.19+2.96 | 9.42+5.37 | 16.56+4.64 | 8.01+4.60 |
| Endogenous | | | | | | |
| Depressives | 58 | 43.6 | 4.10+2.82 | 9.98+5.44 | 15.92+5.48 | 9.72+4.61 |
| Prisoners | 1,023 | 25.9 | 5.72+3.56 | 13.62+4.69 | 13.13+5.23 | 6.78+4.29 |
| Drug | | | | | | |
| Addicts | 8 | 27.2 | 6.94+5.75 | 8.88+6.98 | 17.88+3.94 | 8.62+3.20 |
| Personality | | | | | | |
| Disorders | 56 | 30.6 | 5.78+3.44 | 10.09+6.31 | 15.71+4.74 | 7.06+4.45 |
| Sex | | | | | | |
| Problems | 23 | 35.7 | 4.87+3.24 | 11.91+5.53 | 12.43+6.05 | 7.07+4.05 |
| Alcoholics | 14 | 33.9 | 5.93+2.16 | 9.79+5.13 | 19.64+2.13 | 4.14+3.37 |
| <hr/> | | | | | | |
| Normal | | | | | | |
| Comparison | 2,312 | 27.5 | 3.78+3.09 | 13.19+4.91 | 9.83+5.18 | 6.80+4.14 |
| <hr/> | | | | | | |
| FEMALES | | | | | | |
| Psychotics | 72 | 39.3 | 4.08+3.19 | 10.58+4.66 | 14.56+5.23 | 11.59+5.14 |
| Neurotics | 332 | 34.9 | 3.25+2.71 | 9.46+5.43 | 17.88+3.94 | 9.58+4.51 |
| Endogenous | | | | | | |
| Depressives | 68 | 43.7 | 3.48+2.47 | 10.24+5.76 | 16.54+4.36 | 12.01+4.04 |
| Prisoners | 71 | 27.1 | 6.41+4.07 | 12.32+5.19 | 14.60+5.58 | 9.01+4.89 |
| Drug | | | | | | |
| Addicts | 4 | 32.5 | 6.25+3.20 | 9.25+4.86 | 20.00+1.15 | 3.25+2.50 |
| Personality | | | | | | |
| Disorders | 75 | 31.0 | 5.75+3.51 | 10.19+5.99 | 18.35+4.64 | 7.17+4.30 |
| Sex | | | | | | |
| Problems | 25 | 30.6 | 3.58+3.16 | 9.96+4.27 | 16.32+4.18 | 9.44+4.59 |
| Alcoholics | 5 | 44.0 | 5.50+3.39 | 10.50+4.56 | 18.50+2.50 | 8.80+2.02 |
| <hr/> | | | | | | |
| Normal | | | | | | |
| Comparison | 3,262 | 27.0 | 2.63+2.36 | 12.60+4.83 | 12.74+5.20 | 7.73+4.18 |

Table 3.1 Showing means and S.D.s. of eight abnormal and one normal group (in males and females respectively) on E, P, N and L.

Lie score greater than seven

MALES

| | n | Age | | P | | E | | N | | L | |
|---------------------------|----|-------|-------|------|------|-------|------|-------|------|-------|------|
| | | M | SD | M | SD | M | SD | M | SD | M | SD |
| Psychotics | 40 | 36.70 | 14.02 | 5.66 | 4.44 | 11.52 | 5.09 | 12.28 | 6.11 | 11.86 | 3.27 |
| Neurotics | 82 | 37.63 | 12.00 | 3.28 | 2.27 | 9.10 | 5.08 | 16.34 | 5.21 | 11.92 | 3.14 |
| Endogenous Depressives | 30 | 47.67 | 12.40 | 3.65 | 3.24 | 9.43 | 5.60 | 15.93 | 5.72 | 12.63 | 2.66 |

FEMALES

| | | | | | | | | | | | |
|---------------------------|-----|-------|-------|------|------|-------|------|-------|------|-------|------|
| Psychotics | 30 | 36.50 | 11.58 | 3.82 | 3.53 | 11.53 | 4.16 | 13.03 | 5.00 | 13.17 | 3.39 |
| Neurotics | 168 | 36.96 | 12.02 | 2.83 | 2.65 | 8.80 | 5.48 | 17.87 | 3.88 | 12.37 | 3.34 |
| Endogenous Depressives | 49 | 45.26 | 13.18 | 3.48 | 2.64 | 11.19 | 5.70 | 16.39 | 4.20 | 13.42 | 3.04 |

Lie score less than or equal to seven

MALES

| | | Age | | P | | E | | N | | L | |
|---------------------------|-----|-------|-------|------|------|------|------|-------|------|------|------|
| | | M | SD | M | SD | M | SD | M | SD | M | SD |
| Psychotics | 29 | 30.00 | 11.17 | 6.29 | 3.84 | 9.71 | 5.36 | 16.07 | 5.51 | 4.24 | 2.28 |
| Neurotics | 103 | 30.39 | 9.99 | 5.01 | 3.28 | 9.52 | 5.72 | 17.16 | 4.04 | 4.48 | 2.10 |
| Endogenous Depressives | 14 | 33.57 | 13.53 | 5.04 | 2.26 | 9.82 | 5.90 | 18.64 | 4.25 | 4.89 | 2.11 |

FEMALES

| | | | | | | | | | | | |
|---------------------------|----|-------|-------|------|------|------|------|-------|------|------|------|
| Psychotics | 12 | 31.25 | 10.41 | 6.33 | 2.80 | 9.12 | 6.68 | 16.92 | 5.63 | 4.17 | 1.99 |
| Neurotics | 98 | 30.46 | 11.50 | 4.34 | 2.76 | 9.81 | 5.39 | 18.15 | 3.99 | 4.90 | 1.89 |
| Endogenous Depressives | 9 | 33.44 | 10.78 | 3.44 | 1.96 | 5.94 | 3.66 | 17.06 | 4.82 | 5.44 | 2.08 |

Table 3.2 Showing means and S.D.s. of psychiatric groups with scores on L of over 7 and less than 7 respectively.

loadings from questionnaire responses), Extraversion, a P rating factor (with its main loadings from ratings by professionals), Hostility and a test factor loading on the cognitive tests. The factors at first order level were similar for both sexes. The data were therefore amalgamated for a higher order analysis. Three clear second order factors emerged. The first can be described as a Hostility Direction of Hostility factor loading on the HDHQ, N and P and negatively on L; the second factor is a cognitive factor and included a negative loading on P; and the third factor was a delusional factor with loadings from rated delusional items and a loading from P. A fourth factor that emerged was interpreted as an artifact. On further analysis two super factors emerged labelled P and Introversion (although Claridge (1981) has suggested this latter factor is more akin to Neuroticism). The mean and standard deviation scores of individual psychotic groups on these factors were examined (see Table below)

| | FACTOR I (P) | | FACTOR II (Introversion) | |
|-------------------|--------------|--------|--------------------------|--------|
| | X | SD | X | SD |
| Schizophrenics 51 | -.1126 | 1.0240 | .1867 | .9375 |
| Paranoids 32 | -.6343 | 1.0474 | .0935 | .1947 |
| Affectives 60 | -.4275 | .8627 | -.1426 | 1.2346 |
| Unclassified 9 | .0439 | .8793 | -.1439 | 1.3491 |

Table 3.3 Showing factor scores of psychotic groups on the factor of P and Introversion

It can be seen that although factor 1 can separate the groups, it does not seem to do so on the basis of severity of psychosis, assuming that schizophrenia is the most extreme form of psychosis.

Barrett and Kline (1980, 1981) have factor analyzed the responses of non-psychiatric samples on the EPQ in order to demonstrate the emergence of the four Eysenckian factors. This was in response to the findings of Helmes (1980) who failed to find the Eysenckian factors emerging in item factor analyses at the first and third order level, and Loo (1979) who failed to find the factors at first order level. Barrett and Kline (1980, 1981) suggest that these results may be due to differences and deficiencies in the use of factor analysis. Contrary to these findings Barrett and Kline found supportive evidence in both their studies for the factors. In the first study, the EPQ responses of a Gallup quota sample of 1,198 and a student sample of 406 were analyzed. The two samples were further divided by sex, thus rendering six groups - male, female and Total for the Gallup and the student samples. A Principal Components Analysis of item responses was conducted to select the first order factors and these were obliquely rotated to simple structure. The correlation matrix of these factors was then factor analysed and subjected to oblique rotations until simple structure was achieved to discover the higher order factors. In all six data sets, factors recognizable as N emerged at first order. In five of the data sets, clear E and L factors emerged at first order. At the second order level, N, E and L emerged with great clarity, and practically all the items for these scales were recovered. P only emerged clearly at second order in the Male Gallup and Total Gallup samples. Barrett and Kline suggest that the failure of P to emerge in the female samples may be due to their low P score means and that the failure of P to emerge in the Male student sample may be due to the low variable/subject-ratio (1:1.9).

In the second study, Barrett and Kline tested out Eysenck's claim that his factors can be found at first order level. They analysed the responses of the same samples above plus a Thai student sample of 116. A

principal components analysis was carried out but only four factors were extracted and rotated by Direct Oblimin to simple structure. The percentage of items with their highest loading on the scale to which they belong ranged from 84% to 100% for the British samples. Percentages were slightly lower for the Thai sample. The P factor was weak in the Thai sample with only 40% of the P items having their highest loading on it. Barrett and Kline conclude it is an inappropriate measure for the Thai culture. Mean loading sizes for the appropriate items on the factors in the British sample ranged from .33 to .52. Thus, Barrett and Kline provided support for the Eysenckian factors at first and second order level.

Clinical and Correlational Studies of the P scale

There have been many studies concerning the P scale although the whole issue has been thrown into confusion because studies have used different versions of the scale. Tables 3.4 and 3.5 show the different versions of the P scale used in the PEN and EPQ respectively. There are only 8 items in common. Forbes (1973, 1976) has investigated correlates of both versions of the scale with normal subjects. He claimed that the PEN version of the P scale could be construed as mainly hostility. He also noted the relatively high correlation of the N and P scales in the PEN. The final version of the scale, in the EPQ, is virtually independent of N and according to Forbes (1976) it allows better discrimination between groups of female subjects. In a table showing the seven most powerful items in the scale, (Items 22, 37, 83, 18, 67, 43 and 53), only item 83 can really be described as an hostility item. Forbes (1976) reinterpreted the scale as measuring non-conformity. This hypothesis was supported by a Factor Analytic study using the EPQ, Personality Deviance scales (Bedford and Foulds, 1978b) and the Comrey personality scales (Comrey 1970). P was

4. Do most things taste the same to you?
7. Do you enjoy hurting people you love?
10. Are you generally in good health?
13. Was your mother a good woman?
16. Have you had more trouble than most?
19. Have you had an awful lot of back luck?
21. Do you worry a lot about catching diseases?
23. Did you love your mother?
27. Are there several people who keep trying to avoid you?
29. Is there someone who is responsible for most of your troubles?
30. Do you let your dreams warn or guide you?
32. Do people generally seem to take offence easily?
33. Would you take drugs which may have strange or dangerous effects?
40. Do you have enemies who wish to harm you?
44. Do your friendships break up easily without it being your fault?
47. Was your father a good man?
55. Do people mean to say and do things to annoy you?
59. Would you have been more successful if people had not put difficulties in your way?
62. When you are in a crowded place like a bus do you worry about dangers of infection?
99. Would it upset you a lot to see a child or animal suffer?

Table 3.4 Showing P scale items of the PEN Inventory (taken from S.B.G. Eysenck and H.J. Eysenck 1968)

2. Do you often stop to think things over before doing anything?
6. Would being in debt worry you?
9. Do you lock up your house carefully at night?
11. Would it upset you to see a child or an animal suffer?
18. Do you believe insurance schemes are a good idea?
22. Would you take drugs which may have a strange or dangerous effect?
26. Do you enjoy hurting people you love?
30. Do you have enemies who want to harm you?
33. Do you enjoy practical jokes that can sometimes really hurt people?
37. Do good manners and cleanliness matter much to you?
43. Do you think marriage is old-fashioned and should be done away with?
46. Do people who drive carefully annoy you?
50. Do most things taste the same to you?
53. Does it worry you if you know there are mistakes in your work?
57. Do you like to arrive at appointments in plenty of time?
61. Is (or was) your mother a good woman?
65. Are there several people who keep trying to avoid you?
67. Do you think people spend too much time safeguarding their future with savings and insurances?
71. Do you try not to be rude to people?
74. When you catch a train do you often arrive at the last minute?
76. Do your friendships break up easily without it being your fault?
79. Do you sometimes like teasing animals?
83. Would you like other people to be afraid of you?
87. Do people tell you a lot of lies?
90. Would you feel very sorry for an animal caught in a trap?

Table 3.5 Showing P scale items of the EPQ (Eysenck and Eysenck, 1975)

found to be almost independent of the hostility and empathy factors and loaded highly on a conformity factor. (The negative correlations between P and L (Eysenck and Eysenck, 1975) support this notion since L has been likened to a conformity measure (Eysenck and Eysenck 1976, p.168). Table 3.2 illustrates how P scores decrease with increases in L scores). Forbes concluded that there was little overlap between the PEN and EPQ versions of the P scale. This concern has been voiced by Block (1977b) Claridge and Birchall (1978) and Claridge (1981). The authors of the last two references maintain that PEN P had more face validity and was better at identifying "oddballs". However, in 1980, Forbes re-examined his data and discovered that P was more related to Orderliness (that is, a lack of it) than to Conformity. In a Principal Components analysis with orthogonal rotation of P scale scores with scores from the Comrey scales and the Personality Deviance Scales, he found that P loaded $-.59$ on an Orderliness factor and $-.38$ on a Conformity factor. He interprets Orderliness as being at the opposite dimensional pole from Impulsiveness and thus providing a confirmation of Eysenckian thinking in this matter (Eysenck and Eysenck, 1978).

As a result of these comparisons, it is important to bear in mind which version of the scale is used in each study. Many studies examining P in relation to psychiatric illness and other variables have used predecessors to the final version and some of them are reported here. An indication will be made in each case which version of the scale has been used, if known.

McPherson, Presley, Armstrong and Curtis (1974) found that P scores from the PEN did not show a relationship to severity of psychosis as traditionally diagnosed in terms of schizophrenia, paranoid, manic and depressive patients; but when it was related to groups in terms of Foulds (1965) hierarchy classes (delusions of Disintegration, Integrated

delusions and no delusions), then P increased with severity of psychosis in terms of the hierarchy. Incidentally, in this study no significant difference was found between the neurotics, normals and psychotics on the P scale and the authors suggest it may be because their psychotics tended towards chronicity. Bristow (1981a) correlated the EPQ scores of 97 day hospital patients with their DSSI responses (Foulds and Bedford 1978a). It is not clear how he calculated two of the DSSI measures he reports, the DSSI full scale and DSSI delusional, but both EPQ N and P correlated significantly ($P < .01$) with these measures. In addition P showed significant correlations ($P < .01$) with the Integrated Delusions and Delusions of Disintegration class of the DSSI, but showed negligible correlations with the Dysthymic states and Neurotic symptoms class.

McPherson et al have suggested that P may signify more in terms of within group differences rather than between group differences (i.e. what sort of psychosis an individual is likely to develop). In support of this, Griffith (1975) found, in a sample of 112 female psychiatric patients that non-paranoid schizophrenics had higher EPQ P scale scores than Paranoids and Psychotic depressives. This idea is further borne out by a study of Slade (1975) who found that P could discriminate psychotics with auditory hallucinations from those without.

In addition, Catts, Armstrong, Norcross and McConaghy (1980) replicated findings from a later study by Slade (1976). They studied a group of 24 schizophrenics who were divided into those with a history of hallucinations ($n=12$) and those without ($n=12$). They were tested with the EPQ and the Verbal Transformation Effect (VTE). The VTE is seen when subjects hear illusionary changes in speech (words or phrases) repeated over and over again. Whereas Catts et al found no significant differences between the groups on the EPQ or VTE, they did find significant correlations (after the effects of age and sex were partialled out)

between P and two VTE measures. With increases in P scores, there was an increase in the total number of different illusional words heard ($r=.44$, $p<0.25$) and an increase in the number of words, phonetically akin to the repeated word, heard ($r=.35$ $p<0.05$).

Whereas the evidence cited above suggests that P scores may indicate important differences between psychotic groups, P has also been shown to distinguish psychotics from non-psychotics. Griffith (1975) using the EPQ on a sample of 214 psychiatric patients found P could distinguish psychotics from normals and neurotics, but could not distinguish between normals and neurotics. He concluded that P is capable of making distinctions at the generic level as well as at the specific level. The discrepancy between his results and those of McPherson et al, in distinguishing at a generic level, may be due to P scale versions or to the possible chronicity of the patients in the study by McPherson et al.

P scores have been suggested to be an important factor in several studies concerning recovery in psychiatric patients. Griffith (1975) found that recovered psychotics showed reduced P scores at a 3 month retest whereas non-recovered psychotics showed no such change. High P scorers were found not to benefit from therapy.

This finding has been supported by Rahman and Eysenck (1978) who found that, in a sample of 291 neurotic patients, high P scorers (i.e. those scoring 5 or more on the P scale of the EPQ) took longer to respond to psychotherapy, were rated (in the case of females) as having poorer prognoses and were thought to have benefited less from treatment at discharge.

Evans (1981) found that high P scorers ($n=14$) developed more bodily symptoms thought to be related to autonomic arousal after a stay in a psychotherapeutic ward than low P scorers ($n=11$). She concludes that treatment of a more behavioural nature may be more appropriate for high P

scorers. Failure to respond to treatment is also reported by Russell, Armstrong and Patel (1976) whose study of electric aversion therapy for 70 heavy smokers revealed that those who had failed to give up smoking had higher P scores ($P < .001$) than those who had managed to give up. McManus and Weeks (1982) also found that high P scoring (EPQ) smokers had greater difficulty giving up. In a sample of 78 smokers, not only did P scores correlate with the number of cigarettes smoked per day ($r = .3$, $P < .01$) and the amount of nicotine imbibed ($r = .3$, $P < .01$) but were also found to have made more unsuccessful attempts at giving up. Wells (1970) found in a study of 276 patients in a V.D. clinic that males with high (PEN) N and P ($P < .001$) scores were more likely to default and leave treatment although in women the likelihood was found with high E scores only ($P < .001$).

Williams, Francis and Durham (personal communication to the Eysencks, 1976) found that irregular transcendental meditators had higher P scale scores than regular ones. Eysenck and Eysenck (1976) have suggested a failure to persevere may be an important variable. Failure to respond to treatment, whether for psychosis, smoking or V.D. may be seen in this light and ties in with the notion that psychopathic personalities lack foresight and the ability to delay gratification.

Despite the findings of Forbes (1976) that EPQ P did not seem to be related to hostility, two more recent studies have found such a relationship. Pearson (1977) investigated the relationship between the EPQ scales and the Personality Deviance Scales (PDS) subscales (Bedford and Foulds 1978b, see Chapter Two). The sample consisted of 53 student nurses and 89 non-psychotic psychiatric outpatients. P scale scores did not correlate with any of the PDS measures in the student nurse sample but correlated with Hostile thoughts and Lack of Self Confidence in male patients ($P < .01$) and with Hostile thoughts and Denigration of others in female patients ($P < .05$). More recently, Bristow (1981b) has studied the

EPQ and PDS correlations in a sample of 97 psychiatric patients. P correlated with Extrapunitivity ($P < .001$) and the MPD score of the PDS ($P < .05$). Somewhat confusing for both studies is the fact that N correlated significantly with most of the PDS scales. The discrepancy with the results of Forbes (1976) may be ascribed to his use of a normal sample only.

The link between P and hostility is evident in the Eysencks' description of the high P scorer. It is hardly surprising then that high P scorers, have been shown to have more adjustment difficulties than low P scorers. Evans (1981) found that in a psychiatric sample, the correlations between P scores (EPQ) and stress (on the Holmes Rahe Life Events scale, 1967) was .46 for women ($n=21$, $P < .02$) and .54 for men ($n=12$, $P < .05$). She isolated twelve Life Events typical of the high P scorer and four of these involved difficulties clearly of an interpersonal nature (divorce, sexual problems, trouble with the in-laws and the boss). A fifth Life Event involved legal violations. Lloyd and Cawley (1983) found in their study of 100 male myocardial infarct patients that those who had psychiatric morbidity predating the infarct also had higher P scores, were more likely to be unmarried, unemployed and to have adjustment problems, than those who did not have psychiatric morbidity prior to infarct.

High P scores have also been found to be associated with self-mutilation. Williams and Hassanyeh (1983) found in a series of 200 consecutive admissions to a psychiatric unit, that high P and N, and low E scores were significantly associated with self mutilation ($P < .005$) but not with self-poisoning. They suggest that self-mutilators are more disturbed than over-dosers and that Impulsivity may be an important factor in self-mutilators compared to overdosers. Certainly, the findings of Eysenck and Eysenck (1978) would support this. In a study of the relationship between Impulsiveness, Venturesomeness and Empathy in a sample of over 1000 normal

subjects, they found significant correlations between P (EPQ) and Impulsiveness ($r=.52$) and Venturesomeness ($r=.33$) but not with Empathy ($r=-.05$). Extraversion was also associated with Impulsiveness ($r=.31$) and Venturesomeness ($r=.46$) whereas Neuroticism correlated with Impulsiveness ($r=.38$) and Empathy ($r=.33$)

Moving from the pathological to more normal behaviour, there is evidence that normal high P scorers are more aggressive/assertive than low P scorers. Furnham (1982) found, in a sample of 130 female students, a tendency for high P scorers to prefer stressful situations that demanded assertion (e.g. dealing with a disobedient child, returning defective goods) rather than ones demanding tact and diplomacy. Rim (1982) asked 815 normal subjects to fill in the EPQ and added one extra question "Did you mind filling in this questionnaire?" Those who responded "Yes" (11-14%) had significantly higher N and P scores ($P<.05$), lower E scores ($P<.05$), and in women higher L scores ($P<.05$) and in men, lower L scores ($P<.05$). Although there were personality differences on all four scales, it may be argued that the higher P scores of those who admitted to minding reflect the sort of directness required in assertion/aggression, whereas the higher N and lower E scores may be seen as an explanation of why such people minded. That is to say that the anxious introvert is more likely to mind filling in the EPQ than the non-anxious extravert. The Lie scores in the study are more difficult to interpret.

Further information about the high P scorer may be seen in situation preferences. Eysenck and Zuckerman (1978) found in a sample of over 1000 students that there was a significant relation between P (EPQ) and sensation seeking ($r=.30$ to $.50$, $P<.001$). In addition, E also correlated positively with sensation seeking ($r=.23$ to $.34$ $P<.001$). Furnham (1982) found in a sample of 130 female students that high P scorers (EPQ) (i.e. those scoring 7 or more) showed a preference when compared to low P

scorers (P score of 0) for what Furnham calls, media activities such as reading magazines, gardening, driving, watching T.V. and attending lectures. This preference was significant ($P < .05$). In addition, the high P scorers were less likely to choose formal/intricate and stable situations ($P < .05$) and were less likely to engage in activities involving aesthetics and feelings ($P < .09$). Eysenck and Zuckerman (1978) suggest that sensation seeking may be viewed as a trait subsumed under the superfactor of Psychoticism and that both relate to an "optimal level of stimulation" construct (Eysenck 1967).

Finally, Woody and Claridge (1977) have found that P scores correlate with creativity. In a sample of 100 students they found that the P scores (of the immediate predecessor of the EPQ P scale) showed positive and significant ($P < .001$) correlations with both the number and uniqueness scores of five creativity measures (Instances, Pattern Meanings, Uses, Similarities and Line Meanings). The E, N and L scales showed fewer and weaker correlations. Of these, the L scale showed the most significant ($P < .05$) correlations (seven in all) and these were all negative. In addition, there was a small negative correlation between P and accuracy ($r = -.23$, $p < .01$) suggesting that high P scorers may be poor checkers. High P scores have also been linked to cognitive factors in psychotic patients. Griffith, Frith and Eysenck (1980) performed a factor analysis with Varimax rotation on EPQ scores, sorting test scores and symptom ratings of 40 psychiatric patients (22 of whom were psychotic). The first factor loadings suggested that poor sorting ability (especially where faces are concerned) accompanies high P scores and schizophrenic symptoms. The second factor suggested that high L, and low N and P, scores accompany slowness in sorting. One explanation for the sorting difficulties may reflect a defective "filter" which prevents selective attention (Payne and

Hewlitt, 1960). This may be seen as the other side of the coin of the overinclusive or allusive thinking thought to characterize creative normals (Woody and Claridge 1977, Eysenck and Eysenck 1976, p.33).

Critique of the P Scale

The P scale, partly by virtue of the prominence of its authors in contemporary psychology, has received much criticism. Some criticisms relate to its psychometric properties or reliability (and some of these will be mentioned briefly), but more serious criticisms relate to its validity as a measure of psychoticism.

Firstly, the P scale has been criticised on the basis of its psychometric properties. Bishop (1977) noted that the distribution of P scores in the general population was not normal. Block (1977b), Claridge and Chappa (1973) and Claridge and Birchall (1978) all note the J-shaped distribution of the scale scores with an emphasis on low modal scores. Block (1977b) goes on to query the suitability of using Pearson Product Moment correlations on such data and suggests that the internal consistency reliabilities may be inflated due to the preponderance of zero scores. However, Eysenck and Eysenck (1977) accept this criticism but claim that their main concern is with validity rather than reliability. They write that criticisms of the P scale should be directed towards its validity.

Moving on to the issue of validity, the P scale has been criticised by several authors. Davis (1974), Bishop (1977), Block (1977a, b, 1978a and Stricker (1978) because abnormal groups other than psychotics obtain the highest scores on the P scale. In addition, some normal groups obtain P scores comparable with those of psychotics. For example Davis (1974) tested whether P could discriminate between psychotics and non-psychotics. His study is somewhat problematic now due to the fact that the version of

the P scale used is now outdated. He compared eighteen psychotics and eighteen non-psychotics all of whom were in-patients at Rampton Special Hospital. The fact that the scores of these two groups were not significantly different is viewed as invalidating the scale as a measure of psychoticism. Eysenck and Eysenck (1976 p.104) argue that such results are probably due to the low IQ of the sample (Davis's two groups were drawn from a larger sample with a mean IQ of 80). Perhaps a more potent point that can be made to explain Davis's results is that Davis's non-psychotic group (and indeed his psychotic group) no doubt contained criminals, who are also noted for their high P scores.

The failure of psychotics to be the highest scorers on the final version of the P scale in the EPQ presents more difficulty for the Eysencks. Table 3.1 of this chapter shows that in both the male and female samples prisoners, alcoholics, personality disorder and drug addicts all have higher P scores than the psychotics. This has led several authors Bishop (1977), Block (1977 a, b, 1978a), Stricker (1978) to express dissatisfaction with the scale as a measure of psychoticism. Block (1977a) goes on to note that the difference between the scores of male psychotics and male controls is small in absolute terms. He calculated from the skewed distribution of P score (see Eysenck and Eysenck, 1976, p.71) that 1 in 4 control males has a P scale score in excess of the mean P score of diagnosed psychotics. From this, he surmises that for every psychotic earning a P score greater than or equal to the mean for psychotics, there are 50 male normal controls earning such scores. The same argument applies to the female sample.

Bishop (1977) presents data derived from the EPQ manual and reproduced below.

| Scale | Psychotics (n=104) | | Art Students (n=27) | | Machinists (n=11) | |
|-------|--------------------|------|---------------------|------|-------------------|------|
| | X | SD | X | SD | X | SD |
| P | 5.66 | 4.02 | 7.67 | 4.06 | 1.86 | 2.26 |
| E | 10.67 | 5.22 | 12.26 | 5.34 | 10.54 | 5.43 |
| N | 13.39 | 6.06 | 12.69 | 3.88 | 11.82 | 4.66 |

Table 3.6 Showing means and SDs of various groups on P, E and N (all the samples are male).

She argues that presented with an individual with a P score of 6, an E score of 11 and an N score 13, we could not be sure whether the individual was a psychotic or a mentally stable art student. She argues that Eysenck needs to postulate additional factors to account for such differences.

Eysenck (1977) responded that Bishop had failed to take account of L scale scores in trying to discriminate between the groups. To be fair to Bishop, Eysenck and Eysenck (1975) did not present the L scale scores for the students and machinists in their manual and so Bishop could not have considered them. Eysenck and Eysenck (1976, p.102) argue that elevated L scale scores lower P scale scores and they proceed to divide their sample into high (< 7) and low (≥ 7) L scale scorers to demonstrate this point (see Table 3.2 of this chapter). Inspection of the table reveals that in general, across the various psychiatric groups (psychotics, neurotics and endogenous depressives) submitted to this treatment, P scores are reduced when L scores are 7 or more. Thus, P scores are reduced when L scores are 7 or more in other psychiatric groups as well as in psychotics. Unfortunately, the Eysencks do not submit the normal control data to this treatment and so it is difficult to see whether such an effect occurs with this sample too. However, inspection of the means and SDs shows that normal control samples certainly contain individuals scoring 7 or more on

the L scale. Gourlay (1980) corrected the P scores of these same psychiatric samples for L scale scores on P, E and N and noted that it made little difference to the results. Claridge (1981) too has argued that the Eysenckian appeal to L scale scores is unconvincing.

While it may be the case that raised L scale scores lower P scale scores, the explanation for this is slow to follow. Eysenck and Eysenck abandoned the notion that the Lie scale measures dissimulation alone (1976, ch.11) and suggest that it may measure conformity (p.169) and defensiveness (p.188) amongst other things. Barrett and Kline (1980, 1982) have relabelled the scale as Social Desirability. Stricker (1978) has suggested that it may measure social naivete although the increase of L scores (in adults) with age would be difficult to reconcile with this.

Another serious criticism levelled at the P scale is the doubt that it is a measure of the predisposition (Eysenck and Eysenck, 1975, p.5) to develop psychosis. The Eysencks maintain that if the trait of psychoticism is present in marked degree then it predisposes a person to psychosis. This claim becomes rather problematic when the findings of Verma and Eysenck (1973) and Griffith (1975) are considered. Verma & Eysenck (1973) noted that changes (i.e. reductions) in P (PEN) scores occurred between test and retest six to eight weeks later. These reductions were statistically significant at $P < .01$ for men and $P < .001$ for women. Presumably, these changes reflected psychiatric improvement. Griffith (1975) tested and retested 98 psychiatric patients after one to three months during which psychiatric treatment had occurred. Improved psychotics (n=22) showed a reduction in P scores (from 7.32 to 4.45) while unimproved psychotics (n=18) did not (from 6.62 to 7.78). Thus P score reductions were seen to reflect psychiatric improvement. It may be argued that P scores are susceptible to influence by psychopathological states. Such conclusions have been reached by Hallam (1976) with E and N, by

Coppen and Metcalfe (1976), by Crookes and Hutt (1963), Knowles and Kreitman (1976), Bianchi and Fergusson (1977) and Liebowitz, Stallone, Dunner and Fieve (1979) with N. Kendell and Discipio (1968) showed however that if an extra sentence was added to the test instruction emphasizing that responses should be based on how the individual normally feels, then responses are not so contaminated.

Clearly what is needed, according to Bishop (1977), are prospective studies of high P scorers. Eysenck and Eysenck (1977) argue that such studies have been carried out in that high P scorers tend to respond less well to psychotherapy than low P scorers. This is a weak argument and it is hardly a satisfactory reply to Bishop's demand. What is needed is a demonstration that high P scorers are more prone to develop psychosis than low P scorers. Block (1978a) concludes that "The P scale has neither sufficient reliability nor sufficient construct validity to warrants its implicative title".

Chapter Four Aims and Methods

Section I - Aims

Section II - Method

Section I: Aims

The general aim of this thesis is to examine specific predictions arising out of the development of two recent and potentially useful clinical psychological tests. The major part of the analysis examines the relationship between these two tests. The two tests are the Delusion Symptoms States Inventory (DSSI: Bedford and Foulds, 1978a) and the Eysenck Personality Questionnaire (EPQ: Eysenck and Eysenck 1975). In addition, the Hysteroid Obsessoid Questionnaire (HOQ: Caine and Hope, 1967) was included, in order to examine its relationship to the DSSI and to the E scale of the EPQ, because previous findings on this topic have been conflicting.

The DSSI Hierarchy and Diagnostic Categories

In the first place, the relationship between the hierarchy of Foulds and traditionally diagnosed categories is investigated. As noted in Chapter Two, Foulds (1976) reported on the allocation of DSSI items, by psychiatrists and psychologists, to their corresponding DSSI sets (see Section Two of this chapter for a description of the sets). There was 80-88% agreement between the set to which the item was allocated and the set to which the item belonged. In addition, Foulds (1976) investigated the extent to which psychiatric patients' scores on the DSSI agreed with psychiatric ratings in terms of the presence/absence of signs, symptoms or states. He noted significant agreement except in the cases of Phobic, Compulsive and Ruminative symptoms. In addition, the diagnoses formed by the psychiatrists, excluding those diagnoses

beyond the scope of the DSSI such as Alcoholic and Anorexic, were compared with DSSI diagnoses. The agreement level varied according to psychiatric experience. Full agreement was 42% for senior psychiatrists and 9% for junior psychiatrists. Partial agreement (e.g. Ruminations vs. Compulsive Obsessional) was 22% for senior psychiatrists and 34% for junior psychiatrists. Disagreement was 36% for senior psychiatrists and 56% for junior psychiatrists.

This lack of agreement is disturbingly low and ranges from one half to one third of diagnoses. In particular, it is important to note that Foulds found that 15% of cases which were rated as not having delusions were given a psychotic diagnosis while 26% of cases rated as having delusions were given a neurotic diagnoses. It seems to have been the case that more than one type of classificatory system was being used by the psychiatrists.

In this study, traditional diagnostic categories are compared with DSSI class membership scores. To eliminate the difficulties of different psychiatrists using different classification systems and of the tendency to label Obsessionals, Hysterics and Phobics as Anxiety/Depressive Neurotic, patients in the study were diagnosed by the author using Spitzer, Endicott & Robins' Research Diagnostic criteria (see Section Two of this chapter for details of the procedure) with the aim of introducing an element of consistency into the diagnostic labels.

According to Foulds (1976 p.18, Bedford & Foulds 1978a), one can expect certain psychiatric groups to correspond to the classes of the hierarchical model. That is to say, it is hypothesized that individuals diagnosed as suffering from Neurotic Anxiety and/or Depression would be expected to be members of the Dysthymic States class of the hierarchy. Obsessionals, Phobics and Hysterics, on the

other hand, would be expected to be members of the Neurotic Symptoms class of the hierarchy. Paranoids, Manic Depressives and Endogenous Depressives would be expected to be members of the Integrated Delusions class and Schizophrenics would be expected to be members of the Delusions of Disintegration class. Table 4.1 illustrates the predicted correspondence between traditional diagnostic categories and the hierarchy.

| Class | Traditional Diagnostic Category |
|----------------------------------|--|
| 0 - Personal health | Non-psychiatric sample |
| 1 - Dysthymic states | Neurotic Anxiety Neurotic Depression |
| 2 - Neurotic symptoms | Conversion) Dissociative) Hysteria Phobias Compulsive) Ruminative) Obsessions |
| 3 - Integrated Delusions | Paranoid (non-schizophrenic) Manic Depression Endogenous Depression |
| 4 - Delusions of Distintegration | Schizophrenia |

Table 4.1 Showing predicted correspondence between traditional diagnostic category and hierarchical class membership.

This hypothesis will be tested using the chi squared statistic.

The DSSI Hierarchy

The most significant feature of Foulds' model of personal illness (1965, 1976) is its hierarchical nature: that is, the postulate that individuals not only score in the class to which they belong but also in all the classes below it.

Foulds (1976) tested the hierarchy hypothesis by looking at the patterns of scores produced by 480 psychiatric patients. An individual's response on the DSSI can be represented by a series of 4 scores: 0 or 1 for each of the four classes of the hierarchy. There are sixteen possible patterns that can occur but only five conform to the hierarchical model. The five patterns are summarized in table 4.2 below.

| Class Membership | Delusion of Disintegration | Integrated Delusions | Neurotic Symptoms | Dysthymic States |
|-----------------------------|----------------------------|----------------------|-------------------|------------------|
| Delusions of Disintegration | 1 | 1 | 1 | 1 |
| Integrated Delusions | 0 | 1 | 1 | 1 |
| Neurotic Symptoms | 0 | 0 | 1 | 1 |
| Dysthymic States | 0 | 0 | 0 | 1 |
| Not Personally Ill | 0 | 0 | 0 | 0 |

Table 4.2 Showing the five patterns conforming to the hierarchy

In all 93.3% of the sample showed scoring in concordance with the hierarchy. In addition, 243 normal subjects were also tested and a similar percentage conformed to the hierarchy (exact figures not given).

Other studies cited in Chapter Two support these percentages. However, while there is much evidence indicating that the very large majority of patients conform to the hierarchy, there appears to have been little detailed investigation of those who do not conform. In practice, it is necessary to obtain a score of at least 4 (which can only be done by endorsing at least two items per set) to gain class membership. However, this is really a precaution against false positives. In theory it is only necessary to endorse one item per set

to be eligible for class membership. In this study therefore an investigation is carried out of those members who do not conform to the hierarchy to see if they do conform to the hierarchy when the criterion for class membership is reduced. In other words, the aim is to see if those who do not conform to the hierarchy in a practical sense conform to the hierarchy in the theoretical sense. In addition, subgroups are examined to see if any are more problematic in this respect.

The DSSI Hierarchy and Personality

Foulds (1976) reported on the findings following an investigation of the relationship between the hierarchy and personality scores. The personality measure was the Personality Deviance Scales (PDS) which have subsequently been published (Bedford and Foulds, 1978b). The findings have already been noted in Chapter Two, and a less detailed résumé will be presented here. Foulds (1976) found that scores on two of the PDS scales (Extrapunitivity and Intropunitivity) increased with increases in hierarchical class membership. A Maladjustive Personality Deviance score (MPD) derived from the PDS scores revealed the highest frequency of MPDs occurring in the Disintegrated delusions class. The frequency of MPDs in the classes decreased as hierarchy level decreased. In addition, McPherson, Presly, Armstrong and Curtis (1974) reported that scores on the PEN version of the P scale increased with increases in Symptom Sign Inventory (Foulds & Hope 1968) class level. In the present study, the aim is to investigate the relationship of personality measures to hierarchy classes.

Verma and Eysenck (1973) found a high correlation between the P scale of the PEN and the Hostility Direction of Hostility Questionnaire (HDHQ: Caine, Foulds and Hope, 1970). The HDHQ is a forerunner of the PDS. The correlations between P and seven HDHQ scales were all

significant. Especially high were the correlations between P and Hostility, Urge to Act Out Hostility, Criticism of Others and Projected Delusions of Hostility. It is highly likely that the P scale may relate to the classes of the hierarchy in a similar manner to that of the PDS scales (by the score increasing as hierarchy level rises) which is also how the forerunner of the P scale related to the SSI.

The hypothesis is that P scores increase as class level of the hierarchy increases from the Non-Personally Ill class to the Delusions of Disintegration class. It is also expected that N scores will increase from the Non-Personally Ill class to the Neurotic Symptoms class, but not necessarily thereafter.

E, L and HOQ are expected not to change necessarily with increases in class membership. These classes are broader than the subgroups (Hysterics and Obsessionals) that have in the past been associated with E in particular. For example, Class II of the DSSI contains both Hysterics and Obsessionals, which, according to Eysenckian theory, should be positively and negatively related to E respectively. Bearing this in mind, E, L and HOQ are also examined in terms of DSSI class membership. More specific aims concerning these variables follow.

This hypothesis will be tested using one- and two-way analyses of variance.

E, HOQ and Neurotic Groups

While Foulds (1965, 1976) has argued for a logical distinction to be maintained between personality measures and measures of psychopathology, Eysenck (1958, 1970) has collapsed them into a conceptual continuum and has been content to use psychiatric groups as criterion groups in the development of his personality measures. In particular, this hypothesis deals with the E scale and the HOQ, and

their relationship to various neurotic groups. Eysenck (1970) has argued that Hysterics and Psychopaths are Extraverted neurotics, while Dysthymics (by which he means Anxious, Obsessional, Phobic and Depressed Neurotics (cp Eysenck and Claridge, 1962)) are introverted. Foulds (1961) has argued that Eysenck is guilty of logical errors when using such groups as criterion groups in personality questionnaire development. He argues that while most Hysterics may be Extraverts, and most Dysthymics may be introverts, the converse does not hold. That is to say that most extraverts are not Hysterics, and most introverts are not Dysthymic. He argues that Eysenck has equated Hysteria with extraversion, and Dysthymia with introversion, instead of noting the existence of a correlation. Foulds goes on to argue that there may be important differences between Hysterics and Dysthymics other than that of scores on an extraversion/introversion scale. For this reason, Foulds argues that it is not possible to use Hysterics and Dysthymics as criterion groups for such tests. Foulds (1961) has supported his argument with the findings of Foulds and Caine (1958) who found that over half the women diagnosed as Dysthymic had a Hysteroid personality where personality was rated by raters. Eysenck and Claridge (1962) have noted that this discrepancy may arise due to the possibility that the Hysterics of Foulds and Caine (1958) were constitutional xtraverts (i.e. in terms of excitation inhibition balance) but not behavioural extraverts. In their own study, Eysenck and Claridge showed that Hysterics were more extraverted than Dysthymics and Normals on objective tests, but were only more extraverted than Dysthymics on the E scale. This demonstrates that the constitutional and behavioural measures of extraversion do not correspond precisely. In 1969, Eysenck and Eysenck conceded the point that hysterical personalities and

psychopaths were more appropriate criterion groups than Hysterical neurotics. However, Hysteric neurotics were still regarded as more extraverted than Dysthymic neurotics.

The findings of Foulds and Caine with regard to Hysteroid personality conflict with the Eysenckian findings with extraversion. Of course the difference between personality rated as Hysteroid by raters and measured on the E scale must be considered. In 1967, the Hysteroid Obsessoid Questionnaire (HOQ) was published by Caine and Hope and they have argued that the HOQ and the E scale of the MPI measure much the same thing since the two tests correlate highly. In a psychiatric sample of Neurotics the correlation between HOQ and E (MPI version) was .70 (Caine and Hope 1964). In a non-psychiatric sample, r was .81 (Caine 1965) and the HOQ and E (EPI version) correlation was .69 in a Neurotic sample (Caine and Hope 1967).

Further to this, the most recent version of the E scale (EPQ) is different from its predecessor in the EPI, in that the former is made up of sociability items while the latter contained a sociability and an impulsivity component (Rocklin & Revelle, 1981). These authors argue that Eysenck & Eysenck have produced a purer E scale in the EPQ but that it cannot be assumed to be associated with the experimental findings associated with the EPI E scale. They base this view on the argument that arousal theory is related more to the Impulsivity component of EPI E than to the sociability component. Of course, as noted before there is an impulsivity component in the P scale of the EPQ.

Taking the Eysenckian stance, it is possible to hypothesize that Hysterics will have higher E and HOQ scores than other neurotic groups.

This will be tested by one- and two-way analyses of variance. In addition, the correlations between E and HOQ, and between these scales and the Dysthymic and Neurotic set scores of the DSSI will be examined.

Personality, Psychopathology and Traditional Diagnosis

A further aim of the present investigation is to discover the most powerful combination of variables for discriminating the Neurotic, Psychotic and Non-Psychiatric groups from each other. S. Eysenck (1956) used Discriminant Analysis in a demonstration of the power of personality variables in discriminating psychiatric groups and found, in this way, a separation of Neurotics from Psychotics. In this case, both personality and psychopathological variables are submitted for a Discriminant Analysis. Although it may be thought that the traditional category system is more likely to favour symptom-based measures, the Eysencks have argued (1976, pp.118-119) that symptoms and personality are intelligibly related and that symptom based descriptions can be translated into dimensional terms. Unless such a relationship existed, they write, it would be unjustifiable of them to use the terms "Neurotic" and "Psychotic" as descriptions of personality (as opposed to psychopathology).

The hypothesis in this study is that two discriminant functions will emerge: one will have its main contributions from the P scale scores of the EPQ and the psychotic sets of the DSSI, and the other will have its main contributions from the N scale scores of the EPQ and the neurotic sets of the DSSI.

Psychopathology and Personality

Eysenck and Eysenck (1976, p.38) have argued that personality traits determine, to a large extent, the psychiatric symptomatology an individual may manifest. Foulds, on the other hand, has argued that

there is no necessary relationship between traits and psychiatric pathology and that symptoms, signs and states are best used as diagnostic indicators. Regardless of the debate about the relationship between personality and psychopathology, it may be expected that knowledge of personality scores on a certain personality test will not tell us anything about whether the scorer is having a breakdown or not.

In the present study, the relationship between personality variables and psycho-pathological variables is examined, through Factor Analysis. The aim is to obtain a purer picture of this relationship by disregarding the demarcation of the sample into the diagnostic groups.

It is predicted that four main factors will emerge, each having significant loadings from one of the four sets of the EPQ. More specifically, the P factor is expected to have significant loadings from the psychotic sets of the DSSI (dP, dG, dC and dD). The N factor is expected to include significant loadings from the neurotic and dysthymic sets of the DSSI (CVs, Ds, Rs, CPs, Ps, sA and sD). The E factor is expected to have significant positive loadings from the Hysterical sets (CVs and Ds) and from the Mania sets (sE and dG). In addition, the HOQ is expected to load on this factor since it has been shown to correlate highly with forerunners of the EPQ E scale (Foulds 1965, Caine and Hope 1964). While the fourth factor is expected to contain a significant loading from the L scale, no further specific predictions are made about it.

It is also expected that the P factor will not only have significant loadings from the psychotic sets of the DSSI but also have significant loadings from the Neurotic and Dysthymic sets since, according to the hierarchical model, positive endorsement of the psychotic sets should be accompanied by positive endorsement of the sets beneath it.

Psychosis and P scale scores

The final part of the analysis is an examination of why Psychotics score more on the P scale than non-Psychotics. Foulds (1976) discovered that there was an increase in Extrapunitivity and Intropunitivity with increases in DSSI class level. In addition, Verma & Eysenck (1973) found that P (PEN version) correlated significantly with seven scales of the Hostility Direction of Hostility Questionnaire (HDHQ, Foulds, Caine and Hope, 1970). In particular, there were high correlations with Hostility, Urge to Act Out Hostility, Criticism of Others and Projected Delusions of Hostility. It is hypothesized that amongst other items, Psychotics are more likely to endorse the items with a hostility projected/hostility flavour in the P direction. Items such as the following are expected to be more frequently endorsed by Psychotics:

V26 Do you enjoy hurting people you love?

V30 Do you have enemies who wish to harm you?

V65 Are there several people who keep trying to avoid you?

V83 Would you like other people to be afraid of you?

V87 Do people tell you a lot of lies?

A factor analysis will be performed on the P scale items and the extracted factors interpreted. It is hypothesized that one of the factors will bear some resemblance to paranoid ideas. Items on the factors will then be examined for frequency of endorsement by the different groups in the sample using the chi squared statistic to test for significance of association. P scale scores may at this stage be adjusted if it seems that Psychotics statistically significantly more frequently endorse items that seem to form a cohesive group.

Subsequent analyses of variance will be computed on such unadjusted and adjusted P scale scores to see if endorsing a particular set of P scale items explains why Psychotics score more on P.

Summary of Aims

The general aim of the thesis is to investigate the relationships between traditionally based psychiatric categories, Foulds' hierarchical model, and the Eysenck dimensions.

1. The association between the DSSI classes and traditional diagnostic categories is examined. The hypothesis is that Non-Psychiatric Controls will fall into class O-Personal Health; Anxiety Neurotics and Neurotic Depressives will fall into Class I - Dysthymic states; Phobics, Obsessionals and Hysterics will fall into Class II - Neurotic symptoms; Psychotic depressives, Manic depressives and non-schizophrenics Paranoids will fall into Class III - Integrated Delusions; and Schizophrenics will fall into Class IV - Delusions of Disintegration.
2. A study is made of those who do not conform to the hierarchy, bearing in mind the distinction between conforming to the hierarchy in a practical sense and in a conceptual sense.
3. Personality scores are examined in relation to DSSI classes, with the hypothesis that P scores will increase with increases in DSSI class level and that N scores will increase up to the Neurotic symptoms class but not necessarily thereafter. E, L and HOQ scores are predicted not to differ between DSSI classes.
4. It is hypothesized that Hysterics will have high E and HOQ scores in comparison to Dysthymics, according to Eysenck's stance.

5. An investigation will be conducted, to discover the most powerful combination of variables in discriminating the a priori groups of Non-Psychiatric control, Neurotics and Psychotics. It is hypothesized that the DSSI set scores and personality scale scores will contribute to two functions of Neuroticism and Psychoticism.
6. Discarding the constraints of the traditionally based categories, the relationship between pathological measures and personality variables is examined through Factor Analysis. It is hypothesized that four factors will emerge each containing significant loadings from one of the EPQ scales, and accompanied in the case of P by significant same sign loadings from the psychotic DSSI sets, in the case of N by significant same sign-loadings from the Neurotic DSSI sets, in the case of E by significant same sign-loadings from the Hysterical and Manic DSSI sets.
7. An Item analysis is to be conducted to discover why Psychotics score more on the P scale. It is hypothesized that they endorse items relating to hostility/projected hostility in the P direction more frequently than do non-psychotics.

Section II: Method

The sample in this study consisted of 208 psychiatric patients (110 Neurotics and 98 Psychotics) and 52 unmatched non-psychiatric Controls. Members of the psychiatric sample were selected on the basis of traditional psychiatric categories thought to correspond to the DSSI sets. The Control sample was a convenience sample consisting of non-academic university staff, psychiatric nursing staff and members of a local social club. Members of the sample were all volunteers. They were asked to fill in the DSSI, EPQ and HOQ. Forty three percent of the original sample were retested at a later date.

a) Subjects

i) Psychiatric sample

The psychiatric sample in this study was derived from the psychiatric North Wales Hospital and the West Cheshire Psychiatric Hospital.

The sample consisted of In-patients from both hospitals, and outpatients from the Gwynedd catchment area of the North Wales Hospital.

To be considered for the sample, patients had to satisfy several conditions. They had to be between 17 and 60 years of age, free of organicity, mental retardation and addictions. Many of the Welsh sample spoke Welsh as a first language and English as the second. Such subjects were only included in the study if they were considered by the ward staff to have an adequate command of English. From this sample, individuals who could clearly be allocated to active phases of the following groups were invited to participate:

Schizophrenic
Manic Depressive
Psychotic Depressive
Paranoid (non-schizophrenic)
Obsessional Neurotic
Phobic
Hysterical Neurotic
Neurotic Depressive
Neurotic Anxiety

Five patients (3 women and 2 men) refused to participate.

Spitzer, Endicott and Robins' Research Diagnostic Criteria (1977) was used as a guideline for allocation to all but the Hysterical and Paranoid groups. The use of the Research Diagnostic Criteria (RDC), a forerunner of DSMIII (1980) which was published after this study was conceived, was deemed necessary for two main reasons. As noted in Chapter One, it has frequently been argued that psychiatric diagnosis is unreliable and that there is little agreement between psychiatrists, especially if they espouse differing classificatory systems. Although it has been suggested that the levels of disagreement are exaggerated, it was nevertheless felt necessary to exert some form of control over the allocation of diagnoses in order to obtain consistency. There is also the additional problem mentioned previously that psychiatrists tend to label individuals suffering from phobic, hysterical and obsessional symptoms as Neurotic Depressive/Anxiety Neurotic (Foulds and Bedford, 1975). In any case, it was vital that the diagnoses should be given on the basis of present state, and psychiatric case notes often do not include up to the minute diagnoses.

In no instance was a patient included in the sample if there was a difference of opinion between the author and the psychiatric staff as to whether the patient was neurotic or psychotic. Current psychopathology was assessed by consultation of psychiatric and ward notes, and by discussions with the ward staff or psychiatrist. Patients were then allocated to the appropriate RDC category.

Spitzer et al (1977) do not provide adequate criteria for non-schizophrenic Paranoia, nor for Hysteria. Since some hypotheses in this study involved such groups, alternative criteria were used (see later).

The RDC were developed initially for use in a research project on depressives. However, the ubiquitous presence of depression in a wide variety of psychiatric disorders led the authors to develop criteria for non-affective disorders as well.

The RDC inventory was chosen in this study as the basis for establishing diagnostic groups since it provides precise and clearly operationalised criteria for the inclusion of subjects in such groups. The criteria used are a mixture of signs, symptoms, duration of illness and severity. The items were chosen on the basis of empirical research findings and clinical experience. The criteria were revised continually until reliability could no longer be increased without losing validity. Some clinical features such as blunted affect have been omitted due to the difficulty involved in detection and differentiation from other symptoms and signs.

Although the RDC involves twenty-four categories of psychiatric disorder, only eleven of them were used in this study. These were: Schizophrenia, Schizoaffective disorder Manic type, Schizoaffective disorder Depressed type, Manic disorder, Major Depressive disorder, Minor Depressive disorder, General Anxiety disorder, Obsessive Compulsive disorder, Phobic disorder, Panic disorder and Generalized

Anxiety disorder. Many of these categories have specified subtypes intended for use in detailed research into specific groups. These subgroups were not employed in this study. Other disorders specified by Spitzer et al, but not employed here are beyond the scope of the DSSI.

Spitzer et al, (1977) chose not to use traditional terminology for their diagnostic categories. However, traditional terms are retained in this study so that comparisons may be made between commonly used categories and the alternative classifications under study (Foulds's hierarchical model and Eysenck's dimensional model).

The suggested correspondence between the RDC categories and traditional categories is indicated below.

| <u>Traditional</u> | <u>RDC</u> |
|----------------------|--|
| Schizophrenia | (Schizophrenia (Schizoaffective disorder, manic type (Schizoaffective disorder, depressed (type |
| Manic depression | Manic disorder |
| Psychotic depression | Major depressive disorder |
| Obsessional neurosis | Obsessive compulsive disorder |
| Phobia | Phobic disorder |
| Neurotic depression | Minor depressive disorder |
| Neurotic anxiety | (Generalized anxiety disorder (Panic Disorder |

Although Spitzer et al treat schizoaffective disorders as separate from schizophrenia, they are treated as one group in this study and this is in line with the thinking behind DSMII, and ICD8.

Spitzer, Endicott and Robins (1978) report acceptably high levels of reliability for the RDC in three separate studies. In two studies, assessments were made on the basis of joint interviews and subsequent independent rating. Kappa coefficients for reliability on the groups included in this study ranged from .75 to .97. In a third study using a two day retest period, reliabilities ranged from .65 to .90 for the groups concerned in the present study. However, reliability figures are not given for Phobic disorder or Generalized Anxiety Disorder.

As noted before, Spitzer et al do not provide adequate criteria for Hysteria. They include a syndrome which they call Briquet's disorder but this can not be regarded as representative of hysteria as it is traditionally understood in Britain. In addition, Spitzer et al's category which covers non-schizophrenic paranoia also includes other disorders, and no criteria are laid down for differentiating them. For this reason, the descriptions used by DSMII (American Psychiatric Association, 1968) were used but these are not so precisely defined.

Table 4.3 below indicates the breakdown of the psychiatric sample into diagnostic groups by sex and patient status.

| | Male | | Female | | Total |
|----------------------|------------|------------|------------|------------|-------|
| | In-patient | Outpatient | In-patient | Outpatient | |
| Schizophrenic | 23 | 1 | 28 | 0 | 52 |
| Manic Depressive | 12 | 0 | 5 | 0 | 17 |
| Psychotic Depressive | 2 | 1 | 7 | 0 | 10 |
| Paranoid | 8 | 2 | 9 | 0 | 19 |
| Obsessional | 9 | 4 | 18 | 3 | 34 |
| Phobic | 0 | 2 | 9 | 3 | 14 |
| Hysteric | 2 | 2 | 11 | 0 | 15 |
| Neurotic Anxiety | 6 | 5 | 4 | 3 | 18 |
| Neurotic Depression | 6 | 6 | 15 | 2 | 29 |
| | 68 | 23 | 106 | 11 | 208 |

Table 4.3 Showing distribution of psychiatric sample into diagnostic groups

ii) The non-psychiatric sample

This sample was a convenience sample and must not be assumed to be representative of the non-psychiatric population.

Some of this sample were recruited from Llanfairfechan Social Club, Gwynedd. The rest of the sample were recruited from the hospitals or the University College of North Wales, Bangor. Participation was a voluntary matter. It was explained to volunteers that their questionnaire responses would form the control data to that of a psychiatric sample. They were asked not to participate if they were in receipt of psychiatric treatment at the time. An assurance of strict confidentiality was given. A breakdown of the non-psychiatric sample is given below.

| | Total | Male | Female |
|----------------------------------|-------|------|--------|
| Social Club | 18 | 13 | 5 |
| Non-academic university staff | 10 | 4 | 6 |
| Post-Graduate Students | 5 | 3 | 2 |
| Nurses | 19 | 7 | 12 |
| Total | 52 | 27 | 25 |

Table 4.4 Showing distribution of control sample according to source

b) Materials

Three questionnaires were used in the investigation.

i) The DSSI (Bedford & Foulds, 1978a).

This takes the form of an eighty-four item self report checklist. It contains twelve sets with seven items in each set. The sets are divided between the four classes (see below). Personality traits and attitudes are excluded from the inventory. The DSSI purports to represent symptomatological differentiators for the clinical syndromes it measures.

| DSSI DESCRIPTION | PUTATIVE CLINICAL SYNDROMES |
|----------------------------------|---------------------------------------|
| Class 1 - Dysthymic States (DS) | Neurotic States |
| state of Anxiety - sA | Anxiety State |
| state of Depression - sD | Neurotic Depression |
| state of Elation - sE | Hypomania |
| Class 2 - Neurotic Symptoms (NS) | Neurotic Symptoms |
| Conversion symptoms - CVs | Conversion Hysteria |
| Dissociative symptoms - Ds | Dissociative Hysteria |
| Phobic symptoms - Ps | Phobic Disorder |
| Compulsive symptoms - CPs | Obsessional Disorder (rituals) |
| Ruminative symptoms - Rs | Obsessional Disorder (ruminations) |

| | |
|--|-------------------------|
| Class 3 - Integrated Delusions (D) | Integrated Psychosis |
| delusions of Persecution - dP | Paranoid Disorder |
| delusions of Grandeur - dG | Mania |
| delusions of Contrition - dC | Psychotic Depression |
| Class 4 - Delusions of Disintegration (DD) | Disintegrated Psychosis |
| delusions of Disintegration (dD) | Schizophrenia |

(Bedford & Foulds, 1978 a,p9)

It is essentially a true/false inventory but with a difference. If any item is endorsed as "True" then the respondent is required to respond a second time indicating how much it upsets them, or the frequency with which it occurs, or the degree of certainty with which a delusion of hallucination is treated.

e.g. Recently I have been getting frequent headaches

False True

If true, this has upset me:-

Unbearably A lot A bit

Recently I have felt that I've been interfered with sexually or electrically

False True

If true, how sure are you?

Not very Fairly Certain

One point is awarded to the Number of Symptoms Score for every True response. A second score (ranging from 1-3) is awarded the Total Score depending on the severity of the second response. A score of 4 or more, from the seven items in the set, on the Total Score allows the

individual to score on one of the twelve sets and thus gain membership to one of the four classes. At least two symptoms in a set must be endorsed to be able to gain a Total Score of 4. Validation studies of the DSSI have already been described in Chapter Two as part of the description of the model.

Reliabilities are not reported. Test-retest reliabilities are obviously unsuitable in this case. Split-half reliabilities are also unsuitable since it is only necessary to endorse 2 out of 7 symptoms to be eligible for class membership.

ii) The HOQ (Caine and Hope, 1967).

This was devised as one of three complementary questionnaires produced by Foulds, Caine and Hope. The other two questionnaires were the Symptom Sign Inventory (Foulds & Hope, 1968), a predecessor of the DSSI, and the Hostility Direction of Hostility Questionnaire (Caine, Foulds & Hope, 1970). The HOQ was designed to measure two opposing personality traits that Janet (1901) had observed in neurotics. The scale consists of eleven sub-scales. See Table 4.5 below. The scale is 48 items long and is in a forced choice (True/False) format. Responses in the Hysteroid direction are scored as 1 and responses in the Obsessoid direction are scored as 0.

| Hysteroid | Obsessoid | Item Numbers |
|--|---|------------------|
| 1 Vivid day dreams | Inability to indulge in fanciful thinking | 1 12 25 36 44 |
| 2 Enjoys being the centre of attention | Prefers to stay in the background | 2 13 21 26 37 46 |
| 3 Excessive display of emotions | Scarcely any display of emotions | 3 14 22 27 38 |
| 4 Given to precipitate action | Slow and undecided owing to weighing of pros and cons | 4 15 23 27 39 47 |
| 5 Frequent mood changes | Constant in mood | 5 16 29 |
| 6 Under-conscientious | Over-conscientious | 6 17 24 30 40 |
| 7 Careless and inaccurate | Stickler for precision | 7 18 31 41 |
| 8 Over-dependent | Obstinately independent | 8 32 |
| 9 Desire to impress and gain attention | Self-effacing | 9 19 33 42 |
| 10 Makes superficial friendships | Makes deep, lasting friendships | 10 20 34 43 48 |
| 11 Shallow emotionally | Feels things deeply | 11 35 45 |

Table 4.5 Showing the eleven subscales of the HOQ (from the HOQ manual, Caine and Hope 1967 p.5).

Test-re-test correlations reported by Caine and Hope range from .75 to .85. Table 4.6 below summarizes the reported reliabilities.

| Sample | n | Interval | Coefficient |
|------------|--------|----------------------|-------------|
| Normal | n = 30 | 12 months | .85 |
| Neurotics | n = 62 | 6 weeks (therapy) | .77 |
| Neurotics | n = 48 | 12 months discharged | .74 |
| Psychotics | n = 24 | 6 weeks | .75 |

Table 4.6 Showing the test-retest reliabilities of the HOQ. No split half reliabilities are provided in the manual.

The validity of the HOQ was assessed as follows. One hundred neurotic patients were rated on the eleven subscales of the HOQ by raters trained in the use of rating scales. Ratings were made after a two-week observation period. Ratings on six of the eleven traits (enjoys being centre of attention, excessive display of emotion, given to precipitate action, frequent mood change, under-conscientious, shallow emotionally) showed significant positive correlations with the total rating. These six traits were used for the validation. The mean of these six trait ratings was used to indicate the individuals position on the Hysteroid-Obsessoid dimension. The HOQ was then validated on a sample of 93 neurotic patients. Each patient was rated on the six traits. The correlation between the average rating and total HOQ score was .68.

Caine and Hope (1964) also found ^{an} HOQ correlation of $r=.70$ with E scores on the MPI in neurotic patients. In a non-psychiatric sample, the correlation was .81. Using the E scale of the EPI, the correlation with HOQ in a neurotic sample was .68.

iii) The EPQ (Eysenck and Eysenck, 1975).

This is a ninety item forced choice response (Yes/No) test. The test is the result of over twenty years research. The first of its forerunners was published in the 1950's and since then, the test has been revised five times and published four times. The EPQ is the latest of these and includes a new scale called the Psychoticism scale.

The test comprises three scales measuring three dimensions of personality: Extraversion/Introversion, Psychoticism/Normality and Neuroticism/Stability. In addition, there is a Lie Scale. These are referred to as the E, P, N and L scales and they have 21, 25, 23 and 21 items respectively. The derivation of these scales has been described more fully in Chapter Three.

The EPQ manual presents standardized norms derived from a market research sample ($n < 4000$) covering adults of both sexes from age 16 to 69. In addition, the Eysencks provide norms for a wide variety of occupational groups. However, it is important to note the sample numbers upon which the norms are based since this can be as small as $n = 4$. In addition, norms are provided for psychiatrically diagnosed groups. A table of these scores is presented in Chapter Five. Test-retest reliabilities are acceptably high. On a sample of students and social workers, the range is $r = .78$ to $r = .89$. The split half reliabilities on a random sample of the population range from $r = .68$ to $r = .85$. For prisoners the split half reliability ranges from $r = .71$ to $r = .88$. Reliability figures are not given for psychiatric groups on the EPQ scales.

To a certain extent the scales intercorrelate in a non-psychiatric sample, the correlations, although often significant at the $P < .01$ level, are low and range from $-.04$ to $-.23$. In a psychiatric sample the intercorrelations are higher (see Table 4.7 below).

| | | n | PE | PN | PL | EN | EL | NL |
|---------|-------------|-----|------|-----|------|------|------|------|
| MALES | Psychotics | 104 | .19 | .11 | -.21 | -.12 | .11 | -.53 |
| | Neurotics | 216 | .03 | .16 | -.33 | -.27 | -.00 | -.16 |
| | Endogenous | | | | | | | |
| | Depressives | 58 | -.03 | .22 | -.14 | -.42 | -.15 | -.12 |
| | Prisoners | 934 | -.08 | .04 | -.28 | -.24 | -.07 | -.18 |
| FEMALES | Psychotics | 72 | -.00 | .06 | -.42 | -.40 | .04 | -.38 |
| | Neurotics | 332 | -.04 | .13 | -.29 | -.34 | -.05 | -.17 |
| | Endogenous | | | | | | | |
| | Depressives | 68 | .06 | .07 | -.04 | -.20 | .20 | -.13 |
| | Prisoners | 71 | -.09 | .14 | -.53 | .00 | .00 | -.32 |

Table 4.7 showing intercorrelations between P, E, N and L in abnormal groups (from Manual of the EPQ 1975).

Information relevant to the EPQ has already been discussed in Chapter Three.

Retest^{*}

A number of the sample were re-tested with the same tests at a later date. These data were used to investigate conformity to the DSSI hierarchical pattern where the performances of testees on both occasions were compared with respect to conformity. The time interval between test and retest varied from 1 - 12 months. It was thought that the time factor should not affect conformity/non-conformity to the hierarchy, although it would clearly be of import if the retest scores were examined in terms of psychiatric change.

A breakdown of the total retested psychiatric sample is given below

| Group | Male | Female | Total | Percentage of original group |
|-----------|------|--------|-------|------------------------------|
| Psychotic | 17 | 24 | 41 | 48 |
| Neurotic | 19 | 32 | 51 | 46 |
| Total | 36 | 56 | 92 | 44 |

Table 4.8 Showing re-tested Psychiatric sample breakdown

A breakdown of 'the total' retested non-psychiatric control sample is given below

| Group | Male | Female | Total | Percentage of original group |
|-------------------------------------|------|--------|-------|------------------------------|
| Social Club | 1 | 0 | 1 | 5 |
| Non-Academic University Staff | 3 | 6 | 9 | 90 |
| Postgraduates | 3 | 2 | 5 | 100 |
| Nurses | 4 | 2 | 6 | 50 |
| Total | 11 | 10 | 21 | 40 |

Table 4.9 Showing retested non-psychiatric sample breakdown

^{*} See Appendix C

Procedure

All subjects (with the exception of the Social Club sample) were approached by the author and invited to participate. In the case of the psychiatric sample, patients were only asked to participate if it was clear that they fulfilled the criteria already described. In the case of psychiatric patients, subjects were informed that participation was a strictly voluntary matter, and nothing to do with the treatment process. They were assured of the confidentiality of their responses. Those willing to participate were then invited to fill in the DSSI, EPQ and HOQ in the author's presence.

Social Club subjects were recruited by letter. Tests were supplied in sealed envelopes with an S.A.E. so that participants could fill the tests in at home rather than in the atmosphere of a social club. The tests were coded in order to ensure anonymity so that those who also filled in the tests a second time could note down their code number on the re-test forms.

Statistical Analysis

The individual test scores were recorded on the University College of North Wales DEC-10 computer. The data were analysed using programmes from the Statistical Package for the Social Sciences (SPSS) (Nie, Hull, Jenkins, Steinbrenner and Bent, 1975).

A variety of statistical techniques were used in order to test the hypotheses presented. T-tests and chi squared were employed as appropriate. One- and two- way analyses of variances were used in several instances. The Scheffe test of comparison was employed in instances where more than two groups were compared. This test is a conservative one, and is exact for unequal group sizes. The 5% significance level was used. It must be noted at this point that a

considerable number of analyses of variances and T-tests were executed, and that consequently the probability of a result being significant by chance is raised.

The other main statistical techniques employed are Discriminant Function Analysis and Factor Analysis.

It is important to point out at this stage that all the results reported as significant in Chapter Six are reported on the basis of statistical significance. As Meehl (1954) has pointed out, however, this cannot necessarily be equated with clinical significance.

Limitations of Study

There are several limitations in the present study that need to be clearly stated and borne in mind when interpreting the results of the statistical analysis.

Firstly, the psychiatric sample was allocated to groups by the author. A situation where several experienced diagnosticians, using specific diagnostic criteria (such as the Spitzer, Endicott and Robins (1977) criteria) with which they are familiar allocate subjects to groups on the basis of consensus of opinion, is clearly preferable to the situation here. Related to this problem is that of using two different diagnostic systems in order to have the full complement of groups required for the study. A situation in which some of the groups are selected on the basis of one classificatory system, and others selected on the basis of another system is clearly far from satisfactory. One of the alternative solutions was that of not having two of the psychiatric groups (Hysteric and Paranoid); and this was deemed worse, as it would have led to an incomplete analysis. The other solution would have been to use DSMII or ICD8 for the allocation of all subjects. These systems do not provide such clearcut criteria for the

allocation of candidates, and the chances of wrong diagnoses would have increased. In any case, the criteria of DSMII for Paranoid and Hysteric are quite compatible with the RDC system. Despite all these difficulties, it must be remembered that in fact, for the great majority of the analysis, psychiatric subjects were studied in the broad groups of Psychotic and Neurotic, and not in the subgroups. As stated earlier, no psychiatric patients were included when there was doubt as to whether they were Neurotic or Psychotic.

Secondly, many of the subgroups are unequal in size. For example, the n of the Psychiatric subgroups ranges from 10 to 52. However, the great majority of the analysis was performed on the major groups where n = 110 and 98 for the Neurotic and Psychotic groups respectively. Where appropriate, statistical methods that could cope with unequal group sizes were chosen.

Thirdly, the psychiatric sample in this study was selected from a more general psychiatric sample to reflect groups hypothesized as corresponding to the DSSI sets. They are not to be viewed as representing the psychiatric population as a whole. Additionally, the control sample cannot be regarded as representing the non-psychiatric sample as a whole. It must not be assumed, therefore, that the results here can be generalized beyond the present psychiatric and control samples.

Fourthly, there were five psychiatric subjects who were approached and who refused to participate. They were three women and two men. In addition, many social club members presumably preferred not to participate since only eighteen responded. It is highly possible that their questionnaire responses would have been quite different from the rest of the group to which they would have been allocated, and that their test profiles could have significantly altered the overall

results. Once again, any generalization must necessarily be limited. In addition, an attempt to collect data from a Hypomanic subgroup failed. This was for two reasons: in the first place only two Hypomanic individuals were encountered and, in the second place, the pathological state of one of them deteriorated rapidly into psychosis suggesting that the Hypomanic diagnosis had been premature. For these reasons, data from these two individuals was not included in the analysis.

Summary of Method

The sample in this study consisted of two major groups: a psychiatric sample (n = 110 Neurotics and 98 Psychotics) and a non-psychiatric control (n = 52).

The psychiatric sample consisted of nine subgroups. Seven of these were selected on the basis of Spitzer, Endicott and Robins Research Diagnostic Criteria (1977). These subgroups were Schizophrenics, Manic Depressives, Psychotic Depressives, Obsessionals, Phobics, Neurotic Depressives and Anxiety Neurotics. The other two groups were selected on the basis of the DSMII criteria for Paranoid and Hysterical. The control sample was a convenience sample selected from non-academic university staff, psychiatric nurses and members of a local social club. All subjects participated voluntarily and confidentiality was assured. Subjects were asked to fill in the DSSI, EPQ and HOQ. Forty three percent of the sample were re-tested.

A brief description of the statistical techniques employed was given. Attention was drawn to the possibility of statistically significant results arising by chance in the study. In addition, it was indicated that significant results reported in Chapter Five were reported on the basis of statistical, and not clinical, significance.

Some limitations of the study were highlighted, and include the following issues: the method of allocating psychiatric subgroups, the use of two separate diagnostic systems, unequal subgroup sizes, the generalizability of results on the basis of the current sample and the problem of subjects who refused to participate in the study.

Chapter Five

Results

| | | |
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| Section III | - | Investigation of Conformity to the Hierarchy |
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Section I: Description of Sample

The ten subgroups described in Chapter Four were allocated to three major groups for most of the analysis. These were:

Non Psychiatric control

Neurotic

Psychotic

The distribution of sex in these groups was examined because it would clearly need to be taken into account if one group had a significantly different sex distribution from another. The sex distribution of the groups is illustrated below in Table 5.1.

| Group | Male | Female | Total |
|-----------|------------|------------|------------|
| Control | 27 (51.9%) | 25 (48.1%) | 52 (100%) |
| Neurotic | 42 (38.2%) | 68 (61.8%) | 110 (100%) |
| Psychotic | 49 (50%) | 49 (50%) | 98 (100%) |
| Total | 118 | 142 | 260 |

Table 5.1 Showing the sex distribution within the major sample groups.

It can be seen that the sex distribution is clearly even in the Control and Psychotic groups. However, it is not immediately clear by glancing at the figures for the Neurotic group whether the distribution of sex is statistically significantly different.

Chi squared analysis of these data revealed no statistically significant difference in the frequency distribution of sex across the groups ($\chi^2 = 4.04143$ with 2 df, $p = 0.13$).

The age of the groups studied was also examined to check for possible statistical differences to be borne in mind when considering the results. Table 5.2 below shows the means and standard deviations of age for the groups.

| Group | Male | | Female | | Total | |
|-------------------------|-------|-------|--------|-------|-------|-------|
| | x | SD | x | SD | x | SD |
| Non-Psychiatric Control | 34.22 | 11.63 | 30.76 | 10.75 | 32.56 | 11.25 |
| Neurotic | 40.76 | 12.46 | 39.01 | 10.65 | 39.68 | 11.35 |
| Psychotic | 32.39 | 9.88 | 39.80 | 11.68 | 36.09 | 11.39 |
| Total | 35.79 | 11.78 | 37.83 | 11.45 | 36.90 | 11.62 |

Table 5.2 Showing means and S.D.s of age for the major sample groups.

It can be seen that the Neurotic group in general are older than the other two groups. There is also a tendency for the males in the Neurotic and Control groups to be older, but this pattern is reversed in the psychotic group.

A two-way analysis of variance was computed to examine for the effects of sex, group, and their interaction, on the age variable. Table 5.3 below illustrates this.

| Source of variation | dF | F | Sig. of F |
|-------------------------|----|------|-----------|
| Main effects | 3 | 5.44 | .001 |
| Group | 2 | 7.08 | .001 |
| Sex | 1 | 1.05 | .305 |
| Group x sex Interaction | 2 | 5.84 | .003 |

Table 5.3 Two way anova of age by group and sex.

Table 5.3 indicates that there is a statistically significant ($p < .003$) group x sex interaction effect on age. The Scheffe test was used to assess where the significant differences lay. This test is suitable for unequal group sizes and is a conservative test as it takes all pair-wise comparisons into account. The Scheffe test revealed the following statistically significant differences at the $P < .05$ level: male Neurotics vs. male Psychotics, female Controls vs. female Neurotics and male Psychotics vs female Psychotics. In other words, male Neurotics were statistically significantly older than male Psychotics; female Controls were statistically significantly younger than female Neurotics and female Psychotics; and male Psychotics were statistically significantly younger than female Psychotics. These findings support the well-established notion that psychotics, if male tend to be youthful, and if female, tend to middle age. In addition, the age differences between the female groups may be due to the youthfulness of the control sample. However, these differences in age need to be considered in interpreting the findings in this thesis.

The scores of the present sample on the EPQ and HOQ were examined in comparison with those presented by Eysenck and Eysenck (1976), and by Caine and Hope (1967). This was to check that the current groups

scores and those presented by the other authors were reasonably similar, so as to justify a degree of generalization from the present study.

The groups from this study have been re-divided in order to match the groups that the Eysencks present. That is to say that Psychotic depressives in this study were removed from the general Psychotic groups following the Eysencks' example. This separation is not maintained in the rest of this analysis due to the small sample size ($n = 10$). Table 5.5 below gives the means and standard deviations of the Eysencks (1975).

| | E | | P | | N | | L | |
|--|-------|------|------|------|-------|------|-------|------|
| | x | SD | x | SD | x | SD | x | SD |
| Male Psychotics n = 104 | 10.67 | 5.22 | 5.66 | 4.02 | 13.99 | 6.06 | 9.62 | 5.12 |
| Female Psychotics n = 72 | 10.58 | 4.66 | 4.08 | 3.19 | 14.56 | 5.23 | 11.59 | 5.14 |
| Male Neurotic n = 216 | 9.42 | 5.37 | 4.19 | 2.96 | 15.56 | 4.64 | 8.01 | 4.60 |
| Female Neurotics n = 332 | 9.46 | 5.43 | 3.25 | 2.71 | 17.88 | 3.94 | 9.58 | 4.51 |
| Male Endogenous Depressives n = 58 | 9.98 | 5.44 | 4.10 | 2.82 | 15.92 | 5.48 | 9.72 | 4.61 |
| Female Endogenous Depressives n = 68 | 10.24 | 5.76 | 3.48 | 2.47 | 16.54 | 4.36 | 12.01 | 4.04 |

contd....

| | E | | P | | N | | L | |
|--|-------|------|------|------|-------|------|------|------|
| | x | SD | x | SD | x | SD | x | SD |
| Males Non-psy- iatric n = 2,312 | 13.19 | 4.91 | 3.78 | 3.09 | 9.83 | 5.18 | 6.80 | 4.14 |
| Female Non-psy chiatric n = 3,262 | 12.60 | 4.83 | 2.63 | 2.36 | 12.74 | 5.20 | 7.73 | 4.18 |

Table 5.5 Data derived from Eysenck and Eysenck (1975) showing means and standard deviations of various groups on the EPQ.

Table 5.6 below gives the findings from the present sample.

| | E | | P | | N | | L | |
|---|-------|------|------|------|-------|------|-------|------|
| | x | SD | x | SD | x | SD | x | SD |
| Male Psychotics n = 46 | 13.17 | 5.19 | 5.91 | 3.25 | 15.30 | 5.26 | 9.65 | 4.25 |
| Female Psychotics n = 42 | 11.45 | 5.02 | 5.90 | 3.13 | 17.26 | 4.13 | 10.26 | 4.68 |
| Male Neurotic n = 42 | 10.14 | 5.56 | 3.04 | 2.62 | 14.73 | 5.18 | 11.64 | 4.60 |
| Female Neurotics n = 68 | 7.83 | 5.22 | 3.08 | 2.50 | 17.72 | 4.59 | 12.27 | 4.75 |
| Male Psychotic Depressives n = 3 | 7.33 | 4.16 | 2.33 | 2.08 | 17.33 | 6.35 | 6.66 | 4.72 |
| Female Psychotic Depressives n = 7 | 8.00 | 6.73 | 3.0 | 1.73 | 17.57 | 3.59 | 13.28 | 2.36 |

contd....

| | E | | P | | N | | L | |
|---------------------------|-------|------|------|------|-------|------|------|------|
| | x | SD | x | SD | x | SD | x | SD |
| Male Controls n = 27 | 13.48 | 5.33 | 4.85 | 2.82 | 9.14 | 5.70 | 6.92 | 4.29 |
| Female Controls n = 25 | 13.32 | 4.38 | 3.28 | 2.70 | 10.12 | 5.16 | 7.76 | 5.11 |

Table 5.6 showing means and standard deviation of current sample on the EPQ.

T-tests were performed on the data in tables 5.5 and 5.6 in order to see if there were any statistically significant differences between Eysencks' samples and the ones here. T-tests were not performed on the Psychotic Depressive groups due to the very small number of these groups in the present sample. The following statistically significant differences occurred:

- i) male Psychotics in this sample scored significantly more than those of the Eysencks on the E scale ($p < .01$)
- ii) female Psychotics in this sample scored significantly more than those of the Eysencks on the P scale ($p < .001$).
- iii) female Psychotics in this sample scored significantly more than those of the Eysencks on the N scale ($p < .001$).
- iv) male Neurotics in this sample scored significantly less than those of the Eysencks on the P scale ($p < .01$)
- v) male Neurotics in this sample scored significantly more than those of the Eysencks on the L scale ($p < .001$)
- vi) female Neurotics in this sample scored significantly less than those of the Eysencks on the E scale ($p < .05$).
- vii) female Neurotics in this sample scored significantly more than those of the Eysencks on the L scale ($p < .001$).
- viii) male Controls in this sample scored significantly more than those of the Eysencks on the P scale ($p < .05$).
- ix) female Controls in this sample scored significantly more than those of the Eysencks on the N scale ($p < .05$).

Because of the number of t-tests executed, it may be advisable to take note of only those differences which are significant at the .01 level or above.

These differences do not represent a consistent pattern. Some differences reflect scoring in this sample that enhance the Eysenckian stance, e.g. that female Psychotics have higher P scores and that male Neurotics had lower P scores. Both male and female Neurotics in this sample had higher L scores and this needs to be borne in mind when assessing the results in this study (see below for further examination of L scale scores). In addition female Neurotics had lower E scores while male Psychotics had higher ones. The current psychiatric samples cannot be seen as directly comparable to those of the Eysencks. This may well be the result of differences in diagnostic criteria.

The Controls samples in this study were less stable than those of the Eysencks, with the males in this sample gaining higher P scores and the females gaining higher N scores. The control samples of the Eysencks were gleaned from a market research sample and may be viewed as a random sample - although it is probably more random than many standardization samples which often consist of undergraduates. The control sample in this study is less random than that of the Eysencks with almost one third of the sample made up of Nurses. The differences in scores on P and N may be attributable to age effect. The control sample in this study was relatively young (see Table 5.1) and Eysenck and Eysenck (1975, p.18) show that in males P decreases with age while in females, N decreases with age.

These findings reinforce the point made at the end of Chapter Four, that results from this study are not necessarily generalizable.

Of course, it must be noted that when multiple T-tests are performed the probability of some results being significant by chance increases. This must be borne in mind here.

An attempt was also made to compare the scores of the present sample on the HOQ with those obtained and presented in the HOQ manual (Caine & Hope 1967). Table 5.7 below is derived from the HOQ manual (p.8).

| GROUP | n | Mean | S.D. |
|--|----|-------|------|
| <u>Normals</u> | | | |
| Female General Hospital Patients (Essex) | 50 | 23.30 | 5.10 |
| Females (Essex) | 69 | 24.01 | 5.48 |
| Males (Essex) | 54 | 24.04 | 5.91 |
| Females (Aberdeen) | 33 | 23.48 | 5.83 |
| Males (Aberdeen) | 32 | 23.66 | 5.48 |
| <u>Neurotics</u> | | | |
| Validation Sample (W.Essex) | 93 | 21.81 | 6.26 |
| (East Essex) | 60 | 21.90 | 5.94 |
| (Edinburgh) | 37 | 20.49 | 5.59 |
| <u>Psychotics</u> | | | |
| Non-paranoid schizophrenics (E.Essex) | 20 | 23.45 | 6.57 |
| Paranoiacs (East Essex) | 16 | 21.94 | 5.27 |
| Melancholics (East Essex) | 20 | 18.15 | 5.57 |
| Melancholics (East Essex) | 20 | 18.10 | 6.02 |

Table 5.7 Showing means and standard deviations of various sample groups on the HOQ (Caine & Hope, 1967, p.8)

The means and standard deviations of the present sample are presented below. Once again, the present sample has been divided so as to enable a reasonable comparison with the scores presented by Caine and Hope (1967). However, this proved to be a little difficult in the case of the psychotic sample since Caine & Hope's diagnostic category of non-paranoid schizophrenia does not directly correspond to the category of schizophrenia identified by Spitzer, Endicott and Robins (1977) and used in this study.

| Group | n | Mean | S.D. |
|-----------------------|-----|-------|------|
| Control females | 25 | 24.48 | 4.51 |
| Control males | 27 | 23.85 | 5.99 |
| Neurotics | 110 | 19.53 | 5.30 |
| Schizophrenics | 52 | 24.09 | 5.34 |
| Paranoid | 19 | 22.21 | 3.66 |
| Psychotic depressives | 10 | 17.20 | 4.66 |

Table 5.8 showing means and standard deviations of the study sample on the HOQ.

T-tests were computed to check on the comparability of the present samples scores with those presented by Caine & Hope. The only significant differences to emerge were between the Neurotics of the present sample with the W. Essex Neurotics ($p < .05$) and with the E. Essex sample ($p < .1$). In both cases, the present sample scored significantly less.

It can be argued then that in general the present sample and the samples used by Caine and Hope (1967) are compatible in terms of HOQ scores.

Eysenck and Eysenck (1976) suggest that "L scores must be taken into account in interpreting P and N scores of individuals and groups." The argument is that if L scores are high, then dissimulation is occurring. As a result, P and N scores are depressed since a high L score is assumed to suggest that "faking good" is present. As a result of their suggestion, the differences of those scoring greater than 7 (GT7) and less than or equal to 7 (LE7) were examined.

Table 5.9 below shows the number in the groups scoring LE7 and GT7.

| Group | | Male | Female | Total |
|-------------------------|-----|------|--------|-------|
| Non Psychiatric Control | GT7 | 12 | 10 | 22 |
| | LE7 | 15 | 15 | 30 |
| Neurotics | GT7 | 34 | 56 | 90 |
| | LE7 | 8 | 12 | 20 |
| Psychotics | GT7 | 34 | 38 | 72 |
| | LE7 | 15 | 11 | 26 |

Table 5.9 showing numbers within the groups scoring GT7 and LE7.

It can be seen from Table 5.9 that in the psychiatric sample groups there are many more individuals in the GT7 than in the LE7 groups. This tendency is reversed in the control sample. The sexes are quite evenly distributed in the GT7 and LE7 groups except in the case of GT7 neurotics where females predominate.

Table 5.10 below shows the P scale scores of the samples divided into GT7 and LE7.

| Group | | Males | | Females | | Total | |
|-------------------------|-----|-------|------|---------|------|-------|------|
| | | Mean | SD | Mean | SD | Mean | SD |
| Non Psychiatric Control | GT7 | 4.58 | 2.35 | 4.20 | 2.82 | 4.41 | 2.52 |
| | LE7 | 5.07 | 3.21 | 2.67 | 2.52 | 3.87 | 3.10 |
| Neurotic | GT7 | 2.79 | 2.50 | 2.54 | 2.04 | 2.63 | 2.21 |
| | LE7 | 4.13 | 3.00 | 5.67 | 2.93 | 5.05 | 2.98 |
| Psychotic | GT7 | 5.71 | 2.93 | 4.84 | 2.81 | 5.25 | 2.89 |
| | LE7 | 5.67 | 4.11 | 7.73 | 3.29 | 6.54 | 3.86 |

Table 5.10 Showing means and S.D.s of P scores by groups divided into LE7/GT7.

As Table 5.10 indicates, there is a tendency for GT7 Neurotics to score less than LE7 Neurotics on the P scale. Across all the groups, GT7 females tend to score less than GT7 males but LE7 females in the psychiatric groups score more on P than LE7 males. This is reversed in the control group where LE7 females score less on P than LE7 males.

Two way analyses of variance were computed to examine the effects in each group of LE7/GT7 and sex on P scores. Table 5.11 below illustrates this.

| Group | Source | df | F | Sig of F |
|--------------------------|---------------|----|-------|----------|
| Non Psychiatric Controls | Main effects | 2 | 2.28 | 0.113 |
| | Sex | 1 | 4.08 | 0.049 |
| | GT7/LE7 | 1 | 0.37 | 0.546 |
| | GT7/LE7 x Sex | | | |
| | Interaction | 1 | 1.68 | 0.201 |
| Neurotics | Main Effects | 2 | 8.55 | 0.0001 |
| | Sex | 1 | 0.03 | 0.873 |
| | GT7/LE7 | 1 | 17.10 | 0.0001 |
| | GT7/LE7 x Sex | | | |
| | Interaction | 1 | 2.27 | 0.135 |
| Psychotics | Main Effects | 2 | 1.63 | 0.202 |
| | Sex | 1 | 0.02 | 0.876 |
| | GT7/LE7 | 1 | 3.15 | 0.079 |
| | GT7/LE7 x Sex | | | |
| | Interaction | 1 | 4.08 | 0.046 |

Table 5.11 Two-way anova of P scores within each group by LE7/GT7 and sex.

As Table 5.11 indicates there is a significant ($p < .05$) sex effect on P scores in the Non-Psychiatric control sample. In other words, control sample males scored significantly more on the P scale than did control sample females. There is no significant effect of LE7/GT7 on P scores in the control sample. In addition, no significant LE7/GT7 x sex interaction effects on P scores were observed in this group.

In the Neurotic group, no significant effects of sex on P scores were observed but one highly significant ($p < .001$) LE7/GT7 effect was noted. It can be stated that LE7 Neurotics had significantly higher P scores than the GT7 group and this is in accord with the Eysenckian prediction. However, the small n of the Neurotic LE7 group (20)

compared to the n of the Neurotic GT7^{group} (90) does not indicate that splitting the sample on this basis would be justified. No significant LE7/GT7 interactions occurred.

In the Psychotic group, there were no statistically significant effects of sex or LE7/GT7 on P scores. There was however, a statistically significant GT7/LE7 x sex effect on P scores. However, when this was investigated further with the Scheffe test, no statistically significant interaction effects emerged at the $P < .05$ level although the difference between the P scores in the female Psychotic groups just failed to be significantly different by .13. It is likely that the interaction effect was not strong enough to emerge as significant with the Scheffe test.

Table 5.12 below shows the means and standard deviations of the groups divided into GT7 and LE7 on the N scale.

| Group | Males | | Females | | Total | |
|---------------------|-------|------|---------|------|-------|------|
| | Mean | SD | Mean | SD | Mean | SD |
| Non Psychiatric GT7 | 7.17 | 5.80 | 10.30 | 5.96 | 8.59 | 5.95 |
| Control LE7 | 10.73 | 5.28 | 10.00 | 4.78 | 10.37 | 4.97 |
| Neurotic GT7 | 14.79 | 5.01 | 17.32 | 4.73 | 16.37 | 4.96 |
| LE7 | 14.50 | 6.25 | 19.58 | 3.50 | 17.55 | 5.30 |
| Psychotic GT7 | 14.56 | 5.69 | 17.42 | 3.29 | 16.07 | 4.77 |
| LE7 | 17.40 | 3.68 | 16.91 | 6.12 | 17.19 | 4.76 |

Table 5.12 Showing means and S.D. of N scores by groups divided into LE7/GT7.

There is a general tendency for the LE7 groups to score more on N than the GT7 groups but this tendency is not consistently reflected when the groups are divided by sex. In the Control and Psychotic males, the LE7 group score more on N than the GT7 group but the scores are more or less the same in the Neurotic males. The Control and

Psychotic LE7 females tend to score less than the corresponding GT7 females. This pattern is reversed in the Neurotic females where the LE7 group score more on N than the GT7 group.

Table 5.13 below shows the results of two way analyses of variance examining the effects in each group of LE7/GT7 and sex on N scores.

| Group | Source | df | F | Sig of F |
|--------------------------|---------------|----|-------|----------|
| Non Psychiatric Controls | Main effects | 2 | 0.86 | 0.428 |
| | Sex | 1 | 0.35 | 0.554 |
| | GT7/LE7 | 1 | 1.31 | 0.259 |
| | GT7/LE7 x Sex | 1 | 1.62 | 0.210 |
| | Interaction | 1 | 1.62 | 0.210 |
| Neurotics | Main Effects | 2 | 5.51 | 0.005 |
| | Sex | 1 | 10.04 | 0.002 |
| | GT7/LE7 | 1 | 1.10 | 0.297 |
| | GT7/LE7 x Sex | 1 | 1.10 | 0.297 |
| | Interaction | 1 | 1.10 | 0.297 |
| Psychotics | Main Effects | 2 | 2.77 | 0.068 |
| | Sex | 1 | 4.43 | 0.038 |
| | GT7/LE7 | 1 | 1.55 | 0.216 |
| | GT7/LE7 x Sex | 1 | 2.44 | 0.122 |
| | Interaction | 1 | 2.44 | 0.122 |

Table 5.13 Showing two way anovas of N scores within each group by LE7/GT7 and sex.

As Table 5.13 indicates, no statistically significant differences were observed in the Non Psychiatric control sample between the sexes or between LE7 and GT7 on N scores. In addition, no statistically significant LE7/GT7 x sex interactions occurred. In the Neurotic group, there was a statistically significant ($p < .001$) sex effect on N scores. It can be stated that Neurotic females scored statistically significantly more on the N scale than Neurotic males. However, there was no significant LE7/GT7 effect or LE7/GT7 by sex interaction effect on N scores in the Neurotic groups.

In the Psychotic group, there was also a statistically significant ($P < .04$) sex effect on N scores. It can be stated that Psychotic females scored statistically significantly more on the N scale than Psychotic males. There was no statistically significant LE7/GT7 effect on N scores, nor was there a statistically significant LE7/GT7 by sex interaction on N scores in the Psychotic sample.

It was decided not to split the sample into LE7/GT7 in the further analyses of the data. This was for several reasons. Firstly the majority of the sample (71%) were GT7 scorers. In the psychiatric groups, nearly four times as many subjects scored GT7 than LE7. In the control group there was a majority of LE7 scorers. However, only one statistically significant LE7/GT7 difference emerged. This was in the Neurotic group on the P scale. This involved a difference in sample size of 70 when $n = 90$ and $n = 20$ for GT7 and LE7 scorers respectively. For this reason it did not seem justified to split the sample on the basis of L scale scores.

SUMMARY

1. No statistically significant differences emerged in the distribution of sex across the groups of Non-Psychiatric Control, Neurotics and Psychotics.
2. On the age variable female controls were statistically significantly younger than female Neurotics and Psychotics. Male Neurotics were statistically significantly older than male Psychotics and male Psychotics were statistically significantly younger than female Psychotics.

3. A comparison of the means and standardizations of the groups in the present study with those of Eysenck and Eysenck (1976) and with those of Caine and Hope (1967) revealed that the scores were similar and within the standard deviations of each other.

4. A suggestion of the Eysencks (1976) that high and low Lie scale scorers should possibly be treated separately in research was examined. The groups were divided into those scoring 7 and less, and those scoring over 7 on the Lie scale (following the guidelines laid down by the Eysencks, 1976). Analysis of variance revealed that Neurotics scoring more than 7 on the Lie scale ($n = 90$) had statistically significantly lower P scale scores than Neurotics who scored 7 or less on the Lie scale ($n = 20$). Contrary to expectation there were no other statistically significant differences between high and low L scale scorers on the P scale or on the N scale. A decision not to split the sample into high and low Lie scale scorers was made.

Section II: The DSSI Hierarchy and Diagnostic Categories

This hypothesis concerns the relationship between traditional diagnostic categories and the Foulds hierarchy. According to the hypothesis, one can expect all the Non-Psychiatric Control samples to fall into the Class 0-Personal Health class; all the Anxiety states and Depressed Neurotics to fall into the Class 1 - Dysthymic States class; all the Obsessionals, Phobics and Hysterics to fall into the Class 2 Neurotic states class; all the Manic-Depressives, Psychotic depressives and Paranoids (non-schizophrenic) to fall into the Class 3 Integrated Delusions class and all the Schizophrenics to fall into the Class 4 Delusions of Disintegration class.

Table 5.14 shows the frequency with which members of the ten groups fell into each of the five DSSI classes.

It can be seen that the vast majority of the Non-psychiatric Control group fell into the Personal Health class. The class into which they fell with the next highest frequency was the neighbouring class of Dysthymic States. As expected, the majority of Anxiety States and Neurotic depressives fell into the Dysthymic States Class with the majority of the rest occurring in the neighbouring classes of Personal Health or Neurotic Symptoms. The Phobic, Hysterical and Obsessional groups mostly fell into the Neurotic symptoms group. Those who did not fall into the Neurotic symptoms class fell into the higher classes of Integrated Delusions and Delusions of Disintegration. The Psychotic depressives fell mainly into the Integrated Delusions class with a few falling into the neighbouring class of Neurotic Symptoms. All the Manic Depressives and Paranoids fell into the Integrated delusions class. All but two Schizophrenics fell into the Delusions of Disintegrations class. The two who did not fall into the

| CLASS | PSYCHIATRIC GROUP | | | | | | | | | | Total |
|---------------------------------------|------------------------------------|------------------|-----------------------|---------------|--------|------------------|--------------------------------|--------------------------|---------------|--------------------|-------|
| | Non Psych- iatric Control | Anxiety State | Depressed Neurotic | Hyst- eric | Phobic | Obsess- ional | Psycho- tic De- pressive | Manic Depress- ive | Para- noid | Schiz- ophrenic | |
| Personal Health | 37 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 42 |
| Dysthymic States | 9 | 13 | 22 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 44 |
| Neurotic Symptoms | 3 | 1 | 3 | 10 | 10 | 26 | 3 | 0 | 0 | 0 | 56 |
| Integrated Delusions | 3 | 0 | 1 | 2 | 1 | 7 | 7 | 17 | 18 | 2 | 58 |
| Delusion of Disinte- gration | 0 | 2 | 1 | 3 | 3 | 1 | 0 | 0 | 0 | 50 | 60 |
| Total | 52 | 18 | 29 | 15 | 14 | 34 | 10 | 17 | 19 | 52 | 260 |

Table 5.14 Showing the frequency with which members of the Psychiatric subgroups fell into the five DSSI classes.

neighbouring class of Integrated Delusions. 210 of the 260 subjects, or 80.77% of the sample, fell into the predicted DSSI class. Of the remaining 50 subjects, 32 or 64% fell into a neighbouring class to that predicted. (i.e. next door).

It can be seen then that the general tendency was supportive of the hypothesis. The eleven groups were recoded so that the groups that were hypothesized to be members of the same DSSI class were regrouped as one group. In other words, the Non-Psychiatric Controls were reclassified as Group 1, the Anxiety Neurotics and Depressive Neurotics were reclassified as Group 2, the Obsessionals, Phobics and Hysterics were reclassified as Group 3, the Psychotic depressives, Manic depressives and paranoids were reclassified as Group 4 and the Schizophrenics were reclassified as Group 5. The Chi square statistic on the frequency with which these groups appeared in the Personal Health and the four illness classes of the DSSI was computed. χ^2 was 620.44 with 16df and the significance level was .00001. While it is possible to make a case for a further reduction of the groups to form a 5 x 2 table where individuals are categorized by whether they fall into the expected cell or not, this was decided against. Although in the 5 x 5 cell table, many of the observed frequencies were 0, the lowest expected frequency was 7.3. It was therefore viable to use a 5 x 5 cell table in this case since the lower limit of an expected cell frequency of 5 (where $df \geq 1$) was not violated (Siegel, 1956, and Ferguson, 1976). In any case, reducing the groups to a 5 x 2 format would not make much sense theoretically. There is a great difference in implication between an individual from the Non Psychiatric Control group who falls into the Dysthymic states class, and a member of that group who falls into the Delusions of Disintegration class. It was decided that ignoring such a distinction would unnecessarily distort the results.

It may then be stated that there was a statistically significant association between traditional diagnostic category (as allocated in this study) and the predicted DSSI class and the null hypothesis of no such relationship may be rejected.

Section III: Investigation of Conformity to the Hierarchy

An attempt was made to study the rate at which subjects conformed to hierarchical patterns of scoring on the DSSI. Foulds and Bedford (1978), Foulds (1976) state that a score of 4 or more per item on the DSSI is necessary, in practice, to allocate an individual to a set and thus, to a class. If the set scores for a class do not exceed 3, then the individual is not allocated to that class. The criterion of 4 was chosen in order to avoid allocation to a class on the basis of the testee misinterpreting or misreading the item. To score 4 on a set, it is necessary to positively endorse at least 2 symptom items per set. However in theory a score of only one item per set is sufficient to fulfil the requirements of the hierarchy and should be sufficient to justify allocation to a class.

The pattern of scoring on the DSSI may be represented by a series of 1's indicating set membership and 0's indicating non-membership of a set. Only five patterns of scores conform to the hierarchy and all other patterns represent non-conformity. These are illustrated below in Table 5.15

| Class Membership | Dysthymic States | Neurotic Symptoms | Integrated Delusions | Delusion of Disintegration |
|-------------------------|------------------|-------------------|----------------------|----------------------------|
| Disintegrated Delusions | 1 | 1 | 1 | 1 |
| Integrated Delusions | 1 | 1 | 1 | 0 |
| Neurotic Symptoms | 1 | 1 | 0 | 0 |
| Dysthymic State | 1 | 0 | 0 | 0 |
| Personally Healthy | 0 | 0 | 0 | 0 |

Table 5.15 Patterns of DSSI scoring conforming to the Hierarchy.

It can be stated that conformity to the hierarchy occurs when a) any testee scoring 1 in one class will score 1 in all the classes beneath it b) any testee scoring 0 in a class will also score 0 in all the classes above it.

The DSSI scores of all 260 subjects were examined for conformity to the hierarchy. Table 5.16 below summarises the numbers of individuals in each group conforming/not conforming to the hierarchy.

| Diagnostic Group | Conforming | | | Non-conforming | |
|----------------------|------------|-----|-----|----------------|----|
| | N | n | % | n | % |
| Controls | 52 | 49 | 94 | 3 | 6 |
| Neurotic Anxiety | 18 | 18 | 100 | 0 | 0 |
| Neurotic Depression | 29 | 29 | 100 | 0 | 0 |
| Obsessionals | 34 | 32 | 94 | 2 | 6 |
| Phobics | 14 | 11 | 79 | 3 | 21 |
| Hysterics | 15 | 15 | 100 | 0 | 0 |
| Neurotic total | 110 | 105 | 95 | 5 | 5 |
| Psychotic Depression | 10 | 10 | 100 | 0 | 0 |
| Manic Depression | 17 | 11 | 65 | 6 | 35 |
| Paranoid Psychosis | 19 | 15 | 79 | 4 | 21 |
| Schizophrenic | 52 | 41 | 79 | 11 | 21 |
| Psychotic total | 98 | 77 | 79 | 21 | 21 |
| Overall total | 260 | 231 | 89 | 29 | 11 |

Table 5.16 showing numbers of subjects in each diagnostic group conforming to the hierarchy.

It would not be sensible to set too much store by the overall total rate of conformity of 89%, since it is clear that the Control and Neurotic samples conform to the hierarchy more frequently than do the Psychotic sample. In particular, the Manic depressive group show a greatly decreased degree of conformity to the hierarchy (65%). Other poorly conforming groups were the Phobics, Paranoids and

Schizophrenics. 100% conformity was observed in the dysthymic groups of Neurotic Anxiety and Depression, the Psychotic Depressives and the Hysterics.

A more detailed examination of those individuals who did not conform to the hierarchy pattern revealed two possible reasons for non-conformity. The main reason was that while many non-conforming individuals were scoring such that they conformed to the hierarchy in theory, they were not scoring sufficient to conform to the hierarchy in practice. This is true of the majority of non-conformers. When the criterion for class membership was reduced to a score of 3 in an appropriate set (i.e. a set below the highest set to which the individual belongs), 24% (7/29) of non-conformers became conformers. When the criterion for class membership was reduced to a score of 2 on an appropriate set, 59% (17/29) of non conformers conformed. When the criterion was reduced to 1, 79% (23/29) of non-conformers conformed. 17% (5/29) of non-conformers failed to conform as a result of complete failure to score at all on items contributing to sets belonging to classes below the highest class in which they scored.

In two of the cases in the non-psychiatric sample where conformity was produced by lowering the criterion, there was also a suggestion of misinterpretation - one subject who endorsed Conversion symptoms suffered serious physical problems with his leg. The other non-psychiatric subject who may have misinterpreted items endorsed ^{delusions of Persecution} (dPs) and was in the process of being prosecuted for a civil offence. There also seems to be evidence of misinterpretation in the case of the Phobic patient who endorsed dPs. Both he and his consultant psychiatrist endorsed his experience of hypnagogic delusions. These findings are illustrated in Table 5.17. The issue of what criterion to use is more problematic. Reducing the criterion to 3 only leads to

| Group | Non Con- forming Patterns | Reduce Criterion to 3 | Reduce Criterion to 2 | Reduce Criterion to 1 | Misinter- pretation | Failure to endorse symptom |
|-------------------------------|--|------------------------------|--------------------------------------|-----------------------------|--|-------------------------------------|
| Phobics (n=14) | 1101 1101 1101 | 1111 | | | Hypna- gogic delusions | No class 3 items endorsed |
| Obsessionals (n=34) | 0100 0100 | 1100 | 1100 | | | |
| Paranoid (n=19) | 1010 0010 0010 1010 | 1110 | 1110 | 1110 1110 | | |
| Manic (n=17) | 1010 1010 1010 0010 1010 0010 | | 1110 | 1110 1110 1110 | |) No set) 2 items) endorsed |
| Schizophrenic (n=52) | 1101 1011 1011 0111 1101 1101 0111 1101 1101 1101 1101 | 1111 1111 1111 1111 | 1111 1111 1111 1111 1111 | | |) No set) 3 items) endorsed |
| Non- Psychiatric (n=52) | 0100 0100 0010 | | 1100 | 1100 | Presence of a physical handicap may have led to end- orsement of CVs. Present involve- ment with Police led to end- orsement of dPs. | |

Table 5.17 Showing patterns of the non-conforming scores and possible explanations.

conformity for 24% (7/29). By reducing the criterion further, the possibility of making a Type I error (false positive) increases. The two non-psychiatric subjects whose DSSI patterns conformed by reducing the criterion to 2 and 1, and where the possibility of misinterpretation was also present, illustrate this point.

Another problem with reducing the criterion to 3, 2 or 1, is that it alters the class to which individuals belong when the criteria is 4 (i.e. the highest class in which they score alters). By reducing the criterion to 3, 21% of all individuals become members of classes above the highest one to which they belong when the criterion is 4. By reducing the criterion to 2, 37% of all individuals become members of classes above the highest one to which they belong when the criterion is 4. By reducing the criterion to 1, 48% of all individuals become members of classes above the highest class to which they belonged when the criterion is 4. Table 5.18 below shows the breakdown of these percentages in terms of the three main groups.

| Class Criterion Reduced to | 3 | 2 | 1 | Total |
|----------------------------|-------------|-------------|-------------|--------------|
| Group Normal n = 52 | 15% (8) | 19% (10) | 27% (14) | 61% (32) |
| Neurotic n = 110 | 35% (39) | 23% (25) | 8% (9) | 66% (73) |
| Psychotic n = 98 | 8% (8) | 6% (6) | 7% (7) | 21% (21) |
| Total n = 260 | 21% (55) | 16% (41) | 12% (30) | 48% (126) |

Table 5.18 Showing numbers of sample allocated to a higher class when criterion is reduced to 3, 2 and 1.

The most compelling evidence against reducing the criterion to below 4 is that it could render up to 61% of the non-psychiatric controls as members of classes other than class 0 as compared to 29% when the criterion is 4. Additionally, 66% of neurotics would become members of higher classes than previously. In the psychotic group up to 21% of the sample would be placed in a higher group. Only 2 of these were schizophrenics; as expected, most schizophrenics are members of Class 4 and ascension to a higher class is impossible. The two schizophrenics who did achieve a higher class had the pattern 1110 initially but achieved 1111 by reducing the criterion to 3.

The DSSI scoring patterns of the re-tested sample were also examined for conformity to the hierarchy. Altogether, one hundred and thirteen of the sample were retested. This total consisted of twenty one Non-Psychiatric Controls, fifty one Neurotic patients and forty one Psychotic patients. As mentioned in Chapter Four, the individuals included in the re-test sample were retested after widely varying time intervals. The variability of the test re-test interval should make no difference to conformity to the hierarchy and so was not taken into account here. The time interval is only likely to affect the degree of change and this was not relevant here.

Table 5.19 below shows the percentages of individuals, in each of the three major groups in the re-test sample, that conformed/did not conform to the hierarchy pattern.

| Diagnostic Group | Conforming | | | Non-conforming | |
|------------------|------------|-----|----|----------------|----|
| | N | n | % | n | % |
| Controls | 21 | 20 | 95 | 1 | 5 |
| Neurotic | 51 | 49 | 96 | 2 | 4 |
| Psychotic | 41 | 37 | 90 | 4 | 10 |
| Total | 113 | 106 | 94 | 7 | 6 |

Table 5.19 showing the percentages of the re-test sample conforming/not conforming to the hierarchy.

On re-test, 6% of subjects did not conform to the hierarchy. This figure is even lower than that found on the first testing. It was interesting to note that only one of the re-tested non-conformers was also a non-conformer on first testing. The pattern of scores for this subject was 0010 on both occasions (scoring on dP both times) This individual was a member of the non-psychiatric control group. The other six non-conformers on retest all conformed on initial testing. In addition it is interesting to note that all those of the psychiatric sample who were non-conformers on initial testing and who were retested, conformed on retest. Of the five neurotics who did not conform on initial testing, three were retested and all three conformed to the hierarchy on retest. Of the twenty one psychotics who did not conform on initial testing, five were retested and all five conformed to the hierarchy on retest. Three of the control sample did not conform on initial testing. All three were retested and only one of them failed to conform on second testing. The finding that initial testing non-conformers conform on retest, and vice versa, supports those of Foulds (1976, p.90). Of those who did not conform to the hierarchy on retest, only one of the neurotic sample had not endorsed any items below the class in which she was placed. All of the rest of

the non-conformers on retest had endorsed items in the classes below the class to which they were assigned. However the caution noted above remains with regard to altering the criterion for inclusion in a class.

SUMMARY

In an investigation of conformity to the DSSI hierarchy pattern of scoring, it was found that the majority of the sample conformed. The overall rate of conformity was 89% but this ranged from 65% for the Manic Depressives to 100% for Neurotic Anxiety and Depression, Hysteria and Psychotic Depression. Examination of the non-conformers revealed two possible reasons for their non-conformity. It was suggested that the main reason for non-conformity was too high a criterion for class membership although it was also noted that if the class membership criterion was reduced for all the sample many of them would end up as members of even higher classes than when the criterion is 4. The other reason was that some items may have been misinterpreted. Examination of conformers on initial testing revealed that all but one of them conformed on retest. All the retest non-conformers conformed on initial testing.

The hypothesis was that non-conformity to the hierarchy may result from failing to endorse sufficient items in the lower classes to gain set membership, rather than failing to endorse items in lower sets per se. This hypothesis gained some support and the null hypothesis that failure to conform resulted from a complete failure to endorse lower class items could, in most cases, be rejected.

Section IV: - Personality Scores and the Hierarchy

Personality scores were examined in relation to membership of the DSSI classes. In particular this hypothesis states that P scores will increase with movement up the hierarchy with the highest P scores occurring in the Delusions of Disintegration class. In addition, it was expected that N scores would also increase with movement up the hierarchy to the Neurotic symptom class but that there is no reason why they should increase beyond that class. E, L and HOQ scores should not necessarily differ between the DSSI classes.

Means and standard deviations of the personality scores (E, P, N, L and HOQ) were examined for each DSSI class. Analyses of variance were computed for personality scores by class and sex. The Scheffe test of comparison was used, where necessary, to identify statistically significant differences. This test was chosen because it is exact for unequal group sizes. Table 5.20 below shows the numbers of subjects within each DSSI class.

| DSSI Class | Males | Females | Total |
|--------------------------------|-------|---------|-------|
| 0 Not personally ill | 18 | 24 | 42 |
| I Dysthymic States | 25 | 19 | 44 |
| II Neurotic Symptoms | 22 | 34 | 56 |
| III Integrated Delusions | 30 | 28 | 58 |
| IV Delusions of Disintegration | 23 | 37 | 60 |

Table 5.20 showing the numbers of subjects in each DSSI class.

The Chi squared statistic was computed to see if there was a statistically significant association between sex and DSSI class. Chi squared was not statistically significant ($\chi^2 = 5.41312$ with 4d.f. Sig. = .2475). It can then be stated that there was not a statistically significant association between sex and DSSI class.

E Scores

Table 5.21 below shows the means and standard deviations for the DSSI classes and for the DSSI classes by sex on the E scale of the EPQ.

| DSSI Class | Whole Sample | | Males | | Females | |
|---------------------------------|--------------|------|-------|------|---------|------|
| | X | SD | X | SD | X | SD |
| 0 - Not Personally ill | 12.57 | 5.09 | 12.88 | 5.47 | 12.33 | 4.88 |
| 1 - Dysthymic States | 10.93 | 5.27 | 10.80 | 5.72 | 11.10 | 4.75 |
| 2 - Neurotic Symptoms | 8.94 | 5.80 | 11.18 | 5.74 | 7.50 | 5.44 |
| 3 - Integrated Delusions | 10.86 | 5.92 | 12.70 | 5.37 | 8.89 | 5.94 |
| 4 - Delusions of Disintegration | 11.33 | 5.43 | 12.56 | 5.55 | 10.56 | 5.29 |
| Total | 10.85 | 5.63 | 12.01 | 5.53 | 9.87 | 5.52 |

Table 5.21 means and standard deviations of DSSI classes on the E scale of the EPQ.

The trend for the whole sample is for E scores to decrease up to the Neurotic Symptoms class and to increase thereafter. This trend is repeated in the female sample but not in the male sample where scores decrease up to the Dysthymic states class and increase thereafter. There is a tendency for males to obtain higher E scores than females with the exception of those males in the Dysthymic states class who score less than the females of that class. Overall, however, males

have higher E scores than females. Two way analysis of variance on these data demonstrated the presence of significant class and sex differences.

| Source of Variation | df | f | Sig. of F |
|-------------------------|----|------|-----------|
| Main effects | 5 | 4.26 | .001 |
| Class | 4 | 2.82 | .025 |
| Sex | 1 | 9.76 | .002 |
| Class x sex Interaction | 4 | 1.37 | .244 |

Table 5.22 showing 2-way anova of E scores by class and sex.

It can be seen that there is a statistically significant ($p < .03$) class effect and sex effect ($p < .01$) on E scores. The class by sex interaction was not significant. A univariate analysis of variance was computed to investigate the class effect further. Table 5.23 below illustrates this.

| Source | df | F | Sig. |
|----------------|-----|-----|--------|
| Between Groups | 4 | 2.8 | 0.0277 |
| Within Groups | 255 | | |
| Total | 259 | | |

Table 5.23 showing one way anova of E scores by DSSI class.

Table 5.23 shows that there is a statistically significant ($p < .03$) class effect on DSSI scores. The Scheffe comparison test revealed one statistically significant difference between the Not-Personally Ill class and the Neurotic Symptoms class. This difference was significant at the $P < .05$ level. It can be stated then that the Not Personally Ill

class scored statistically significantly more on the E scale than the Neurotic Symptoms class. None of the other differences between the classes on the E scale were statistically significant.

As Table 5.22 indicates, there was also a significant sex effect on E scores. It can then be stated that males score statistically significantly more on the E scale than females.

The null hypothesis that E scores are not affected by DSSI class could not be rejected in that the Not Personally Ill scored statistically significantly more than the Personally Ill classes.

P Scores

Table 5.24 below shows the means and standard deviations for the DSSI classes and for the DSSI classes by sex on the P scale of the EPQ

| DSSI Class | Whole Sample | | Males | | Females | |
|---------------------------------|--------------|------|-------|------|---------|------|
| | x | SD | x | SD | x | SD |
| 0 - Not Personally Ill | 3.17 | 2.46 | 3.44 | 2.52 | 2.95 | 2.45 |
| 1 - Dysthymic States | 2.79 | 2.37 | 3.16 | 2.62 | 2.31 | 1.97 |
| 2 - Neurotic Symptoms | 3.02 | 2.25 | 3.77 | 2.60 | 2.52 | 1.89 |
| 3 - Integrated Delusions | 5.05 | 2.92 | 5.33 | 2.82 | 4.75 | 3.05 |
| 4 - Delusions of Disintegration | 6.35 | 3.22 | 6.69 | 3.80 | 6.13 | 3.02 |
| Total | 4.23 | 3.07 | 4.55 | 3.16 | 3.95 | 2.97 |

Table 5.24 means and standard deviations of DSSI classes on the P scale of the EPQ.

The general trend for males and females was for P scores to increase with movement up the hierarchy from the Dysthymic States Class to the Delusions of Disintegration class with the Not Personally Ill

class scoring more than the Dysthymic States class. The whole sample and Female Not Personally Ill class also gain higher P scores than their Neurotic class counterparts. In the case of the male only sample, the Not Personally Ill class score less than the Neurotic symptoms class on P. There is also a consistent tendency for males to obtain higher P scale scores than females. A two way analysis of variance on P scores by class and sex was computed.

| Source of Variation | df | F | Sig. of F |
|-------------------------|----|-------|-----------|
| Main Effects | 5 | 15.07 | .0001 |
| DSSI Class | 4 | 18.04 | .0001 |
| Sex | 1 | 4.70 | .031 |
| Class x Sex Interaction | 4 | 0.17 | .955 |

Table 5.25 showing two way anova of P scores by DSSI class and sex.

It can be seen from Table 5.25 that there is a statistically significant ($p < .001$) DSSI class effect and a significant sex effect ($p < .04$) on P scores. There was not a significant class by sex interaction. A univariate analysis of variance was computed to investigate the class effect further. Table 5.26 below illustrates this.

| Source | df | F | Sig. |
|----------------|-----|-------|--------|
| Between Groups | 4 | 17.64 | .00001 |
| Within Groups | 255 | | |
| Total | 259 | | |

Table 5.26 showing a one way anova of P scores by DSSI class.

As Table 5.26 indicates, there was a highly statistically significant ($p < .0001$) DSSI class effect on P scores. The Scheffe comparison test revealed the following differences at the $P < .05$ level:

Not Personally Ill vs Integrated Delusions

Not Personally Ill vs Delusions of Disintegration

Dysthymic States vs. Integrated Delusions

Dysthymic States vs. Delusions of Disintegration

Neurotic Symptoms vs. Integrated Delusions

Neurotic Symptoms vs Delusions of Disintegration

It can be stated then that the Psychotic classes of the DSSI (i.e. Integrated Delusions and Delusions of Disintegration) scored statistically significantly more on the P scale of the EPQ than the Neurotic Symptoms class Dysthymic States class and the Not Personally Ill Class. There were no statistically significant differences between the Psychotic classes, or between the Not Personally Ill, Dysthymic States and Neurotic Symptoms class.

Table 5.25 also indicates a significant ($P < .04$) sex effect on P scores. It can then be stated that males score statistically significantly more on the P scale than females.

It can be stated then that the hypothesis that P scores would increase with progression up the DSSI hierarchy was supported and the null hypothesis of no such increase rejected. In addition, this increase was statistically significant in terms of differences between the Psychotic classes of the hierarchy and the Neurotic and Dysthymic classes. There was also a statistically significant difference between the Not Personally Ill class and the Psychotic classes, and between males and females.

N Scores

Table 5.27 below shows the means and standard deviations for the DSSI classes and for the DSSI classes by sex on the N scale of the EPQ.

| DSSI Class | Whole Sample | | Males | | Females | |
|---------------------------------|--------------|------|-------|------|---------|------|
| | X | SD | X | SD | X | SD |
| 0 - Not Personally ill | 9.40 | 5.00 | 8.16 | 5.40 | 10.33 | 4.58 |
| 1 - Dysthymic States | 12.77 | 5.16 | 13.40 | 4.49 | 11.94 | 5.95 |
| 2 - Neurotic Symptoms | 17.62 | 4.38 | 15.59 | 5.61 | 18.94 | 2.71 |
| 3 - Integrated Delusions | 16.08 | 5.52 | 14.60 | 6.29 | 18.14 | 3.65 |
| 4 - Delusions of Disintegration | 17.51 | 4.28 | 16.17 | 4.62 | 18.35 | 3.89 |
| Total | 15.12 | 5.70 | 13.74 | 5.87 | 16.24 | 5.31 |

Table 5.27 Means and standard deviations of DSSI classes on the N scale of the EQP.

As can be seen from Table 5.27 there is a general tendency for N scores to increase with movement up the hierarchy to the Neurotic Symptoms class although the trend falters thereafter. However, the N scores of the Integrated Delusions class and Delusions of Disintegration class are still comparatively high to those of the Not Personally Ill and the Dysthymic States class. There is a tendency for the Integrated Delusions class to score less than the Neurotic Symptoms and the Delusions of Disintegration Class. This tendency is slight but consistent across the sexes. With the exception of the Dysthymic States class, where males have higher N scores than females, the general tendency is for females to obtain higher N scores than males.

Table 5.28 below shows the results of a two way analysis of variance of N scores by class and sex.

| Source of Variation | df | F | Sig. of F |
|-------------------------|----|-------|-----------|
| Main Effects | 5 | 24.16 | .0001 |
| DSSI Class | 4 | 25.67 | .0001 |
| Sex | 1 | 13.99 | .0001 |
| Class x Sex Interaction | 4 | 2.34 | .056 |

Table 5.28 Showing 2 way anova of N scores by DSSI class and Sex.

It can be seen from Table 5.28 that there are highly statistically significant ($p < .001$) DSSI class and sex ($p < .001$) effects. The class x sex interaction was not significant at $p < .05$. A univariate analysis of variance was computed to investigate these class effects more fully. This is illustrated in Table 5.29 below.

| Source | df | F | Sig |
|----------------|-----|-------|--------|
| Between Groups | 4 | 24.90 | .00001 |
| Within Groups | 255 | | |
| Total | 259 | | |

Table 5.29 Showing one way anova of N scores by DSSI class.

The Scheffe comparison test revealed the following differences statistically significant at $P < .05$ level.

Not Personally Ill vs Dysthymic States

Not Personally Ill vs Neurotic symptoms

Not Personally Ill vs Integrated Delusions

Not Personally Ill vs Delusions of Disintegration

Dysthymic States vs Neurotic Symptoms

Dysthymic States vs Integrated Delusions

Dysthymic States vs Delusions of Disintegration

In other words, the Not Personally Ill class scored significantly less on the N scale than all the other DSSI classes and the Dysthymic States class scored statistically significantly less on the N scale than all the classes above it.

In addition, Table 5.28 indicates the presence of a highly significant ($P < .0001$) sex effect on N scores. It can be stated that females obtain statistically significantly higher scores on the N scale than males.

As Table 5.28 indicates, the DSSI class x sex interaction on N scores failed to achieve significance at ($p < .05$).

The findings here support the hypothesis that N scores increase with progression up the hierarchy to the Neurotic Symptoms class, and that N scores do not necessarily increase beyond that level. The null hypothesis of no such increase may be rejected. Thus there is no statistically significant difference between the N scores of the Psychotic classes and of the Neurotic Symptoms class but there are statistically significant differences between the Psychotic classes of the hierarchy and the lower classes of Dysthymic States and Not Personally Ill.

L Scores

Table 5.30 below indicates the means and standard deviations of the L scale scores divided by DSSI class and by DSSI class by sex.

| | Whole Sample | | Males | | Females | |
|---------------------------------|--------------|------|-------|------|---------|------|
| DSSI Class | X | D | X | SD | X | SD |
| 0 - Not Personally ill | 7.95 | 4.78 | 8.72 | 5.01 | 7.37 | 4.62 |
| 1 - Dysthymic States | 12.31 | 5.18 | 11.08 | 5.13 | 13.94 | 4.90 |
| 2 - Neurotic Symptoms | 11.51 | 4.56 | 8.95 | 4.46 | 13.17 | 3.84 |
| 3 - Integrated Delusions | 10.01 | 4.35 | 9.53 | 4.05 | 10.53 | 4.67 |
| 4 - Delusions of Disintegration | 9.85 | 4.84 | 9.69 | 5.07 | 9.94 | 4.76 |
| Total | 10.36 | 4.90 | 9.66 | 4.71 | 10.93 | 4.98 |

Table 5.30 Showing means and standard deviations of DSSI classes on the L scale of the EPQ.

It can be seen from Table 5.30 that the Dysthymic states class tend to obtain the highest scores on the L scale and that the Not Personally Ill class score the least on the L scale. In the male sample L scale scores increase gradually from the Neurotic symptoms class upto the Delusions of Distintegration Class. In the female sample, the L scale scores decrease from the Dysthymic class up to the Delusions of disintegration class. There is a particularly large difference in this progressive decrease, between the female Neurotic Symptoms class and the Integrated Delusions class. There is also a tendency for females to obtain higher L scale scores than males.

A two way analysis of variance was computed to examine the effects of DSSI class and sex on L scale scores. Table 5.31 below illustrates this.

| Source of Variation | df | f | Sig. of F |
|-------------------------|----|------|-----------|
| Main Effects | 5 | 6.01 | .0001 |
| DSSI Class | 4 | 6.29 | .0001 |
| Sex | 1 | 6.21 | .013 |
| Class x Sex Interaction | 4 | 2.67 | .033 |

Table 5.31 Showing 2 way anova of L scores by DSSI class and sex.

As Table 5.31 indicates, there was a statistically significant DSSI class ($P < .0001$) and sex ($P < .001$) effect on L scores. However, there was also a significant class X sex interaction ($P < .034$). The Scheffe comparison test on the ten groups divided by class and sex revealed two significant differences: Female Not Personally Ill class vs Female Dysthymic States Class, and Female Not Personally Ill vs Female Neurotic Symptoms class. In other words, the Female Not Personally Ill class scored statistically significantly less on the L scale than the Female Dysthymic states class and the Female Neurotic symptoms class. It may be of interest here to note that the female control sample (which is roughly equivalent to the female Not Personally Ill class) were significantly younger than other female groups, and that L scale scores increase with increasing age (Eysenck & Eysenck, 1975). This may explain the present finding.

The null hypothesis that L scale scores should not be affected by DSSI class was not supported in that highly significant differences emerged. Suggested reasons were put forward for these differences.

HOQ Scores

Table 5.32 below shows the means and standard deviations of the DSSI classes and of the DSSI classes by sex on the HOQ scores.

| DSSI Class | Whole Sample | | Males | | Females | |
|---------------------------------|--------------|------|-------|------|---------|------|
| | X | D | X | SD | X | SD |
| 0 - Not Personally ill | 24.57 | 4.97 | 25.11 | 5.02 | 24.16 | 5.01 |
| 1 - Dysthymic States | 20.58 | 5.83 | 19.84 | 5.20 | 21.78 | 6.55 |
| 2 - Neurotic Symptoms | 18.58 | 5.27 | 19.45 | 6.09 | 18.02 | 4.68 |
| 3 - Integrated Delusions | 22.29 | 4.93 | 24.13 | 4.84 | 20.32 | 4.29 |
| 4 - Delusions of Disintegration | 23.31 | 5.40 | 24.47 | 6.85 | 22.59 | 4.20 |
| Total | 21.83 | 5.64 | 22.56 | 6.02 | 21.21 | 5.23 |

Table 5.32 Showing means and standard deviations of DSSI classes on the HOQ.

As Table 5.32 indicates, there is a general trend for HOQ scores to decrease from the Not Personally Ill Class to the Neurotic symptoms class and to increase from there up to the Delusions of Disintegration Class. There is also a tendency for males to obtain higher scores than females with the exception of the Dysthymic States class where males score less than females on the HOQ. Overall, however, the males score more highly than females on the HOQ.

A two way analysis of variance was computed to examine for the effects of DSSI class and sex on HOQ scores. Table 5.32 below illustrates this.

| Source of variation | df | f | Sig. of F |
|-------------------------|----|-------|-----------|
| Main Effects | 5 | 9.10 | .0001 |
| DSSI Class | 4 | 10.28 | .0001 |
| Sex | 1 | 4.69 | .031 |
| Class x Sex Interaction | 4 | 1.94 | .104 |

Table 5.32 Showing 2-way anova of HOQ scores by DSSI class and sex.

It can be seen from Table 5.32 that there is a highly statistically significant ($P < .0001$) DSSI class effect on HOQ scores and also a significant ($p < .04$) sex effect. The class by sex interaction on HOQ scores was not significant. A univariate analysis of variance was computed to explore this effect more fully. Table 5.33 below illustrates this.

| Source | df | F | Sig. |
|----------------|-----|------|--------|
| Between Groups | 4 | 9.91 | 0.0001 |
| Within Groups | 255 | | |
| Total | 259 | | |

Table 5.33 Showing one way anova of HOQ scores by DSSI class.

As Table 5.33 indicates, there was a significant DSSI class effect on HOQ scores. The Scheffe comparisons test revealed the following statistically significant ($P < .05$) differences:

Not Personally Ill vs Dysthymic States

Not Personally Ill vs Neurotic symptoms

Neurotic symptoms vs Integrated Delusions

Neurotic symptoms vs Delusions of Disintegration

It can be seen then that the Not Personally Ill class score significantly more on the HOQ than the Dysthymic states and Neurotic symptoms classes. In addition, the Psychotic classes scored significantly more on the HOQ than the Neurotic symptoms class.

In addition, Table 5.32 reveals a significant ($P < .04$) sex effect on HOQ scores. It can then be stated that males obtain significantly higher scores on the HOQ than females.

As Table 6.32 indicates, there was not a significant DSSI class x sex interaction effect on HOQ scores.

It is interesting to note that the general trend for HOQ scores is similar to the trend with E scores. However, there is only one significant difference between classes with the E scale whereas the HOQ has four. Both scales show significant sex differences, i.e. males score significantly higher than females on the E scale and on the HOQ.

The null hypothesis that HOQ scores should not be affected by DSSI classes could not be rejected since DSSI class effects on HOQ scores occurred.

Summary

1. E Scores. E Scores were predicted not to differ between DSSI classes. There was only one significant difference between the DSSI classes on this scale. That was between the Not Personally Ill and the Neurotic Symptoms class. The Not Personally Ill Class scored significantly more on the E scale than the Neurotic Symptoms class. In addition, males scored statistically significantly more than females on the E scale. No statistically significant DSSI class x sex interactions on the E scale occurred.

2. P Scores. As predicted, P scores increased with increases up the DSSI class hierarchy. The Psychotic classes (Delusions of Disintegration and Integrated Delusions) scored statistically significantly more on the P scale than the non-Psychotic classes (Not Personally Ill, Dysthymic States and Neurotic Symptoms). In addition, males gained significantly higher P scores than females. No statistically significant DSSI class x sex interactions occurred. The findings were thought to be supportive of the hypothesis that P scores would increase with increases in hierarchy class.

3. N. Scores. As predicted, N scores rose up the hierarchy to the Neurotic symptoms class but not thereafter. The Not Personally Ill class scored significantly less on N than all the other classes and the Dysthymic States class scored significantly less on N than all the classes above it. The Neurotic symptoms, Integrated Delusions and Delusions of Disintegration classes were not statistically significantly different from each other on the N Scale. There was also a significant tendency for females to score more than males on the N scale but no significant DSSI class x sex interactions occurred. The findings were thought to be supportive of the hypothesis that N scores would increase up to the Neurotic symptoms class.

4. L Scores - L scores were predicted not to necessarily differ between the classes. The DSSI class and sex effects on L were statistically significant but there was also a statistically significant class x sex interaction effect. The Sheffe test revealed the female Not Personally Ill class to score significantly less than the female Dysthymic States Class and the female Neurotic symptoms class. The suggestion was made that this may be due to an age effect.

5. HOQ scores. HOQ scores were predicted not to differ between DSSI classes. The Not Personally Ill class scored statistically significantly more on the HOQ than the Dysthymic states and Neurotic Symptoms classes. Males in general obtained significantly higher scores on the HOQ than females. In addition, the Psychotic classes scored statistically significantly more than the Neurotic Symptoms class. No statistically significant sex or DSSI class x sex interaction effects were observed.

Section V: E, HOQ and Neurotic Groups

E and HOQ scores were examined in relation to membership of certain Neurotic groups. More specifically, it was predicted that Hysterics would have elevated E and HOQ scores compared to the rest of the Neurotic groups (who may all be classed as Dysthymic according to Eysenck and Claridge (1962) who stated that Obsessional, Phobic, Anxiety and Depressive Neurotics were all Dysthymic).

Means and standard deviations of E and HOQ were examined in the Neurotic groups of Anxiety and Depressed Neurotics, Hysterics, Phobics and Obsessionals. Analyses of variance were computed on these scores by group and sex. The Scheffe test of comparison was used to identify where the significant differences lay.

Table 5.34 below shows the numbers of subjects in each group.

| GROUP | MALE | FEMALE | TOTAL |
|--------------------|------|--------|-------|
| Anxiety Neurotic | 11 | 7 | 18 |
| Depressed Neurotic | 12 | 17 | 29 |
| Hysteric | 4 | 11 | 15 |
| Phobic | 2 | 12 | 14 |
| Obsessional | 13 | 21 | 34 |
| Total | 42 | 68 | 110 |

Table 5.34 showing numbers of subjects in the Neurotic groups

Chi² analysis on these data revealed no statistically significant ($P < .05$) effect in the frequency distribution of sex across the groups ($\text{Chi}^2 = 8.36470$ with 4df, $P = .08$).

The correlation (Pearson Product Moment) between E and HOQ for the whole sample ($n = 260$) was $+0.66$ and this was highly significant statistically ($p < .001$). For the Neurotic group on their own ($n=110$) the correlation was $+0.57$, which also was highly significant ($p < .0001$).

E Scores

Table 5.35 below shows the means and standard deviations for the Neurotic groups on the E scale.

| Group | Whole Sample | | Males | | Females | |
|--------------------|--------------|------|-------|------|---------|------|
| | X | SD | X | SD | X | SD |
| Anxiety Neurotic | 10.72 | 5.41 | 12.82 | 4.96 | 7.43 | 4.61 |
| Depressed Neurotic | 8.66 | 5.43 | 7.33 | 4.89 | 9.59 | 5.75 |
| Hysteric | 10.07 | 6.05 | 12.00 | 5.60 | 9.36 | 6.31 |
| Phobic | 7.79 | 4.49 | 8.50 | 0.71 | 7.67 | 4.89 |
| Obsessional | 7.47 | 5.43 | 10.15 | 6.23 | 5.81 | 4.18 |
| Total | 8.71 | 5.45 | 10.14 | 5.56 | 7.83 | 5.22 |

Table 5.35 Showing means and S.Ds of E scores in the Neurotic groups.

It can be seen from Table 5.35 that Hysterics are not the highest scorers either in the group as a whole, or in the groups divided by males and females. In the Whole and Male groups, the Anxiety Neurotics score highest on E but in the Female groups, it is the Depressed Neurotics who score highest. In the Male group, the Depressed Neurotics score least while in the Female and Whole sample groups, it is the Obsessionals who score least. There is a tendency for males to obtain higher E scores than females.

A two way analysis of variance was computed to examine for the effects of group and sex on E scores. This is illustrated below.

| Source of variation | df | F | Sig. of F |
|-------------------------|----|-------|-----------|
| Main effects | 5 | 2.001 | .085 |
| Group | 4 | 1.227 | .304 |
| Sex | 1 | 3.993 | .048 |
| Group x Sex Interaction | 4 | 2.041 | .094 |

Table 5.36 showing 2-way anova of E scores by Neurotic group and sex.

As Table 5.36 indicates, there is not a significant Neurotic group effect on E scores. There is however a significant ($P < .05$) sex effect. It can then be stated that Males obtain statistically significantly higher scores on E than females.

As Table 5.36 also indicates, there is no statistically significant Neurotic group x sex interaction effect on E scores.

The hypothesis that Hysterics would obtain higher E scores than other Neurotic groups was not supported and the null hypothesis of no significant difference on E scores between Hysterics and other Neurotic groups could not be rejected.

HOQ Scores

Table 5.37 below shows the means and standard deviations for the Neurotic groups on the HOQ.

| Group | Whole Sample | | Males | | Females | |
|--------------------|--------------|------|-------|------|---------|------|
| | X | SD | X | SD | X | SD |
| Anxiety Neurotic | 21.11 | 5.75 | 22.64 | 5.23 | 18.71 | 6.02 |
| Depressed Neurotic | 19.83 | 6.39 | 17.42 | 5.26 | 21.53 | 6.71 |
| Hysteric | 20.53 | 2.75 | 23.50 | 2.65 | 19.45 | 1.92 |
| Phobic | 18.36 | 3.97 | 19.50 | 2.12 | 18.17 | 4.24 |
| Obsessional | 18.50 | 5.32 | 20.23 | 4.71 | 17.43 | 5.50 |
| Total | 19.54 | 5.31 | 20.33 | 5.12 | 19.04 | 5.39 |

Table 5.37 Showing means and S.Ds. of HOQ scores in the Neurotic groups.

It can be seen from Table 5.37 that in the whole sample and female groups, the Hysterics are not the highest scoring group on the HOQ. In the Male sample, Hysterics score highest on the HOQ. In the female sample, Obsessionals score least on the HOQ while in the Male

sample, it is the Depressed Neurotics who score least. In the whole sample, the Phobic group score least. There is a general tendency for males to score more than females on the HOQ.

A two way analysis of variance was computed to examine for the effects of group and sex on HOQ scores. Table 5.38 below illustrates this.

| Source of Variation | df | f | Sig. of F |
|-------------------------|----|-------|-----------|
| Main Effects | 5 | 1.078 | .377 |
| Group | 4 | .941 | .443 |
| Sex | 1 | .943 | .334 |
| Group x Sex Interaction | 4 | 2.581 | .042 |

Table 5.38 Showing 2-way anova of HOQ scores by Neurotic group and sex.

It can be seen from table 5.38 that there is no statistically significant group or sex effect on HOQ scores. There is however a statistically significant ($P < .05$) group by sex interaction effect on HOQ scores. However, the Scheffe test revealed no statistically significant interaction effects between the groups. The significance level in Table 5.38 is not very high ($P = .042$) and it is clear that the effect is not strong enough to be demonstrated by the Scheffe test. Once again, the null hypothesis of no significant differences between Hysterics and other Neurotic groups on the HOQ could not be rejected.

Thus far, there seems to be little evidence to support the notion of a relationship between E, HOQ and the Hysterical and Dythymic disorders. Grouping the different Dysthymic groups together would no doubt alter this situation. This was decided against however since it would have ironed out what may be important differences between the groups. To investigate further, Spearman correlations were computed between E, HOQ and the Neurotic sets of the DSSI.

| Variable | E | | | | HOQ | | | |
|-----------------------|----------------|------|--------------|------|----------------|------|--------------|------|
| | Neurotics only | | Whole Sample | | Neurotics only | | Whole Sample | |
| | r | p | r | p | r | p | r | p |
| Dysthymic | | | | | | | | |
| State of Anxiety | -.11 | .275 | -.20 | .001 | -.15 | .114 | -.27 | .001 |
| State of Depression | -.25 | .009 | -.33 | .001 | -.33 | .001 | -.35 | .001 |
| Compulsions | -.17 | .071 | -.05 | .217 | -.07 | .471 | -.04 | .256 |
| Rumination | -.19 | .041 | -.07 | .130 | -.15 | .125 | -.10 | .071 |
| Phobias | -.25 | .009 | -.27 | .001 | -.14 | .132 | -.22 | .001 |
| Hysteric | | | | | | | | |
| Dissociative symptoms | -.08 | .413 | -.05 | .228 | .02 | .810 | .01 | .820 |
| Conversion symptoms | -.02 | .804 | -.06 | .181 | .03 | .769 | -.04 | .569 |

Table 5.39 showing correlations between E, HOQ and the DSSI Neurotic and dysthymic sets.

It can be seen from Table 5.39 that Dysthymic sets have a negative relationship with E + HOQ whether the sample is the Neurotics only or the Whole sample. The correlations for states of Anxiety and Depression and Phobic symptoms increase from the Neurotic sample to the whole sample, but decrease for Compulsions and Ruminations. The significant ($P < .001$) correlations for the Whole sample are between the States of Anxiety and Depression and Phobias with E and with HOQ. For the Neurotic group only, they are with state of Depression and Phobias ($p < .01$), and Ruminations ($p < .05$) with E, and State of Depression ($p < .001$) with HOQ. These correlations are negative and in the direction predicted by Eysenckian theory. All the correlations between E, HOQ and the Hysteric sets are negligible. E and HOQ behave similarly in the analysis. This is not surprising since, as seen, they correlate highly.

Summary

There was little evidence to support the view that Hysterics in this sample have statistically significantly higher E and HOQ scores than other neurotic groups and the null hypothesis of no significant difference between Hysterics and other neurotic groups could not be rejected. There was a tendency for the Dysthymic states sets and the Phobic set of the DSSI to have significant negative correlations with E and HOQ. E and HOQ were highly correlated with each other as predicted.

Section VI: Personality, Psychopathology, and Traditional Diagnosis

This hypothesis concerns the discrimination of the traditional psychiatric groups of Psychotic, Neurotic and Non-Psychiatric control, on the basis of the personality measures of the Eysencks (1975). Caine and Hope (1967) and the symptom based measure of Bedford and Foulds (1978a). The hypothesis here is that the P scale and the psychotic items of the DSSI will form one discriminant function and that the N scale and the neurotic items of the DSSI will form the other.

A Discriminant Function analysis was executed. This technique examines distinctions between two or more groups with the purpose of finding the best combination of variables to predict membership of groups that are designated prior to the analysis. This purpose is achieved by forming discriminant functions that are linear combinations of the discriminating variables. The maximum number of functions that can be derived is either $N-1$ (where N equals number of groups) or N (where N equals the number of variables) whichever is the lesser. Once the functions are derived, it is possible to interpret them to see how the groups are separated, and to re-classify individuals on the basis of the function.

A multiple discriminant analysis was performed on the following variables: E, P, N, L. (EPQ)

HOQ

| | | |
|----------------------------|---|------|
| State of Anxiety |) | |
| Conversion Symptoms |) | |
| Delusions of Persecution |) | |
| State of Elation |) | |
| Compulsions |) | |
| Delusion of Disintegration |) | DSSI |
| State of Depression |) | |
| Phobias |) | |
| Delusions of Grandeur |) | |
| Rumination |) | |
| Delusions of Contrition |) | |
| Dissociative Symptoms. |) | |

In all, 17 variables were entered into the analysis.

The sample was divided into the three main psychiatric groups of Non-psychiatric controls (n = 52), Neurotics (n = 110) and Psychotics (n = 98).

When using Discriminant analysis, a stepwise selection of variables is selected in terms of their discriminating power. The first variable chosen has the highest discriminating power. The next variable chosen is that which, in conjunction with the first variable chosen, has the highest discriminating power. This process is repeated until all discriminating variables have been entered. All the variables not needed to obtain satisfactory discrimination are then eliminated from the analysis. Wilks method was used to specify the stepwise criterion. In this method, the criterion is the overall multivariate F ratio for the differences between group centroids. As the F ratio increases, Wilks Lambda decreases. This method takes into account the differences between all the centroids and within group homogeneity.

In addition to a discriminant analysis using data from the whole sample, two separate discriminant analyses were performed on the two halves of the sample. This is because there is no way of assessing the significance of the bimodality of a distribution or separation of groups (Paykel, 1981). In order to check on the validity of a set of discriminant function analysis results, replication is necessary (Kline 1979, Paykel, 1981). In this study, an attempt at replication was made by splitting the sample in half. This will be discussed after the report of discriminant analysis with the whole sample.

Thirteen variables were selected by the stepwise procedure for further inclusion in the analysis. These variables are contained in Table 5.40 below along with the corresponding values of Wilks Lambda, and the significance level of the F ratio.

| Step | Variable | Wilks Lambda | Sig. |
|------|----------------------------|--------------|---------|
| 1 | State of Depression | 0.61 | 0.00001 |
| 2 | Delusion of Persecution | 0.38 | 0.00001 |
| 3 | Delusions of Grandeur | 0.31 | 0.00001 |
| 4 | Anxiety State | 0.28 | 0.00001 |
| 5 | L | 0.26 | 0.00001 |
| 6 | Delusion of Disintegration | 0.25 | 0.00001 |
| 7 | N | 0.25 | 0.00001 |
| 8 | Ruminative Symptoms | 0.25 | 0.00001 |
| 9 | Compulsive Symptoms | 0.24 | 0.00001 |
| 10 | Conversion Symptoms | 0.24 | 0.00001 |
| 11 | E | 0.24 | 0.00001 |
| 12 | Delusion of Contrition | 0.23 | 0.00001 |
| 13 | Phobic Symptoms | 0.23 | 0.00001 |

Table 5.40 Showing the stepwise selection of variables for further analysis.

The state of Depression variable is the most discriminating variable in the stepwise selection procedure followed by delusions of Persecution, delusions of Grandeur and state of Anxiety. This suggests that Dysthymic states and Ideas of Reference will be of import in the ensuing analysis.

Four variables were eliminated from further analysis at this stage. These were: P, HOQ, state of Elation and Dissociative symptoms.

It is of interest to note that P, a variable that was expected to feature in one of the functions, has been excluded from further analysis. This suggests that P is not a useful predictor variable in this sample.

Table 5.41 below shows the extent to which the two discriminant functions account for the explained variance in the sample.

| Function | Eigenvalue | % of Variance | Cumulative % | Canonical Correlation |
|----------|------------|---------------|--------------|-----------------------|
| 1 | 1.12864 | 52.48 | 52.48 | 0.7281589 |
| 2 | 1.02202 | 47.52 | 100.000 | 0.7109468 |

Table 5.41 Showing the Canonical Discriminant Functions.

As Table 5.41 indicates, both functions have eigenvalues greater than one. In terms of the percentage of variance accounted for, both functions account for approximately half the variance accounted for by the two functions. They have similarly high correlations with the dummy variables which define group membership ($r > .70$).

Table 5.42 below indicates the discriminant function coefficients and enables interpretation of the functions.

| Variable | Function I | Function II |
|----------------------------|------------|-------------|
| E | -0.19285 | -0.08323 |
| N | 0.20020 | 0.13778 |
| L | 0.33416 | 0.15042 |
| State of Anxiety | 0.41246 | 0.29413 |
| Conversion Symptom | 0.18808 | -0.07417 |
| Delusions of Persecution | -0.29271 | 0.51930 |
| Compulsion | 0.11608 | -0.18508 |
| Delusion of Disintegration | 0.21194 | 0.18729 |

| Variable | Function I | Function II |
|-------------------------|------------|-------------|
| State of Depression | 0.61575 | -0.02539 |
| Phobias | -0.06461 | -0.16252 |
| Delusions of Grandeur | -0.02599 | 0.60438 |
| Ruminations | -0.24787 | 0.11929 |
| Delusions of Contrition | -0.21315 | -0.03699 |

Table 5.42 showing the standardized canonical Discriminant Function coefficients.

Table 5.42 indicates that the first discriminant function consists of State of Depression, State of Anxiety and L scores and can be labelled a Dysthymic States function. The role of L as the third most powerful contributor, is unclear. As mentioned in Chapter Three, its original intended use as a simple lie scale has in some ways been abandoned. In addition there is a relatively large negative contribution from delusions of Persecution emphasizing the non-psychotic nature of the function.

The second discriminant function has delusions of Grandeur and delusions of Persecution as its main coefficients. In addition, state of Anxiety shows a relatively large contribution. This function may be labelled as a Clinical Psychoticism function.

N does not feature as a major contributor. This must not be seen as an indication of its value as a predictor variable. Loadings are strongly affected by the complex correlation between all the items with the intention of maximizing between group discrimination, regardless of the contribution of an individual item, or its effect on an individual subject.

Table 5.42 below shows the centroids of the three groups on the two functions.

| Group | Function I | Function II |
|-----------------|------------|-------------|
| Non-Psychiatric | -1.87555 | -0.87281 |
| Neurotic | 0.97418 | -0.74130 |
| Psychotic | -0.09828 | 1.29519 |

Table 5.42 Showing group centroids on the Discriminant Functions.

Figure 5.1 overleaf shows the position of these centroids on a graph of the discriminant functions. It is clear that Function I which has been labelled as a Dysthymic states function discriminates the Non-Psychiatric Controls from the Neurotics. To a certain extent, it also discriminates the Psychotics from the Neurotics and the Non-Psychiatric Controls too. This is as a result, no doubt, of the influence of the negative contribution of delusions of Persecution to Function I. The second function, which has been labelled as Clinical Psychoticism clearly differentiates the Psychotics from the Neurotics and the Non-psychiatric sample. The latter two groups are virtually indistinguishable on this function.

The discriminant analysis also involved a Varimax rotation of the function. The rotated functions were examined. Table 5.43 below shows the rotated discriminant function coefficient.

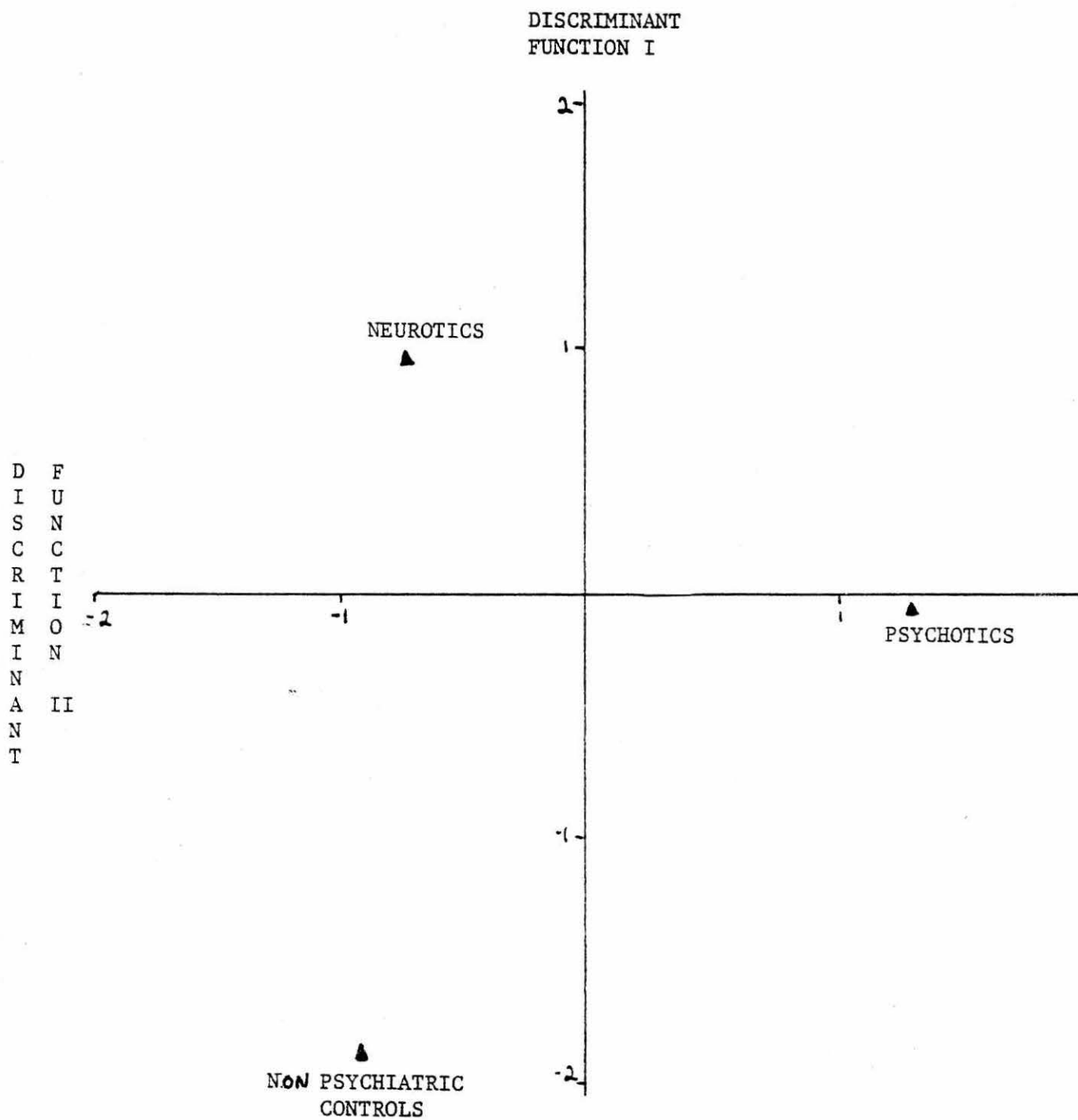


Fig.5.1 Showing the positions of the Group Centroids on the Discriminant Functions.

| Variable | Rotated Function I | Rotated Function II |
|-----------------------------|--------------------|---------------------|
| E | -0.20774 | -0.03103 |
| N | 0.22883 | 0.08188 |
| L | 0.36155 | 0.05977 |
| State of Anxiety | 0.47406 | 0.17861 |
| Conversion Symptoms | 0.16279 | -0.11990 |
| Delusions of Persecution | -0.14986 | 0.57697 |
| Compulsions | 0.06477 | -0.20865 |
| Delusions of Disintegration | -0.15687 | 0.23534 |
| State of Depression | 0.58868 | -0.18234 |
| Phobias | 0.10410 | -0.14053 |
| Delusions of Grandeur | 0.12976 | 0.59086 |
| Ruminations | -0.20902 | 0.17882 |
| Delusions of Contrition | -0.21551 | 0.01887 |

Table 5.43 showing the standardized Discriminant function coefficients for rotated functions.

The main contributing variables to the rotated functions are the same as those main contributing variables to the unrotated functions. The first rotated function may be labelled a Dysthymic states function with its main contributions being State of Depression, state of Anxiety and L. The second rotated function may be labelled as a Clinical Psychoticism function with its main contributions being delusions of Grandeur and delusions of Persecution.

As a check on the adequacy of the derived functions for discriminating between the groups each member of the sample was reclassified according to the functions derived. Predicted group membership (according to the discriminant functions) and actual group membership (according to the a priori groups) were compared. Of course, in the case of the present investigation, the a priori groups

can not be treated as highly reliable, since allocation to psychiatric groups is not so clear an issue as, for example, allocation to a male/female group. Reclassification of the sample was on the basis of individual members' discriminant function scores and the pooled within-groups covariance matrix for the function.

Table 5.44 below shows the results of the reclassification.

| Actual Group | N | Predicted Group | | |
|-----------------|-----|-----------------|------------|------------|
| | | Non-Psychiatric | Neurotic | Psychotic |
| Non Psychiatric | 52 | 96.2% (50) | 1.9% (1) | 1.9% (1) |
| Neurotic | 110 | 10.9% (12) | 84.5% (93) | 4.5% (5) |
| Psychotic | 98 | 16.3% (16) | 16.3% (16) | 67.3% (66) |

Table 5.44 showing the percentage of cases reclassified into the three groups.

χ^2 demonstrated a highly significant association between the a priori groups and predicted groups. ($\chi^2 = 266.79$, 4 df, $p < .0001$).

It can be seen that the non-psychiatric sample showed the highest agreement between predicted and actual group membership of the two cases that were misclassified, one was re-classified as Neurotic and the other as Psychotic. The one reclassified as Neurotic scored positively on the DSSI sets of state of Anxiety, state of Elation, Compulsions, state of Depression, Phobias, Ruminations and delusions of Contrition. The one reclassified as Psychotic scored positively on the DSSI sets of state of Anxiety, state of Elation, Compulsion, delusions of Disintegration, state of Depression, Phobias, Ruminations, delusions of Contrition and Dissociative symptoms. Unfortunately, neither of these subjects responded to the invitation to be re-tested, so what became of them is unknown. It was stressed at the time of testing that

individuals receiving psychiatric treatment should not volunteer to be tested. However, it is possible that these two individuals may have subsequently received psychiatric help since it is likely, due to the extent of their pathology, that they may not have coped for long without it. The alternative is that these scores may be the result of invalid responding.

In the Neurotic group 84.5% of individuals had the same predicted and actual group membership. 10.9% were classified as non-psychiatric and 4.5% were classified as Psychotic. Table 5.45 below shows the breakdown of Neurotic patients allocated to a group different from their actual group membership.

| Actual Group | Predicted Group | | |
|--------------------------|-----------------|-----------|-------|
| | Non-Psychiatric | Psychotic | Total |
| Anxiety Neurotic (18) | 4 | 1 | 5 |
| Neurotic Depression (29) | 5 | 1 | 6 |
| Hysteric (15) | 1 | 2 | 3 |
| Phobic (14) | 0 | 0 | 0 |
| Obsessional (34) | 2 | 1 | 3 |

Table 5.45 Showing breakdown of re-allocated members of the Neurotic group. (Actual sub-group n shows the size of the whole subgroup and not just the number of individuals reallocated.)

It can be seen that the commonest source of disagreement between actual and predicted group membership occurred with the altered mood states Neurotic subgroups of Anxiety and Depression where the majority of reclassifications were into the Non-Psychiatric group. This may be viewed as a neighbourly re-allocation since, of all the psychiatric sample, individuals suffering from such mood states may be considered as the least disturbed (although not necessarily the least distressed). The tendency here for Hysterics to be reallocated to the Psychotic

group twice as frequently as the non-psychiatric subgroup must be treated with extreme caution due to the minimal numbers involved. The Phobic group showed no tendency to be re-allocated at all while the Obsessional group showed a slight tendency. Once again, it is difficult to comment on the direction of re-allocation due to the small numbers involved.

In the Psychotic group 67.3% of subjects were allocated to their actual group. 16.3% were allocated to the non-psychiatric group and 16.3% were allocated to the Neurotic group. Table 5.46 below shows the sub-group breakdown of re-allocated subjects.

| Actual Group | Predicted Group | | |
|---------------------------|-----------------|----------|-------|
| | Non-Psychiatric | Neurotic | Total |
| Sub-groups (n) | | | |
| Psychotic depression (10) | 0 | 10 | 10 |
| Manic depressive (17) | 6 | 1 | 7 |
| Paranoid (19) | 4 | 1 | 5 |
| Schizophrenic (52) | 6 | 4 | 10 |

Table 5.46 showing breakdown of re-allocated membership of the Psychotic group.

As Table 5.46 indicates, all the Psychotic depressive patients were re-allocated to the Neurotic group. There was also a general tendency for the other psychotic subgroups to be re-classified as non-psychiatric rather than as Neurotic. Inspection of the raw scores revealed that the mis-classification of the Psychotic depressive group was due to a failure to endorse other psychotic symptom items on the DSSI such as delusions of Persecution and delusions of Grandeur. Clearly if they were suffering from such pathology, they would not be likely to have been diagnosed as Psychotic depressive in the first place. Table 7.1 (in Appendix B) contains the means and standard deviations of the subgroups on all the DSSI sets. It can be seen from

these that the Psychotic depressive group only endorsed the psychotic delusions of Contrition items to any extent. The relatively large number of misclassified Manic Depressives was perturbing, but inspection of the raw data revealed that the misclassified subjects are those who failed to score on delusions of Persecution as well as delusions of Grandeur. In addition, they failed to endorse Neurotic symptoms sets. A similar result emerged with the misclassified Paranoics. The misclassified ones were those who failed to endorse delusions of Grandeur items as well as delusions of Persecution items on the DSSI and also the Neurotic symptoms sets. The misclassified Schizophrenics were those who tended to endorse neither delusions of Persecution items nor delusions of Grandeur items, or only one of them.

The number of misclassifications in the Psychotic group is large and can partly be attributed to the lack of mixed syndrome scoring as well as to a failure to endorse symptom sets in the Neurotic class, thus failing to uphold the hierarchical principle.

In all, 80.38% of cases in this analysis were "correctly" re-classified.

The results of the split sample analyses are contained in the Appendix D. It can be seen that the analysis with sample A was in close agreement with the whole sample analysis. Two functions emerged labelled Dysthymic States and Clinical Psychoticism. The first function here discriminated the Non-Psychiatric and Neurotic groups. To a lesser extent the Psychotic group could be discriminated from both these groups on this sample. The second function more clearly separated the psychotic group from the non-psychotic and Neurotic groups. See Figure 7.1 in Appendix D. The rotated functions were highly similar to the unrotated ones. The overall number of "correct" re-classifications was 85.38%. The analysis with sample B produced less clear cut unrotated

functions. The first function to emerge was basically a bipolar one with Depressed states at one pole and Ideas of Reference at the other. It was interesting here to note the separation of the two obsessional sets of the DSSI on this function. Ruminations occurred at the same pole as Ideas of Reference. The second function was labelled as a Clinical Psychoticism factor. The first function clearly separates the Non-Psychiatric group from the Neurotic group. To a lesser extent, the Psychotic group could be discriminated from both the other groups on this function. However, the second function most clearly discriminated Psychotics from the Non-psychiatric sample and the Neurotic sample who were indistinguishable on this function. See fig. 7.1 in Appendix D. The rotated solution was clearer. The first rotated function which consisted mainly of Dysthymic states and Obsessional symptoms (Ruminations and compulsions) was clearly a Dysthymic/Obsessional function while the second function was a Clinical Psychoticism one (delusions of Grandeur, delusions of Persecution, delusions of Disintegration). The overall number of "correct" re-classifications in this analysis was 79.23%

The analysis with sample A was clearly a replication of the whole sample analysis. The analysis with sample B, while producing very similar separation did so on the basis of slightly different functions although the rotated functions for sample B were similar to those of sample A and the whole sample analysis. Figure 7.1 in Appendix E which contains the centroids of the three groups in each discriminant analysis demonstrates quite clearly that replication was achieved.

SUMMARY

A Discriminant Function Analysis was conducted using the EPQ, HOQ and the DSSI sets. Seventeen variables and three groups were entered into the analysis. The groups were: Non-Psychiatric control (N = 52), Neurotics (n = 110) and Psychotics (n = 98).

Two functions were derived. The first one was labelled Dysthymic states and consisted of state of Anxiety, state of Depression and L. The second was labelled Clinical Psychoticism. It consisted of delusions of Persecution and delusions of Grandeur. The first function discriminated between the Non-Psychiatric Controls and Neurotics and the second function discriminated between Psychotics and Non-Psychotics. The Varimax rotated functions were highly similar to the unrotated functions. In a reclassification based on scores on the discriminant functions, 80.38% of the sample were correctly reclassified. χ^2 was significant ($p < .01$). Of note, Manic Depressives and Paranoids were misclassified as a result of failure to uphold the hierarchy principle.

Split sample analyses were conducted to check for the reliability of the main analysis. The split sample analyses confirmed the reliability of the whole sample analysis.

The part of the hypothesis that the scores from the DSSI Neurotic and Psychotic sets would emerge as major contributory variables to the two discriminant functions respectively was supported and the null hypothesis that no functions resembling Neurotic ^{and} Psychotic disorders was rejected. The personality variables of N and P were remarkable for their lack of contribution to the function. In fact, P was dropped from further analysis early on, along with HOQ, state of Elation and Dissociative symptoms. The part of the hypothesis predicting the role of N and P in the discriminant functions was not supported.

Section VII: - Psychopathology and Personality

The next part of the analysis was an attempt to examine the relationship of personality measures to pathological items in a factor analysis. The hypothesis was that in a Factor Analysis of E, P, N, L, HOQ and the scores from the twelve DSSI sets, at least four clear factors should emerge, each having a major contribution from one of the four Eysenckian scales of E, P, N and L. More specifically, the factors that were expected to emerge were:-

A Clinical Psychoticism factor - consisting of P, delusions of Persecution, delusions of Grandeur, delusions of Contrition and delusions of Disintegration.

A Neuroticism factor - consisting of N, state of Anxiety, state of Depression, symptoms of Conversion, symptoms of Dissociation, Ruminations, Compulsions and Phobias.

An Extraversion factor - which should not only have significant contributions from E but may also be expected to have a significant contribution from the HOQ.

A Lie scale factor.

It was, of course, possible that more factors would emerge (e.g. some factors made up of mainly pathological items) in addition to the four mentioned above.

It was also likely that some of the four factors mentioned above would have additional contributions from a mixture of DSSI items. This was because the inclusive nature of the DSSI sets predisposed to such a situation.

Seventeen variables were submitted to the analysis: E, P, N, L, HOQ, state of Anxiety, symptoms of Conversion, delusions of Persecution, state of Elation, Compulsions, delusions of

Disintegration, state of Depression, Phobias, delusions of Grandeur, Ruminations, delusions of Contrition and symptoms of Dissociation. Scores from all the 260 subjects were used.

These variables were submitted to a Principal Factor Analysis. (Nie, Hull, Jenkins, Steinbrenner and Bent, 1975). A Spearman correlation matrix was used for the analysis since the DSSI set scores were ordinal and not normally distributed. (See Appendix E for correlation matrix).

Table 5.47 below shows the initial factors, their eigenvalues and the percentage of variance they accounted for.

| Factor | Eigenvalue | Percentage Variance | Cumulative Variance |
|--------|------------|---------------------|---------------------|
| 1 | 6.85 | 40.3 | 40.3 |
| 2 | 2.88 | 16.9 | 57.2 |
| 3 | 1.07 | 6.3 | 63.5 |
| 4 | 0.91 | 5.3 | 68.8 |
| 5 | 0.72 | 4.2 | 73.1 |
| 6 | 0.67 | 4.0 | 77.0 |
| 7 | 0.54 | 3.2 | 80.2 |
| 8 | 0.50 | 3.0 | 83.1 |
| 9 | 0.44 | 2.6 | 85.7 |
| 10 | 0.40 | 2.4 | 88.1 |
| 11 | 0.37 | 2.2 | 90.3 |
| 12 | 0.35 | 2.0 | 92.3 |
| 13 | 0.31 | 1.8 | 94.1 |
| 14 | 0.30 | 1.7 | 95.9 |
| 15 | 0.26 | 1.5 | 97.4 |
| 16 | 0.23 | 1.3 | 98.7 |
| 17 | 0.21 | 1.3 | 100 |

Table 5.47 showing eigenvalues and percentage of variance accounted for by each factor.

It can be seen that the first factor accounted for just over 40% of the variance to be accounted for. The second factor accounted for just over 16% and the third, fourth and fifth accounted for just over 6%, 5% and 4% of the variance respectively.

In order to decide how many factors to extract, Cattell's Scree test technique was employed (see Fig. 5.2). The Scree test seems to suggest extracting five factors, although it could be argued that it also indicates extracting four or six. The Kaiser Unity rule, of course, suggests extracting only three factors. However, there were only seventeen variables in the analysis and Cattell (1952) has suggested that when the number of variables is less than twenty, there is a tendency for Kaiser's criterion to extract a conservative number of factors. In order to decide between four, five and six factors, three analyses were computed with Direct Oblimin Rotation ($\delta = 0$) and the resulting factors examined. The five factor solution was adopted since it produced the most psychologically clear factors. An additional justification for extracting five factors is that it does seem to be the number of factors most strongly suggested by the Scree test. However, it must be acknowledged that the decision of how many factors to extract is not entirely objective. The four and six factor solutions are in appendix E.

The five factors extracted account between them for 73.1% of the variance accounted for by the seventeen factors.

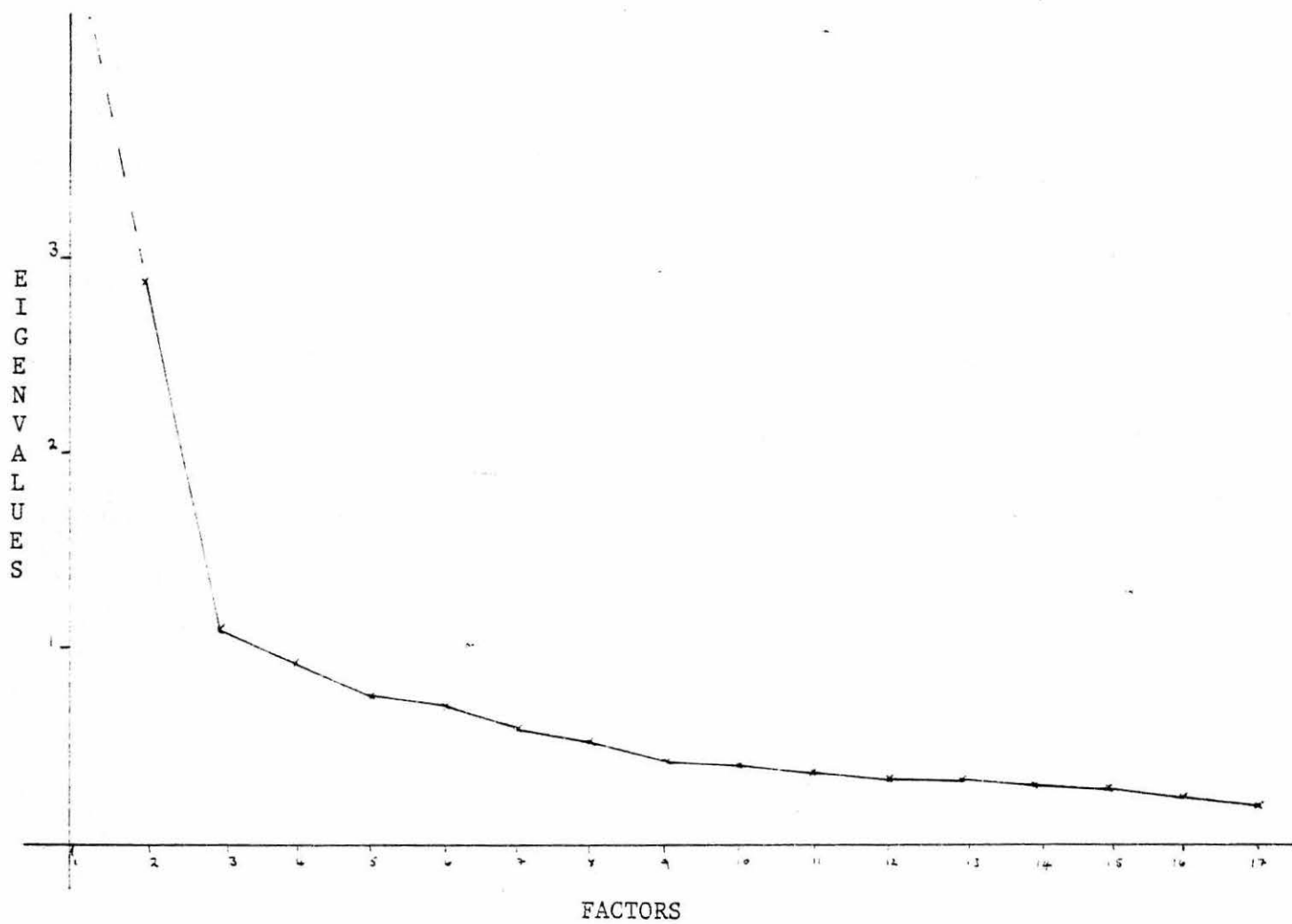


Fig. 5.2. Showing Scree test of Factors/Eigenvalues

The five extracted factors were subjected to Direct Oblimin rotations with delta set from -30 to .5 in order to search for the factor solution with the simplest structure. The delta = -.3 solution was taken as the most parsimonious. This is contained in Table 5.48 below. For the factors, the hyperplane counts are 35%, 71%, 41%, 53% and 47% in order of appearance. The overall mean hyperplane count percentage was 49% and this factor solution just failed, by one decimal point to reach significance at the .10 level according to Bargmann's criteria (Sine & Kameoka, 1977).

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 |
|-----------------------------|----------|----------|----------|----------|----------|
| E | 0.10193 | 0.93468 | 0.10617 | -0.04317 | -0.02628 |
| P | 0.06393 | 0.08297 | -0.44634 | -0.45027 | -0.03510 |
| N | 0.71693 | -0.10728 | -0.02179 | -0.13334 | -0.01459 |
| L | 0.01030 | -0.06311 | -0.04638 | 0.50044 | 0.04667 |
| HOQ | -0.19504 | 0.65934 | -0.17588 | -0.04370 | -0.04329 |
| State of Anxiety | 0.71999 | 0.01858 | -0.04655 | 0.22248 | -0.06855 |
| Conversion Symptoms | 0.34431 | 0.07520 | -0.42969 | 0.18233 | -0.02793 |
| Delusions of Persecution | 0.07070 | -0.00850 | -0.62678 | -0.06613 | -0.13820 |
| State of Elation | -0.01581 | 0.06902 | 0.01487 | -0.07448 | -0.83808 |
| Compulsions | 0.41231 | 0.03440 | -0.14908 | 0.17926 | -0.43163 |
| Delusions of Disintegration | -0.01668 | 0.02258 | -0.73396 | 0.09542 | -0.17036 |
| State of Depression | 0.76909 | -0.13543 | -0.03771 | 0.07328 | 0.04104 |
| Phobias | 0.30811 | -0.16540 | -0.32246 | 0.23770 | -0.16007 |
| Delusions of Grandeur | -0.14795 | 0.10289 | -0.41460 | -0.08975 | -0.47386 |
| Ruminations | 0.51962 | -0.03505 | -0.07385 | -0.05159 | -0.41642 |
| Delusions of Contrition | 0.38361 | -0.14270 | -0.35462 | -0.11875 | -0.17377 |
| Dissociative Symptoms | 0.31103 | -0.02222 | -0.54524 | -0.07263 | -0.15076 |

Table 5.48 showing the Direct Oblimin rotated factor loadings.

Variable loadings of .3 or more were used to guide the interpretation of the factors (Tabachnik & Fidell 1983).

The following variables (in order of loading size) contributed to Factor One - state of Depression (.76909), state of Anxiety (.71997), N (.71693), Ruminations (.51962), Compulsions (.41231), delusions of Contrition (.38361), Conversion symptoms (.34431), Phobias (.30811) and

Dissociative Symptoms (.31103). It is a factor that is clearly dominated by affective states and neurotic symptoms. Apart from state of Elation, it contains all the Dysthymic states and Neurotic symptoms class sets. In addition, the N scale has an excellent loading (Comrey 1973) on this scale. It is interesting to note also the appearance of delusions of Contrition in this factor, in the light of the confusion that abounds over the distinctions between Neurotic and Psychotic depression. This factor may be labelled a Neuroticism factor.

Factor Two was altogether more specific. It had two loadings: one from Extraversion (.93468) and one from Hysteroidness (.65934). When only two variables load on a factor, a test of that factor's reliability is to examine the pattern of correlations of the two variables with each other and with other variables. If they are highly correlated with each other and relatively uncorrelated with other variables, then the factor may be said to be reliable (Tabachnik and Fidell, 1983). Observation of the correlation matrix revealed this to be the case. Extraversion and Hysteroidness correlated .67 with each other and were relatively uncorrelated with other variables. The next issue to consider was whether these two separate measure represented one or two separate variables. Since they only account for just under 45% of the variance in each other, it seemed fair to assume that they were two separate variables in this study. Factor Two may be labelled primarily as an Extraversion factor.

Factor Three consists of the following variables - Delusions of Disintegration (-.73396), Delusions of Persecution (-.62678), Dissociative symptoms (-.54254), P (-.44634), Conversion symptoms (-.42969), Delusions of Grandeur (-.41460), Delusions of Contrition (-.35462) and Phobias (-.32246). This is clearly a factor closely related to psychosis. It contains all the DSSI psychotic sets and the P

scale. In addition it contains the two Hysteric sets and Phobias. This could possibly be explained by the hierarchical nature of the DSSI sets. This factor may be labelled a Clinical Psychoticism factor.

Factor Four is bipolar and contains L (.50044) and P (-.45027). In the correlation matrix in appendix E, it can be seen that L scale scores are most highly correlated with P (-.28) while they are relatively uncorrelated with other variables. P, on the other hand shows much higher correlations with the psychotic sets of the DSSI. Table 5.49 below reproduces the correlations with P of all the variables in the analysis.

| Variable | P |
|-----------------------------|----------|
| E | 0.20574 |
| N | 0.16815 |
| L | -0.28274 |
| HOQ | 0.20884 |
| State of Anxiety | 0.06420 |
| Conversion symptoms | 0.25674 |
| Delusions of Persecution | 0.42463 |
| State of Elation | 0.37754 |
| Compulsions | 0.22548 |
| Delusions of Disintegration | 0.40134 |
| State of Depression | 0.07212 |
| Phobias | 0.15127 |
| Delusions of Grandeur | 0.47398 |
| Ruminations | 0.28235 |
| Delusions of Contrition | 0.31460 |
| Dissociative Symptoms | 0.41731 |

Table 5.49 Showing the correlations of the P scale with other variables

In particular it can be seen that P shares higher correlations ($< .4$) with the psychotic sets of the DSSI (excepting delusions of Contrition) and Dissociative symptoms. Because of this it may be argued that this factor may be unreliable (Tabachnik and Fidell, 1983) and although this factor also emerged in the four and six factor solutions too it may not emerge in other samples. However, both P and L have been associated with social desirability. In the case of P scores, it has been argued that low scores may reflect a desire to fake good in order to appear socially desirable (Hinton 1975). In the case of L, high scores may also reflect social desirability (Montag 1977, Barrett and Kline, 1980). The negative correlation between P and L therefore ties in well with previous thinking in the field. It is clear that such a factor needs to be replicated with a different data set. This factor may be labelled as a Social Desirability factor,

It is of interest to note here that while P correlated more highly with the psychotic DSSI sets, it only accounted for between 16% and 22% of the variance in these variables. This hardly supports the idea of the P scale as a measure of clinical psychosis. To support such a thesis, much higher correlations with psychotic delusions would be needed to demonstrate concurrent validity.

Factor Five consists of State of Elation ($-.83808$), Delusions of Grandeur ($-.47386$), Compulsions ($-.43163$) and Ruminations ($-.41642$). This factor contains contributions from the DSSI sets associated with Mania (Elation and Delusions of Grandeur) in addition to contributions from the two obsessional sets (Ruminations and Compulsions). This is a confusing factor since obsessional activities are not usual in the phenomena of Mania neither can it be put down to the hierarchical

concept since Manic Depressives as we have seen, fail to obtain adequate scores on neurotic symptoms such as obsessions. This factor may be labelled as one of Mania.

Table 5.50 below shows the factors and their correlations with each other.

| Factors | Extraversion | Clinical Psychoticism | Social Desirability | Mania |
|-----------------------|--------------|-----------------------|---------------------|-------|
| Neuroticism | -.32 | -.44 | .19 | -.38 |
| Extraversion | | -.05 | -.27 | -.16 |
| Clinical Psychoticism | | | .06 | .60 |
| Social Desirability | | | | .12 |

Table 5.50 showing correlations between the five factors.

It can be seen from Table 5.50 that the first factor of Neuroticism has substantial and negative loadings with Clinical Psychoticism (-.44), Mania (-.38) and Extraversion (-.32). The second factor, Extraversion has low and negative correlations with Social Desirability (-.27) and Mania (-.16) and a negligible association with Clinical Psychoticism (-.05). The third factor, Clinical Psychoticism is highly correlated with Mania (.60) and unassociated with Social Desirability (0.6) which is of interest since P plays a major role in both the factors of Psychoticism and Social Desirability. Finally, there is a low correlation between the fourth and fifth factor of Social Desirability and Mania (.12). As may be expected the three psychopathological factors all correlate with each other substantially. The Clinical Psychoticism factor is relatively free of association with the personality factors, Mania is weakly but negatively associated with Extraversion while Neuroticism has a stronger negative association with

both Extraversion and a weaker positive association with Social Desirability. It is interesting to note that Extraversion has negative correlations with every other factor.

The first, third and fifth factors (Neuroticism, Clinical Psychoticism and Mania) to emerge from the analysis were clearly psychopathological factors while the second and fourth (Extraversion and Social Desirability) factors were personality factors. It was of interest to note in this connection that P emerged as a strong contributor to both Neuroticism and Clinical Psychoticism) and
"Although it may seem desirable at this stage to have executed a second order analysis, this was regarded as being beyond the scope of the immediate hypothesis".

these

Summary

It was hypothesized that P and N would emerge, in a factor analysis, in two separate factors with high loadings from the psychotic and neurotic sets of the DSSI respectively. This was supported in the analysis. In addition, E and L both occurred in non-pathological factors as predicted. Five factors were extracted altogether: Neuroticism, Extraversion, Clinical Psychoticism, Social Desirability and Mania. The relatively low correlations of P with the psychotic sets of the DSSI were noted and the question of P scores representing functioning from normality to Psychosis was raised. The correlations between factors were inspected. All three pathological factors were substantially negatively correlated with each other with the exception of Psychosis and Mania where the correlation was substantial and positive. Whereas Clinical Psychoticism was unassociated with the non-pathological factors, Mania was negatively associated with one of them (Extraversion) while Neuroticism was associated with both Extraversion (negative) and Social Desirability (positive).

Section VIII: Psychosis and P Scale Scores

This part of the analysis was to see if the Psychotic sample were scoring on any particular aspects of the P scale to a greater extent than the other groups. As we have seen, Psychotics (or those classed as such by the DSSI) do score significantly more on the P scale than non-Psychotic groups. The initial part of this analysis was to conduct a Factor Analysis of P scale items. It is hypothesized that Psychotics in particular are more likely to endorse items with a Projected Hostility/Hostility flavour.

All the P scale items (25 in all) were submitted for analysis. Scores were recorded so that a score which meant a point on the scale was "1" and a score which did not lead to a point on the scale was "0". Table 5.51 overleaf summarizes the P scale items.

The items were submitted to a Principal Factor Analysis based on a Phi correlation coefficient matrix. The matrix is contained in Appendix F. A Scree test (see Figure 5.3 overleaf) was used to see how many factors might best be extracted. The Scree test was ambiguous and suggested that either 3, 6 or 8 factors could be extracted. Extracting 8 factors was also consistent with Kaisers' unity criterion. Three initial analyses with Direct oblimin rotation ($\delta = 0$) were executed extracting 3, 6 and 8 factors. A decision was made not to extract 6 or 8 factors because both these solutions contained factors made up of only one variable suggesting that the factors were insufficiently defined (Tabachnik & Fidell, 1983). In addition four of the factors in the eight factor solution were made up of only two variables. Tabachnik and Fidell (1983) note that in such cases, if the two variables in question are highly correlated with each other, and relatively uncorrelated with the other variables, then the factor may

be regarded as reliable. In this case, the relevant variables were not highly correlated with each other at the same time as being relatively uncorrelated with other variables. The eight and six factor solutions, therefore, were rejected on the grounds of unreliability and insufficiently defined factors. These factor solutions are contained in Appendix F.

Following the suggestion of Tabachnik & Fidell (1983) to examine the factor extractions around the point of diminishing returns on the Scree test, the four and five factor solutions were also examined (also rotated to Direct oblimin solution ($\Delta = 0$)). The three factor solution was adopted on the basis of being the most parsimonious as well as psychologically meaningful. These factor solutions are also in Appendix F.

Table 5.52 overleaf shows the initial factors with their respective eigenvalues and the percentages of variance they accounted for.

- No V2 Do you stop to think things over before doing anything?
- No V6 Would being in debt worry you?
- No V9 Do you lock up your house carefully at night?
- No V11 Would it upset you a lot to see a child or an animal suffer?
- No V18 Do you believe insurance schemes are a good idea?
- Yes V22 Would you take drugs which may have strange or dangerous effects?
- Yes V26 Do you enjoy hurting people you love?
- Yes V30 Do you have enemies who want to harm you?
- Yes V33 Do you enjoy practical jokes that can sometimes really hurt people?
- No V37 Do good manners and cleanliness matter much to you?
- Yes V43 Do you think marriage is old-fashioned and should be done away with?
- No. V46 Do people who drive carefully annoy you?
- No. V50 Do most things taste the same to you?
- No. V53 Does it worry you if you know there are mistakes in your work?
- No. V57 Do you like to arrive at appointments in plenty of time?
- No. V61 Is (or was) your mother a good woman?
- No. V65 Are there several people who keep trying to avoid you?
- No. V67 Do you think people spend too much time safeguarding their future with savings and insurances?
- No. V71 Do you try not to be rude to people?
- No. V74 When you catch a train do you often arrive at the last minute?
- Yes V76 Do your friendships break up easily without it being your fault?
- Yes V79 Do you sometimes like teasing animals?
- Yes V83 Would you like other people to be afraid of you?
- Yes V87 Do people tell you a lot of lies?
- No V90 Would you feel very sorry for an animal caught in a trap?

Table 5.51 p Showingscale items submitted for factor analysis.

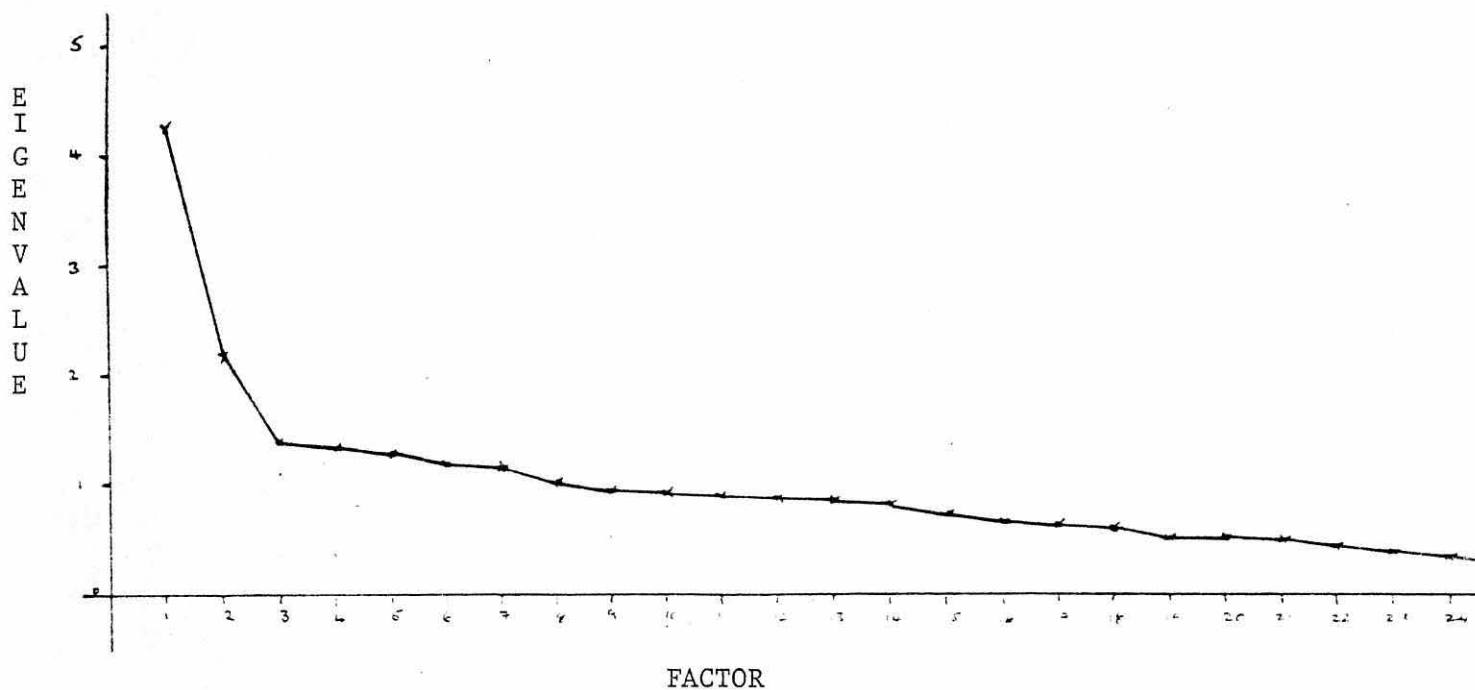


Fig. 5.3 Showing Scree test on factors extracted in analysis of the P scale.

| Factor | Eigenvalue | % of Var. | Cum % |
|--------|------------|-----------|-------|
| 1 | 4.24389 | 17.0 | 17.0 |
| 2 | 2.02704 | 8.1 | 25.1 |
| 3 | 1.42045 | 5.7 | 30.8 |
| 4 | 1.37325 | 5.5 | 36.3 |
| 5 | 1.27912 | 5.1 | 41.4 |
| 6 | 1.21867 | 4.9 | 46.2 |
| 7 | 1.18287 | 4.7 | 51.0 |
| 8 | 1.02045 | 4.1 | 55.1 |
| 9 | 0.95198 | 3.8 | 58.9 |
| 10 | 0.92069 | 3.7 | 62.6 |
| 11 | 0.90200 | 3.6 | 66.2 |
| 12 | 0.86145 | 3.4 | 69.6 |
| 13 | 0.82929 | 3.3 | 72.9 |
| 14 | 0.78207 | 3.1 | 76.1 |
| 15 | 0.75514 | 3.0 | 79.1 |
| 16 | 0.69740 | 2.8 | 81.9 |
| 17 | 0.68645 | 2.7 | 84.6 |
| 18 | 0.61639 | 2.5 | 87.1 |
| 19 | 0.56909 | 2.3 | 89.4 |
| 20 | 0.55786 | 2.2 | 91.6 |
| 21 | 0.50757 | 2.0 | 93.6 |
| 22 | 0.47937 | 1.9 | 95.5 |
| 23 | 0.40269 | 1.6 | 97.1 |
| 24 | 0.37762 | 1.5 | 98.7 |
| 25 | 0.33722 | 1.3 | 100.0 |

Table 5.52 showing eigenvalues and percentages of variance for each factor.

It can be seen that the first three factors accounted for just over 30% of the variance to be accounted for.

Table 5.53 below shows the eigenvalues and the percentage of the accounted for variance that each factor explained.

| Factor | Eigenvalue | % of Var | Cumulative Percentage |
|--------|------------|----------|-----------------------|
| 1 | 3.48979 | 64.0 | 64.0 |
| 2 | 1.31996 | 24.2 | 88.3 |
| 3 | 0.63898 | 11.7 | 100.0 |

Table 5.53 showing eigenvalues and amount of variance accounted for by the extracted factors.

Factor 1 explained 64% of the accounted for variance. Factor 2 and Factor 3 accounted for 24% and 11% respectively. Just under 60% of the total variance remained unaccounted for by the factors.

The three extracted factors were submitted to a series of Direct oblimin rotations with delta swept from -30 to .5. The delta = -1.9 was adopted as the most parsimonious. The hyperplane counts for the three factors are 24%, 40% and 32% respectively with a mean hyperplane count of 32%. According to Bargmann's test, this solution is statistically significant at the .05 level (Sine & Kameoka, 1977). Table 5.54 shows the pattern matrix of variable loadings on the rotated factors.

| | Factor 1 | Factor 2 | Factor 3 |
|-----|----------|----------|----------|
| V2 | 0.08715 | -0.13709 | 0.17867 |
| V6 | 0.38687 | 0.34232 | 0.14541 |
| V9 | 0.10012 | 0.32056 | 0.35323 |
| V11 | 0.50856 | 0.03716 | -0.12054 |
| V18 | 0.23907 | 0.08502 | 0.22842 |
| V22 | 0.16931 | -0.18909 | 0.17138 |
| V26 | 0.50610 | -0.26354 | 0.11850 |
| V30 | 0.14128 | -0.31607 | 0.10998 |
| V33 | 0.33085 | -0.11008 | 0.18388 |
| V37 | 0.40014 | 0.02544 | 0.06703 |
| V43 | 0.18279 | -0.22760 | 0.25928 |
| V46 | 0.37467 | 0.02227 | 0.10769 |
| V50 | 0.22174 | -0.30965 | 0.00150 |
| V53 | 0.28336 | -0.01474 | -0.03148 |
| V57 | 0.38215 | 0.16236 | 0.23310 |
| V61 | 0.43342 | -0.03771 | -0.05206 |
| V65 | -0.03028 | -0.64930 | 0.25791 |
| V67 | 0.02632 | -0.05874 | 0.40254 |
| V71 | 0.43302 | -0.02000 | -0.11661 |
| V74 | 0.01108 | 0.13743 | 0.51965 |
| V76 | 0.08041 | -0.55435 | -0.07557 |
| V79 | 0.28739 | -0.08039 | 0.19703 |
| V83 | 0.34601 | -0.22671 | 0.19269 |
| V87 | 0.12003 | -0.35069 | 0.13007 |
| V90 | 0.43961 | 0.06419 | -0.07862 |

Table 5.54 showing the pattern matrix of the oblique rotated factors.

The criterion (Tabachnik & Fidell, 1983) of including items with loadings on the factor of .3 or more was adopted for interpretation. Table 5.5 below shows the relevant items in each factor fully worded, and with their loadings. They are listed in order of their importance to the factor.

Items were interpreted at face value in the interpretation of the factors.

The first factor seems to contain elements of sadism, affectionlessness, hostility, a lack of heed for social rules and lack of caution. The sadistic element can be seen in items 11 (Would it upset you a lot to see a child or animal suffer?), 26 (Do you enjoy hurting people you love?), 90 (Would you feel sorry for an animal caught in a trap?), 83 (Would you like other people to be afraid of you?) and 33 (Do you enjoy practical jokes that can sometimes really hurt people?). The affectionlessness can also be seen in these sadistic items and item 71 (Do you try not to be rude to people?). It can also be seen in item 61 (Is (or was) your mother a good woman?) although it could be argued that this item may be more appropriately seen as a genuine reflection of a poor early life history. The lack of heed for social convention can be seen in items 37 (Do good manners and cleanliness matter much to you?), 57 (Do you like to arrive at appointments in plenty of time?). Lack of caution can be seen in item 83 (Do people who drive carefully annoy you?) and 6 (Would being in debt worry you?) In general, this factor seems to be representative of Affectionless Psychopathy and will be labelled as such.

| <u>FACTOR I</u> | | | |
|------------------|------|---|---------|
| P Scale Response | Item | | Loading |
| No | V11 | Would it upset you a lot to see a child or animal suffer? | .50856 |
| No | V26 | Do you enjoy hurting people you love? | .50610 |
| No | V90 | Would you feel very sorry for an animal caught in a trap? | .43961 |
| No | V61 | Is (or was) your mother a good woman? | .43342 |
| No | V71 | Do you try not to be rude to people? | .43302 |
| No | V37 | Do good manners and cleanliness matter much to you? | .40014 |
| No | V6 | Would being in debt worry you? | .38687 |
| No | V57 | Do you like to arrive at appointments in plenty of time? | .38215 |
| Yes | V46 | Do people who drive carefully annoy you? | .37467 |
| Yes | V83 | Would you like other people to be afraid of you? | .34601 |
| Yes | V33 | Do you enjoy practical jokes that can sometimes really hurt people? | .33085 |

| <u>FACTOR II</u> | | | |
|------------------|-----|--|---------|
| Yes | V65 | Are there several people trying to avoid you? | -.64930 |
| Yes | V76 | Do your friendships break up easily without it being your fault? | -.55435 |
| Yes | V87 | Do people tell you a lot of lies? | -.35069 |
| No | V6 | Would being in debt worry you? | .34232 |
| No | V9 | Do you lock up your house carefully at night? | .32056 |
| Yes | V30 | Do you have enemies who wish to harm you? | -.31067 |
| Yes | V50 | Do most things taste the same to you? | -.30965 |

FACTOR III

| | | | |
|-----|-----|---|--------|
| Yes | V74 | When you catch a train, do you often arrive at the last minute? | .51965 |
| Yes | V67 | Do you think people spend too much time safeguarding their future with savings and insurance? | .40254 |
| No | V9 | Do you lock up your house carefully at night? | .35323 |

Table 5.55 showing the wording of items loading $\geq .3$ on the three extracted factors.

The second factor is more specific and is bipolar. Primarily it is a factor with a large contribution from negatively loading paranoid items: that is, items 65 (Are there several people trying to avoid you?) 76 (Do your friendships break up easily without it being your fault?), 87 (Do people tell you a lot of lies?) and 30 (Do you have enemies who wish to harm you?) The other negatively loading item on this factor is item 50 (Do most things taste the same to you?). The two positive contributors are item 6 (Would being in debt worry you?) and item 9 (Do you lock up your house carefully at night?) A negative answer to both leads to scores on the P scale. In this case, negative answers to these items lead to a positive contribution to a factor dominated by negative loadings from positively scored P scale items. In other words, positive paranoid ideas contribute to the same factor as positive responses to "Do you lock up your house carefully at night?" and "Would being in debt worry you?" Although these are non-P scale score responses, it may reasonably be argued that the former response is quite consistent with paranoid ideation. This factor may then be labelled as one of Paranoid Ideation.

The third factor is suggestive of a rather careless attitude. It consists of items 74 (When you catch a train do you often arrive at the last minute?), 67 (Do you think people spend too much time safeguarding their future with savings and insurance?) and 9 (Do you lock up your house carefully at night?) It suggests a more acceptable lack of caution than that suggested in factor one where the lack of caution affected other people. This third factor may be labelled as Lack of Caution.

Factors One and Two are clearly more deviant than Factor Three. The factor correlation matrix revealed the following correlations between the factors: Factors One and Two $r = .18$, Factors Two and Three $r = .11$,

Factors One and Three $r = .35$. Factor Two is relatively unrelated to Factors One and Three which correlate with each other moderately.

Items with loading of .3 on the factors were then examined for the frequency with which they were endorsed in the direction of P. The sample was divided for this purpose into Psychotics ($n = 98$) and Non Psychotics ($n = 162$). The Non-Psychotic group was a combination of the Non Psychiatric control group and the Neurotic group. The tables below (5.56 to 5.58) show the absolute frequency and percentage frequency with which the relevant items were endorsed in the P direction. The Chi squared statistic was employed to see if there was a significant association between endorsement direction and group. Yates's formula was employed in each χ^2 .

Table 6.60 below shows the frequency with which items loading $< .3$ on factor one were endorsed in the P direction by Non-Psychotics and Psychotics.

FACTOR ONE - AFFECTIONLESS PSYCHOPATHY

| Item | Non-Psychotics n = 161 | | Psychotics n = 98 | | Chi ² | Sig. |
|------|---------------------------|------|----------------------|------|------------------|--------|
| | n | % | n | % | | |
| 11 | 7 | 4.3 | 1 | 1.0 | 1.21606 | .02615 |
| 26 | 9 | 5.6 | 11 | 11.2 | 2.02289 | .1549 |
| 90 | 14 | 8.6 | 6 | 6.1 | .24872 | .6180 |
| 61 | 8 | 4.9 | 9 | 9.2 | 1.17321 | .2787 |
| 71 | 25 | 15.4 | 11 | 11.2 | .58782 | .4433 |
| 37 | 13 | 8.0 | 10 | 10.2 | .14017 | .7081 |
| 6 | 29 | 17.9 | 13 | 13.3 | .65686 | .4177 |
| 57 | 15 | 9.3 | 15 | 15.3 | 1.63508 | .2010 |
| 46 | 32 | 19.8 | 17 | 17.3 | .10059 | .7511 |
| 83 | 11 | 6.8 | 17 | 17.3 | 6.02567 | .0141 |
| 33 | 13 | 8.0 | 11 | 11.2 | .74617 | .3877 |

Table 5.56 Showing the frequencies of items loading on Factor One endorsed in P direction, and Chi².

As table 5.56 indicates, these items on Factor One were not "popular" and all were seldom endorsed in the P direction. In the majority of items, there is little difference between the scoring directions of the groups. The exception to this is item 11 where scores in the P direction are associated with the Non-Psychotic group ($\chi^2 = 1.26106$, 1df, $P=.027$). This item "Would it upset you a lot to see a child or animal suffer?" as noted before, is at face value, of a sadistic type. While it may be the case that the Non Psychotic groups endorsed this item more than the Psychotic group, it must be noted that only 4.3% (7) of the Non Psychotic group endorsed it. On that basis it is not possible to draw firm conclusions regarding the sample (i.e. Non Psychotic group) and endorsing such an item in the P direction. In addition, there was a statistically significant association between endorsing item 83 in the P direction (Would you like other people to be afraid of you?) and the Psychotic group. Seventeen percent of Psychotic group endorsed this item compared to eleven percent of Non-Psychotics.

In general it may be stated that except in the case of two items endorsing items, loading .3 on Factor One in the P direction was not significantly associated with either the Non Psychotic or Psychotic groups.

Table 5.57 below shows the frequency with which items loading 3 on Factor Two were endorsed, in the P direction by Non-Psychotics and Psychotics.

FACTOR TWO - PARANOID IDEATION

| Item | Non-Psychotics | | Psychotics | | Chi ² | Sig. |
|------|----------------|------|------------|------|------------------|--------|
| | n | % | n | % | | |
| 65 | 23 | 14.2 | 43 | 43.9 | 26.85324 | .00001 |
| 76 | 31 | 19.8 | 43 | 43.9 | 16.15856 | .0001 |
| 87 | 39 | 24.1 | 43 | 43.9 | 10.19260 | .0014 |
| 6 | 29 | 17.9 | 13 | 13.3 | .65686 | .4177 |
| 9 | 45 | 27.8 | 23 | 23.5 | .38498 | .5349 |
| 30 | 20 | 12.3 | 41 | 41.8 | 27.95464 | .00001 |
| 50 | 27 | 16.7 | 25 | 25.5 | 2.45756 | .1170 |

Table 5.57 Showing frequencies of items, loading on Factor Two, endorsed in the P direction and Chi².

It can be seen from Table 5.57 that the Psychotic group endorsed most of these items with greater frequency than the Non-Psychotic group. There was a highly significant association between the Psychotic group and items, 65, 76, 87 and 30. These items ("Are there several people who keep trying to avoid you?" "Do your friendships break up easily without it being your fault?" "Do people tell you a lot of lies?" "Do you have enemies who wish to harm you?") are all paranoid in content. It is clear that any person with delusions of Persecution is likely to endorse one or more such items and thus raise his/her P score. Item 50 (Do most things taste the same to you?) showed no significant association with either group. It is of interest to note here the tendency of the Psychotic group not to endorse items 6 and 9 (Would being in debt worry you? Do you lock up your house carefully at night?) in the P direction. This may be seen as lending some support to the argument expressed above that, particularly in the case of item 9, endorsing items against the P direction may be seen as consistent with paranoid ideation.

In general, it may be stated that there are several highly statistically significant associations between endorsing items, loading .3 on the Paranoid Ideation factor, in the direction of P and the Psychotic group.

Table 5.58 below shows the frequency with which items loading .3 on Factor Three were endorsed in the P direction by Non-Psychotics and Psychotics.

| FACTOR THREE - LACK OF CAUTION | | | | | |
|--------------------------------|----------------|------|------------|------|-----------------------|
| Item | Non Psychotics | | Psychotics | | Chi ² Sig. |
| | n | % | n | % | |
| 74 | 41 | 25.3 | 39 | 39.8 | 5.35537 .0207 |
| 67 | 63 | 38.9 | 45 | 45.9 | .96988 .3247 |
| 9 | 45 | 27.8 | 23 | 23.5 | .38498 .5349 |

Table 5.58 showing frequencies of items, loading on Factor Three, endorsed in the P direction.

Items 67 and 9, on Factor Three are endorsed in the P direction to a similar extent by both groups. The exception is item 74 ("When you catch a train do you often arrive at the last minute?") which is significantly associated with the Psychotic group ($\text{Chi}^2 = 5.35537$, 1df, $P < .03$). The difference is not highly significant and relates to a just over 14% difference in rate of endorsement in the P direction. No theoretical explanation is offered for the association of this item and the Psychotic group.

In general, it may be stated that there was not an overall tendency for Psychotics to endorse items loading $\geq .3$ on Factor 3 in the direction of P. There is one exception (item 74) and no theoretical explanation is put forward for this.

The next stage of this analysis was to recalculate P scale scores without items 65, 76, 87, 30 and 83. and to compute an analysis of variance on these scores. Item 74 was left in the adjusted P scores since there was no clear psychological reason for its association with psychosis unlike the other items. These were compared with the unadjusted P scores. Table 5.59 below gives the means and standard deviation of the relevant groups on the adjusted and unadjusted P scales.

| | Unadjusted P | | Adjusted P | |
|---------------------------------|--------------|------|------------|------|
| | X | SD | X | SD |
| Non Psychotics - male (n=69) | 3.75 | 2.82 | 3.44 | 3.21 |
| female (n=93) | 3.14 | 2.54 | 2.86 | 2.94 |
| whole (n=162) | 3.40 | 2.68 | 3.10 | 3.06 |
| Psychotics - male (n=49) | 5.69 | 3.30 | 3.98 | 2.79 |
| female (n=49) | 5.49 | 3.14 | 3.45 | 2.46 |
| whole (n=98) | 5.59 | 3.20 | 3.72 | 2.64 |

Table 5.59 Showing means and S.D.s of Psychotics and Non Psychotics on P and adjusted P.

It can be seen from Table 5.59 that the effect of removing certain items from the P scale had the effect of reducing scores for both the Non-Psychotic and Psychotic groups. The drop in scores as a result of this adjustment is particularly marked in the Psychotic group.

Both sets of data were submitted to a two way (group by sex) analysis of variance of P scores. The sex variable was included since, as noted before, the Eysencks (1976) have argued for a relationship

between maleness and P scores and it was considered important to monitor for such an effect. Table 5.60 below shows the analysis of variance of unadjusted P scores.

| Source of Variation | df | F | Sig. of F |
|-------------------------|----|--------|-----------|
| Main Effects | 2 | 18.391 | .0001 |
| Group | 1 | 33.917 | .0001 |
| Sex | 1 | 1.609 | .206 |
| Group x Sex Interaction | 1 | | .581 |

Table 5.60 showing two way anova of unadjusted P scores by group and sex.

As table 5.60 shows, there is a highly significant ($p < .0001$) group effect on P scores. There is no statistically significant ($P < .05$) sex, or group by sex interaction effect on P scores. It can then be stated that Psychotics score significantly more on the unadjusted P scale than do Non-Psychotics.

Table 5.61 below show the results of a two way analysis of variance of adjusted P scores by group and sex.

| Source of Variation | df | F | Sig. of F |
|-------------------------|----|-------|-----------|
| Main Effects | 2 | 2.565 | .079 |
| Group | 1 | 2.325 | .129 |
| Sex | 1 | 2.353 | .126 |
| Group x Sex Interaction | 1 | 0.006 | .938 |

Table 5.61 showing two way anova of adjusted P scores by group and sex. As table 5.61 shows, there are no statistically significant ($P < .05$) group or sex effects on the adjusted P scale scores. It may be stated then that once certain items of a paranoid nature are removed from the P scale, Psychotics and Non-Psychotics no longer have significantly different P scores.

Summary

This part of the study was to investigate why Psychotics score more on the P scale than Neurotics and Non-Psychiatric Controls. A factor analysis with Oblique Rotation of P scale items revealed three main factors labelled Affectionless Psychopaths, Paranoid Ideation and Lack of Caution. Psychotics were statistically significantly associated with items on the second factor of Paranoid Ideation but they were not associated, in general, with items loading on the other factors.

P scores were then recalculated without the items to which Psychotics were statistically significantly associated (one item from the first factor and four from the second factor). Analysis of variance of the new P scores revealed no significant difference between Psychotics and non-Psychotics, whereas on the unadjusted P scores, Psychotics scored significantly more.

The hypothesis that Psychotics were more likely to endorse P scale items with a Projected Hostility/Hostility flavour was supported and the null hypothesis is of no such association between Psychotics and paranoid items was rejected.

Chapter Six Discussion

- Section I - Introduction
- Section II - Dimensions and classes
- Section III - Functions and Factors

Section I: Introduction

The aims of this thesis involve an examination of the relationships between two seemingly radically different approaches to classification in psychiatry. The Eysenckian system is based on dimensions of personality and the argument that certain personality traits (i.e. Neuroticism and Psychoticism) predispose to psychiatric breakdown. Eysenck & Eysenck (1976) have argued for dismantling the Traditional Category System (TCS) which is based upon examining for symptoms and signs of mental illness, and for replacing it with description in terms of personality dimensions. "Personality description in terms of a dimensional system ... is not complementary to the categorical... system... but is suggested to be an alternative to it (p.203)." However, Eysenck, White & Eysenck (1976) in discussing possible strategies for refining the dimensional approach to psychiatric classification, write that it may be valuable to incorporate "sign and symptom" items as well as objective test data and physiological measures. This may be seen as an admission of the value of pathological non-personality items in psychiatric classification.

Foulds (1965, 1976) has argued that personality and symptomatology are to be logically distinguished since, amongst other things, personality type is not necessarily indicative of breakdown type. Making such a distinction enables the examination of their relationship whereas not making the distinction does not. His later work involved an examination of the relationships between his scales of personality

deviance (comprising Extrapunitivity, Intropunitivity and Dominance) and the hierarchy of personal illness. As a result, he uncovered a correlation between personality deviance and severity of personal illness.

Both psychologists have produced empirical evidence to support their claims but the two systems have not been investigated thoroughly together using the final versions of their respective instruments. This study was an attempt to do so. A sample consisting of Psychotic, Neurotic and Non-Psychiatric controls were asked to complete the Eysenck Personality Questionnaire (EPQ: Eysenck & Eysenck, 1975), the Delusions Symptoms States Inventory (DSSI: Bedford & Foulds, 1978a) and the Hysteroid Obsessoid Questionnaire (HOQ: Caine & Hope, 1967). A portion of the sample were retested at a later date. Before examining the results of the statistical analysis, several points must be made in order to guide interpretation.

The allocation of psychiatric patients to groups was unsatisfactory since they were allocated to their respective groups by the author. This was a situation born of necessity, but ~~it may nevertheless be~~ viewed as preferable to ~~what~~ ~~often occurs~~ often occurs in research where patients are grouped according to diagnoses conferred by a variety of psychiatrists, with a variety of degrees of experience using a variety of different diagnostic systems. In this study, an attempt was made to ensure consistency of the criterion by using the Research Diagnostic Criteria (RDC: Spitzer, Endicott & Robins, 1977) which provides well operationalized definitions for psychiatric categories. Patients were allocated to RDC groups on the basis of discussions with experienced ward and psychiatric staff and consultation of case notes. In addition, criteria from the Diagnostic and Statistical Manual II (DSMII: American Psychiatric Association, 1968)

had to be used for two groups not adequately covered by the RDC (Hysterical and Paranoid). However, any criticisms that there may be of the allocation of patients to groups apply only to a small part of the study. The large proportion of the study involved the sample divided into three broad groups of Neurotic, Psychotic and Non-psychiatric control. The control sample were requested not to participate if they were receiving psychiatric treatment. For the psychiatric sample, no subject was asked to participate if there was doubt or disagreement about their allocation to the Neurotic or Psychotic group.

Neither the psychiatric sample, nor the control sample, may be viewed as representative of either the psychiatric population, or the non-psychiatric population, as a whole respectively. The psychiatric groups were chosen to correspond to the hierarchical scheme and thus, large portions of the psychiatric sample as a whole are "missing" (e.g. Anorexics, Alcoholics, Drug addicts). The control sample is a convenience sample and has a large predominance of Nurses and non-academic university staff. In addition, the ~~representatives~~^{ness} of these groups is ^{further} limited by those subjects who were approached but preferred not to participate.

Prior to investigating specific hypotheses, the study sample were examined in terms of features not subjected to hypothesis. There was no statistically significant difference in terms of distribution of sexes across the Psychotic, Neurotic and Control groups although there was an age effect in that male Psychotics were statistically significantly younger than male Neurotics and female Psychotics. This is hardly surprising considering that (according to Mayer-Gross, Slater and Roth 1979, p.239) schizophrenic breakdown is generally associated with youth in males and middle age in females (Gray 1973, Eysenck & Eysenck 1976, ch. 9), and considering that schizophrenics were by far the largest

psychotic sub-group in this study. The female Control sample were statistically significantly younger than the other female groups. This can be viewed as a peculiarity of the particular group used in this study.

When comparing the present samples scores on the EPQ with those presented by Eysenck & Eysenck (1975) several statistically significant differences emerged. In comparison with their 1975 counterparts, the male Psychotics were more Extraverted, the female Psychotics were more Psychotic and Neurotic, male Neurotics were less Psychotic but had higher Lie scores, female Neurotics were less Extraverted and scored more on the Lie scale, male controls were more Psychotic and female controls were more Neurotic. A general pattern emerged of raised P scores in male Psychotics and controls, and raised N scores in female Psychotics and controls. In the Neurotic groups, L scores are raised.

There are enough significant differences to indicate the possibility of the non-equivalence of the present groups with those of the Eysencks. This may be due to differences in diagnostic criteria but this is purely speculative since the Eysencks are not specific on this matter. Of course, the usual cautions about finding chance significant results apply since twenty four t-tests in all were applied to these data. Comparisons were not carried out with the Psychotic Depressives due to small sample sizes in this study.

In addition, the scores of the present sample were compared with those of Caine & Hope (1967) on the HOQ. Only two, out of a possible twelve, significant differences emerged. This was between the present sample Neurotics and two (out of three) of Caine & Hope's Neurotic groups. In general, it may be argued that the groups in the current sample are more or less comparable with those presented by Caine & Hope.

Of course, in any study utilizing questionnaire responses (as opposed to objective tests, physiological indices and ratings made by others) cognizance needs to be taken of factors that may influence responding such as Social Desirability, acquiescence, dissimulation and response bias. Eysenck & Eysenck (1975) included a Lie scale in the EPQ with the aim of checking for dissimulation. At their suggestion that L scores must be considered in the interpretation of N and P scores (1976, p.102) the sample was divided into high and low L scorers with a score of 7 as the criterion (following Eysenck & Eysencks' example 1976, p.103). Psychotics, Neurotics and Controls scoring 7 or less on the Lie scale were compared with those scoring more than 7 on the P and N scales. In reply to Bishops' (1977) consternation that, according to data supplied by Eysenck & Eysenck (1975), Psychotics are by no means the highest P scorers and are exceeded in this respect by drug addicts, prisoners, personality disorders and alcoholics, Eysenck (1977) has said that the Psychotics P scores would be raised had they not dissimulated as much as they did (as is evidenced from high Lie scores).

When the groups were divided as described above, it was found that the majority of the psychiatric sample in fact had L scale scores in excess of 7 anyway. In support of the Eysenckian idea, low L scoring Neurotics did have significantly higher P scores than high L scoring Neurotics. No such effect was noted in the Control and Psychotic groups. In the Control group, there was a sex effect on P scores with males scoring more and this is in agreement with suggested links between P and Maleness (Gray 1973, Eysenck & Eysenck 1976, ch. 9) and in the link between P, psychopathy and maleness noted by Kline (1983, p.113).

In the case of N, no significant differences emerged between high and low L scale scorers although in both psychiatric groups a sex effect emerged with females gaining higher scores on the N scale. Due to the

small size of the Neurotic Low L scoring group (n=20) compared to the high scorers (n=90), it was decided not to split the sample according to L scale scores. In any case, doubt has been thrown on the Eysenckian suggestion that, had the psychotics not dissimulated so much they would have had higher P scale scores. Gurlay (1980) found that by correcting for the influence of L (by utilizing correlations between P and L supplied by the Eysencks (1976, p.103) on the P, E and N scores of the Eysencks abnormal samples (1976, pp.101-103) little difference occurred. Also Claridge (1981) has taken issue with the Eysencks on this point by noting that the difference between high and low scoring psychotics on P can be less than one scale point.

In addition, doubt has been thrown on the idea that the L scale measures dissimulation per se. Eysenck & Eysenck (1976, pp.168) persuade the reader that L may be a measure of conformity. In support of this, they note that women who are noted for a tendency to be more law abiding than men have higher L scale scores than men. They go on to suggest that the scale may measure dissimulation, in addition to conformity, given circumstances motivating individuals to fake good. The Eysencks (1976) note other suggestions that the L scale measures unoriginality and socialization (p.186), orthodoxy (p.168) and defensiveness (p.104).

With regard to the present study, subjects were informed when filling in their questionnaires that the results were confidential and absolutely nothing to do with their treatment and so little motivation for dissimulation was provided, although no account was taken of any privately generated motivation individuals may have had.

Griffith (1975) has argued that the L scale may have a dual nature: one function being to present oneself in a good light, and the other is yet to be discovered. He argues that the EPQ scores of high L scale

scorers should not be rejected on the basis of dissimulation and that continuing to examine how L scorers perform in abnormal samples may lead to a better understanding of this pathological phenomenon.

Section II.3: Dimensions and Classes

a) The DSSI and the TCS

The first hypothesis dealt with in this study concerned the relationship between the categories of the TCS and the DSSI hierarchical classes. It stated that: Class 0 (Personal Health) would be associated with the non-psychiatric control sample; Class I (Dysthymic States) would be associated with Anxiety states and Neurotic depressives; Class 2 (Neurotic symptoms) would be associated with Obsessionals, Phobics and Hysterics; Class 3 (Integrated Delusions) would be associated with Paranoid States, Manic Depressives and Psychotic depressives; and that Class 4 (Delusions of Disintegration) would be associated with schizophrenia. The null hypothesis of no association was rejected on the grounds of a statistically significant association. In instances where the predicted relationship did not hold up, cases were mostly allocated to neighbouring classes. This suggests that there are intelligible relationships between the TCS, as represented by RDC categories, and the DSSI hierarchy. These results may be added to those reported by Foulds (1976), and reported in Chapter Two of this thesis, whereby good agreement was reported between the items of the DSSI and their allocation to the appropriate set by psychiatrists and psychologists. In addition, Foulds reported good agreement between ratings of patients on DSSI items by psychiatrists and the DSSI scores gained from the patients by self report. It is suggested that this may be seen as providing concurrent validity for the DSSI although this must, of course, be tempered with an acknowledgement that the allocation

of patients to groups in this study could be regarded as problematic. In addition, it may be argued that the chance of association between the TCS groups in this study and the DSSI classes is raised due to the use of a highly rigorous and operationalized version of the TCS. Had "case note diagnoses" been used, a different picture may well have emerged although as Kline (1979) has argued, any attendant unreliability would probably have been random and non specific in its effect (1979, p.257). However, having examined the problems in the use of the TCS in Chapter One, it would have been difficult to justify making no attempt to reduce criterion variance in this study. Cognizance is given however to a recognition of a difference between how the TCS probably is used, and how it perhaps ought to be used.

b) Conformity to the DSSI hierarchy

The second part of the analysis was an investigation of conformity to the DSSI hierarchy. Patterns of hierarchy scoring were examined and it was found that 89% of the sample conformed although this ranged from 65% for the Manic Depressives to 100% for Hysterics, Psychotic depressives, Neurotic depressives and Anxiety states. The rates of conformity for Neurotics was 95%, for Controls 94% and for Psychotics 79%. The overall rate of conformity of 89% was in agreement with rates found in other studies. McPherson, Antram, Bagshaw and Carmichael (1977) found a rate of 96% conformity for a mixed psychiatric sample and Foulds (1976) reported a 93% rate of conformity in a psychiatric sample. Foulds' figure of 94% conformity for controls also agrees with the figure found in this study.

The reduced rate of conformity for the Psychotic sample is also in broad agreement with previous findings. Bedford & Presly (1978) found a rate of 81% in a schizophrenic sample, although in their case the sample was a chronic one. Surtees & Kendell (1979) also found a reduced rate of

conformity to the Foulds hierarchy in a study of Psychotics using the PSE. The rate of conformity ranged from 55% to 95% depending on the psychotic group and the method of scoring used. Unlike in the present study, they found their worst conformers to be schizophrenics (48% to 55%) with manics the next worst (55% to 70%). In addition, the results of de Jong, Giel, Lindeboom, Sloof & Wiersma (1978) using the PSE with a Dutch cohort, confirm these findings. Bagshaw & McPherson (1978) found a poor conformity rate (73%) in their study although their sample consisted of Hypomanics as well as Manics which may explain why their results are slightly better than those presented here. It is interesting to note in this respect that Crookes & Hutt (1963) found Manics could be distinguished from other psychiatric groups by a characteristic scoring pattern on the MPI (Eysenck 1959) of high E scores but low N scores.

In general, it may be argued that the results of rate of conformity presented here are not at variance with previous findings. However, previous studies have done little in the way of detailed examination of non-conformity although Bagshaw & McPherson (1978), Surtees & Kendell (1979) and de Jong et al (1984) suggest that the failure of Psychotics to conform is due to a failure to endorse items in the Neurotic symptoms class. In the present study, the Psychotics who did not conform to the hierarchy failed to endorse a mixture of Neurotic symptoms and Dysthymic states items. In the case of Obsessional non-conformers there was a failure to endorse Dysthymic states items and all three Phobic non-conformers endorsed Delusions of Disintegration!

In the present study, it was found that the majority of non-conformers failed to conform because although they were endorsing items in classes lower than the one to which they were allocated, they were

not endorsing such items frequently enough, or extremely enough, to gain a set score. When the criterion for gaining a set score, and thus class membership was reduced, all but 17% of the non-conformers conformed.

However, this does not solve the problem of non-conformity. By reducing the criterion, class membership is raised such that between 21% to 48% of the sample, depending upon how much the criterion is lowered, become members of classes higher up the hierarchy than the one to which they originally belonged. Clearly, reducing the criterion leads to Type I errors such that up to two thirds of the control sample become members of the personal distress/illness classes. The high degree of association shown between TCS groups and hierarchy class membership in Section Two of Chapter Five, would indicate that a criterion of 4, as chosen by Foulds & Bedford (1975), is reasonable.

It may be that, in the case of Psychotics, failure to endorse Neurotic symptoms and Dysthymic items sufficiently to gain class membership, may result from failing to view such symptoms and states (even though acknowledged) as being problematic. For example, schizophrenics are quite likely to positively endorse and gain full marks in terms of degree of certainty on items in class 4 such as "Recently I've seen visions which no-one else could see" or "Recently I have felt that there was a special meaning in one side of my body being different from the other." Positive endorsement of Dysthymic and Neurotic items is accompanied by a question about the degree of distress the symptoms and signs cause. Psychotics may not necessarily see their obsessions, phobias and hysterical symptoms, which they admit to, as distressing since these may form an important part of a delusional world. For example, a schizophrenic may not perceive obsessional checking as unnecessary, or if they do, may not find it upsetting. Donlon & Blacker (1973) have described psychosis as the ultimate retreat

from a world too painful to face. Given this logic, it would be unreasonable to expect psychotics to conform to the Foulds hierarchy since the affect of the psychotic is typically "split off" or flattened. The psychotic retreat from the world is in terms of denial or withdrawal.

It may be argued that problems of non-conformity due to the possible failure of psychotics to recognize certain psychological phenomena, such as obsessional checking, as problematic could be overcome by the use of structured interviews instead of a self report inventory. However, the results of Surtees & Kendell (1979) and de Jong et al (1984) indicate that their interviewers failed to elicit evidence of neurotic symptoms in their study samples. While this seems damning evidence for the hierarchy, it is argued that the issue of the non-conformity of psychotics has yet to be thoroughly evaluated. While a schizophrenic may deny the occurrence of obsessional checking in an interview because they do not construe it as such, independent^e observation of that person's behaviour may indicate the contrary. de Jong et al (1984), in support of this, have noted that one of their sample, although not admitting to neurotic symptoms, was seen to manifest them. This would suggest that observation of patients may provide important additional information to interviews and self reports.

O'Neill has made a case for interpreting conformity to the hierarchy in terms of social desirability. The argument goes that the more severe the illness the greater the likelihood of endorsing socially undesirable items such as are found on the DSSI. However, this view does not explain the greater degree of non-conformity in the psychotic groups in this study. Why, for example, should the more severely ill endorse socially undesirable items in Classes 3 and 4 but not in classes 1 and 2? Unless one argued that the Class 1 and 2 items were socially

desirable, O'Neill's argument is difficult to defend. Although it might be conceded that Class 1 and 2 items are more socially desirable than Class 3 and 4 items, endorsing them is more undesirable than not endorsing them.

Within the non-conformers, three individuals gained non-conformity patterns as a result of inappropriately endorsing items. Instances of misinterpretation illustrate one of the difficulties encountered in using self report inventories and part of this difficulty could be resolved by using a structured interview format for the DSSI as Foulds (1976) has suggested. In practice, however, few practising clinical psychologists would use questionnaires such as the DSSI without discussing the items endorsed in greater detail with the respondent.

When the DSSI protocols of the re-tested sample were inspected, it could be seen that all the non-conformers on initial testing conformed on retest. In addition, of the non-conformers on retest all but one conformed on initial testing. Once again, all but one of the non-conformers on retest would have conformed had the criterion been lower but the cautions described above apply here too. These findings agree with those of de Jong et al (1984) who assessed their sample on three occasions. The majority of those who did not conform on one occasion did so on another.

To conclude the issue of conformity to the hierarchy, this study along with others demonstrated poor conformity in the Psychotic group in particular. Reducing the criterion for class membership enhanced the rate of conformity but also led to membership of classes above the original class. The result of Section II Chapter Five, where a significant association was found between TCS groups and the DSSI classes suggests that reducing the criterion is an inappropriate solution to the non-conformity problem. It was debated whether non-

conforming psychotics actually experienced symptoms lower down the hierarchy but failed to acknowledge them, or whether they just did not have such symptoms. It was concluded that this had not been adequately tested, and further research could address this problem by exploring the hierarchy in terms of observing the behaviour of psychiatric patients instead of collecting data on the basis of interviews and self reports. However, the results of the present study and those of de Jong et al (1984) where individuals who fail to conform at one time, do so at another time, provides some support for the notion that psychotics do experience such symptoms. In addition, it was suggested that O'Neill's social desirability hypothesis fails to explain psychotic non-conformity.

c) Personality and the DSSI hierarchy

The next hypothesis concerned the scoring patterns of DSSI class members on the EPQ and HOQ. It stated that P scores would increase upto the highest hierarchy class whereas N scores would only increase up the Neurotic symptoms class. E, L and HOQ were hypothesized not to be affected by the DSSI classes. A preliminary analysis (Chi squared) revealed no statistically significant distribution of sex across the DSSI classes. In general the results allowed rejection of the null hypothesis of no such pattern with P and N. P scores showed steady increases up the hierarchy and the psychotic classes scored significantly more than the rest of the sample on this measure. This may be seen as providing support for the link between P and severity of psychosis. It was interesting, however, to note the general tendency of the Not Personally Ill class to gain slightly higher P scores than the Dysthymic States and Neurotic Symptoms classes of the hierarchy, although this difference was not statistically significant. In

addition, there was a significant sex effect on P whereby males gained higher scores. As noted earlier in this discussion, this is in line with Eysenckian thinking on the matter (1976, Ch. 9).

The trend of increasing P scores with increases up the DSSI hierarchy is in broad agreement with the findings of McPherson, Presly & Armstrong (1974) who compared the P scale of the PEN with the predecessor of the DSSI, the SSI. Table 6.1 below summarizes their findings.

| Group | N | Mean | SD |
|--------------------------|----|------|------|
| Non-Integrated Delusions | 11 | 6.82 | 3.31 |
| Integrated Delusions | 8 | 4.38 | 2.13 |
| No Delusions | 8 | 2.63 | 2.00 |

Table 6.1 Showing scores of psychiatric patients on the P scale (PEN) from McPherson et al (1974).

Differences in the absolute value of P in this study and that of McPherson et al are most likely due to the use of different versions of the scale. In Chapter Three, it was demonstrated that the two versions of the scale had less than half their items in common. In addition, the reduced sample sizes in the McPherson et al study would suggest that their results may be less reliable than those presented here.

On the face of it, the pattern of P scale scoring in the DSSI classes is similar to the scoring patterns on the Personality Deviance Scales (PDS; Bedford & Foulds, 1978b). Foulds (1976) showed that scores on Extrapunitivity, Intropunitivity and Dominance (the scales of the PDS) have a tendency to increase with increases in class membership. Like the P scale, Extrapunitivity scores in Fould's control sample (which, it may reasonably be argued, is almost equivalent to those scoring in the Not Personally Ill class here) are slightly raised in comparison to those of the first two illness classes of the hierarchy.

The Intropunitivity scores, on the other hand show no such increase in the control sample. The Dominance scores are highest in the control sample but increase from the Dysthymic States class to the Delusion of Disintegration class.

The tendency for these scores (P, Extrapunitivity and Dominance) to be slightly raised in control samples may indicate that a certain amount of these traits is adaptive in the same way that Furneaux (1957) found that a degree of anxiety in introverts is an advantage in students studying engineering or languages. As noted before, Woody & Claridge (1977) have found P to be related to creativity, and Gotz and Gotz (1979) found that commercial artists have high P scores. They suggest that this may reflect not only originality, but also the ability to sell their work.

Eysenck & Eysenck have also drawn attention to the healthy and adaptive P scorer - the sort who would "be exceptionally well positioned to look after himself in our type of society" (1976, p.34). More recently, Ray & Ray (1982) have argued, from their study examining MMPI Psychopathic Deviate scorers in the general population, that subclinical psychopathy may be an adaptive asset, having isolated it in doctors, businessmen and psychiatrists! Such people tended to see themselves as sensitive, relating well to others, permissive with children and non-punitive towards criminals amongst other things. In addition, Wakefield, Sasek, Brubaker & Friedman (1976) have noted positive correlations of P with autonomy and aggression, and negative correlations of P with deference and nurturance. This would suggest that Eysenckian P measures more than just psychosis.

A relationship between Extrapunitivity and P has already been demonstrated by previous research (as reported in Chapter Three). Both Pearson (1977) and Bristow (1981b) found positive and significant

correlations between P (EPQ) and Extrapunitivity in psychiatric samples. Although Pearson found a significant correlation between P and one of the Intropunitivity sub-scales, Bristow found no significant correlation between P and the total Intropunitivity scale. Neither study found a positive significant correlation between P and Dominance (which measures for dominance and uninhibited aggression).

It may be argued then that the P scale is related to PDS Extrapunitivity and behaves in a similar manner in the DSSI hierarchy. Items from the P scale such as "Do your friendships break up easily without it being your fault?" and "Do people tell you a lot of lies?" further endorse this point. Foulds (1976) however shows that class 4 members of the hierarchy are also the most Intropunitive in comparison to other classes. There is little evidence (except Pearson's) of a relationship between P and Intropunitivity and an inspection of P scale items would not lead one to expect it. In addition, no relationship between Dominance and P has been demonstrated in the studies reviewed. It would seem then that the scales of the PDS (and in addition the Maladjusted Personality Deviance score which is derived from the three scales) are tapping something over and above the P scale (i.e. Intropunitivity and Dominance) that are increased in psychotics. This issue will be returned to at the end of this chapter.

The N scores also showed the hypothesized increase up to the Neurotic symptoms class of the hierarchy but not thereafter. Significant differences occurred between the Not Personally Ill and the rest of the sample, between the Dysthymic States class and those above it, but not between the Neurotic symptoms class and those above it. In addition, women were found to gain significantly higher N scores than males and this effect is in line with the findings of Eysenck & Eysenck (1975).

The clear cut pattern of N scores in the hierarchy may be seen as supportive of the Eysenckian link between their scale and clinical neurosis as defined by the DSSI classes. The fact that the Neurotic Symptoms class do not score significantly more on N than the classes above was because of the levelling off of N scores at this point. The Neurotic symptoms class and the psychotic classes of the DSSI gain the highest N scores but are indistinguishable in this respect.

The next prediction was that the E, L and HOQ scales would not show any special relationship with the DSSI classes. But this null hypothesis had to be rejected to the extent that the E and HOQ scales were significantly affected by DSSI class and sex, while L scores were significantly affected by interactions of class and sex.

In the case of E, the Not Personally Ill class scored significantly more on E than the Neurotic symptoms class. The general trend (although not statistically significant) was for the Not Personally Ill group to score more than all the other classes on E. In this way, it may be likened to Dominance in the PDS. In support of this Pearson (1977) found a positive and significant correlation between E and Dominance in a control and in a psychiatric sample, and Bristow (1981b) also found such a relationship with a psychiatric sample. Coppen & Metcalfe (1965) and Hallam (1976) have argued that E scores may be depressed in psychiatric illness and the findings here are supportive of the point. In addition, Foulds (1959) has argued that there is even a subgroup of Hysterical Neurotics that are obsessoid rather than hysteroid as rated by psychiatrists on a predecessor to the HOQ. As noted in this section (four) of the results, E and HOQ are highly related.

HOQ scores showed significant differences between the Not Personally Ill groups and the two Neurotic classes, and between the Neurotic symptoms class and the Psychotic classes and follow the pattern

Foulds (1976) found with Dominance scores more closely than the E scale. Not only did the Not Personally Ill class gain the highest HOQ scores, but the scores increased from the Dysthymics States class (who scored least) up the hierarchy. As with the E scale, males scored significantly more on the HOQ than females.

The E scale of the EPQ is noted for its emphasis on sociability (Rocklin & Revelle, 1981). It is interesting then to note that Controls have higher E (and HOQ) scales than Neurotics and this may be seen as relevant to Foulds' concept of deteriorating mutual personal relations which are a sign of personal illness. Clearly, the more difficult the social interaction, the less sociable an individual is likely ^{to be}. In the case of rising E (and HOQ) scores in the psychotic classes, it may be argued that, although interpersonal relationships are suffering, they are not perceived as such by the psychotic individual.

The L scale scores were affected by interaction effects. Within the female part of the sample, significant differences occurred between the Not Personally Ill class and the two neurotic classes in that the Not Personally Ill scored less. No other statistically significant differences occurred although it can be seen that the Not Personally Ill, and men in general, had reduced L scores. It is interesting to note that the Eysencks' (1976, p.102) argument that high L scale scores in psychotics depress their P scale scores is difficult to reconcile with the findings here that the most severely psychotic (Class 4 members) by no means had the highest L scores. In fact, in this study, the two neurotic classes in general had by far the highest L scores.

In the light of (i) the finding reported by Eysenck & Eysenck (1975) that L scale scores increase with age, (ii) the fact that the female control sample (which is more or less equivalent to the female Not Personally Ill class) is significantly younger than the female

Neurotic sample(which is roughly equivalent to the female Dysthymic States and Neurotic Symptoms class), and (iii) the fact that there is a general trend in this study for Neurotics to be older than Controls and Psychotics, it seems reasonable to suggest that the findings reported here concerning L and the hierarchy may be due to age effects.

In summary then, P and N scores showed the predicted patterns of scoring in the DSSI classes. P scores increased with severity of illness in terms of DSSI classes, while N scores only showed increases up to the Neurotic symptoms class. Differences between P and other measures examined in relation to the hierarchy were discussed. E and HOQ scores, contrary to the hypothesis, were significantly affected by DSSI class and it was suggested that psychiatric illness may depress E and HOQ scores. Significant differences with the L scale were possibly due to the effects of age.

d) E, HOQ, Dysthymics and Hysterics

The next hypothesis concerned the relationship between E, HOQ and the Hysteric/Dysthymic neurotic groups. The concern here is not with differences between Controls and Neurotic groups on E and HOQ but with the differences between the subgroups of the neuroses. The position adopted by Eysenck (1970) is that Hysterical Neurotics are more extraverted than Dysthymic Neurotics. Since E and HOQ are reported to be highly related both here and in previous studies (see Chapter Four) this is contrary to evidence supplied by Foulds and Caine (1958) who found that over half a diagnosed Dysthymic female sample had Hysteroid personalities as rated by raters.

The problem was examined here using the HOQ and the E scale. The point at issue here is not whether Hysterical Neurotics should be used as criterion groups for E or hysteroidness, but merely whether they are more extraverted or hysteroid than other neurotic groups.

Several points must be borne in mind in assessing the results here. Firstly, hysteroidness in the Foulds and Caine study was assessed by raters using scales that eventually contributed to the HOQ. In addition, the E scale used in the present study is a different version to those used by the Eysencks and their co-workers in the studies already cited on this issue. The present E scale differs from its predecessor in the EPI in that it now measures Sociability more than anything else and Impulsivity items have largely been removed (Rocklin & Revelle, 1981).

Another point to be borne in mind is that it is not possible to compare the diagnostic criteria across studies in detail since it is not given. However, Eysenck and Claridge (1962) indicate that their Dysthmic group covers the categories of Anxiety States, Depressed Neurotics, Phobics and Obsessionals. In addition, the small sizes of the groups used in this study (n=14 to n=34) would suggest that results should be viewed tentatively.

Neurotic sub-groups were kept separate in the study since "lumping" the Dysthmic group together would clearly have ironed out important differences. A Chi square of the association between sex and group failed to be significant. Preliminary analysis of the relationship between E and HOQ revealed highly significant correlations ranging from .57 to .66.

Inspection of the mean scores of the Anxiety, Depressed, Hysterical, Phobic and Obsessional Neurotic groups revealed that the Hysterics were not the highest scorers on the E scale although they were consistently in second position if the groups were ordered from highest scorers to lowest scorers. The pattern of scoring is different for the male and female groups. In the male sample, Anxiety Neurotics gained highest scores on E whereas in the female sample, it was the Depressed

Neurotics. In the female groups, Obsessionals scored the least whereas in the male groups, this position was taken by Depressed Neurotics. It has already been seen that, across the whole sample, males gain significantly higher scores on E than females. In a two-way analysis of variance of these data, a significant sex effect emerged with males gaining, as expected, higher scores. However, no significant group effect emerged.

With regard to the HOQ scores, the pattern of scoring once again differed in the male and female samples. In the male sample, the Hysterics gained the highest scores but this was not the case in the female sample where the Hysterics came second. In the female sample the highest scores were by the Depressed Neurotics and the lowest scores were the Obsessionals. In the male sample, the lowest scorers were the Phobics. Analysis of variance of these data by group and sex revealed a just significant ($p < .042$) interaction effect although this effect was not strong enough to emerge in the Sheffe test.

Support if any, for the Eysenckian position may be regarded as equivocal but it is also not possible to refute a null hypothesis of no relationship between Hysterical Neurosis, E and HOQ with such findings. For this reason, the correlations between the Dysthymic sets and Hysteric sets of the DSSI with E and HOQ were examined. While the Dysthymic sets (state of Anxiety, state of Depression, Compulsions, Ruminations and Phobias) all had a negative relationship with E and HOQ (some of which were significant), the Hysterical sets (Dissociative state and Conversion symptoms) showed negligible correlations with them.

This lack of relationship between scores on the Hysterical DSSI sets with E and HOQ may be seen as failing to support the Eysenckian contention of a systematic link between extraversion (in the form of

Eysenck's E and hysteroidness) and hysterical symptomatology. Eysenck's (1970) theory states that extraverts have a lower threshold of thalamo-cortical inhibition, which is the mechanism that inhibits movement (hence hysterical paralysis), perception (hence hysterical blindness), and memory (hence hysterical amnesia) in symptom-production. These inhibitory mechanisms are more readily triggered in extraverts by stimulation of the thalamo-cortical portion of the reticular formation.

There may be several reasons for this. The alterations in the E scale may have affected the way in which different neurotic groups score on it. Eysenck & Eysenck (1976, p.viii) recognize that more recent versions of their scales may not replicate findings with earlier versions, although in (1975) they say that the old and new E and N scales are so similar that correlates of the old scale "must be assumed to apply with equal force to the new scales". Also the small group sizes in this study may have rendered the results unreliable. In addition, it has not been possible to compare the criteria for allocation to groups in this study with the criteria used in other studies (e.g. Eysenck & Claridge, 1962) due to lack of specification. The Hysterical Neurotics in this study may have been what Eysenck calls 'constitutional' extraverts in that they suffer from hysterical symptoms, but not 'behavioural' extraverts in that they do not obtain high E scores on the EPQ. This last possibility was not tested here.

As noted before, Rocklin & Revelle (1981), and Block (1978) have argued that the experimental correlates of EPQ E cannot be assumed to be the same as those for EPI E and that such correlates need to be re-established. More recently, Frcka & Beyts and their co-workers have been examining conditioning with regard to EPQ E and P. Frcka, Beyts, Levey and Martin (1983) examined the classical conditioning of eyeblink

responses in relation to EPQ P and E. The results of their study (on a non-psychiatric sample) revealed no main effects for P or E but an interaction effect. Low P Introverts and high P Extraverts gave more conditioned responses than high P Introverts or low P Extraverts. There was no significant E by UCS (air puff) intensity interaction effect as might have been expected. However there was a significant E by P by UCS effect. Superior conditioning was seen in low P Introverts in low UCS intensity and high UCS intensity conditions. Also, high P Extraverts demonstrated better conditioning than high P Introverts in conditions of low UCS intensity whereas under conditions of high intensity UCS, they conditioned worse. These findings are contrary to expectation. The authors suggest that these results may be due to the removal of Impulsivity from the E scale.

More recently, Beyts, Frcka, Martin & Levey (1983) have found that high P scorers are poor conditioners in an experiment where eyeblinks were classically conditioned using two levels of paraorbital shock intensity as the UCS. The results for Extraverts showed a failure to condition under high UCS intensity conditions. However, the authors suggest that the UCS intensity level in their study was not strong enough, even in the high intensity condition. Introverts, on the other hand responded as predicted and conditioned well under low UCS intensity conditions.

In general then, it may be argued that evidence in favour of Hysterical Neurotics being extraverted and hysteroid in comparison with other Neurotic groups is equivocal. Correlation between E and HOQ with the Dysthymic and Hysteric sets of the DSSI revealed negative and significant relationships with some of the Dysthymic sets, and negligible relationships with the Hysterical sets. This is somewhat

similar to the findings of Presly (1971) who found a significant association between obsessoid ratings and obsessional symptoms on the SSI, but not between hysteroid ratings and hysterical symptoms on the SSI.

Possible reasons for the equivocal results were given. They included the issue of comparability of groups across studies and the small sample size in this study. In addition, it may be possible that the Hysterics in this study were 'constitutional' rather than 'behavioural' extraverts. The final reason given for the discrepancy was the changes in the E scale. Two studies were cited that suggest that extraversion as designated by EPQ E, fails to fulfil predictions of Eysenckian theory in conditioning experiments.

Clearly more research is needed to address i) the relationships between EPQ E, physiological correlations of extraversion and hysterical/dysthymic disorders; and ii) the problem of personality and conditionability now that the E scale is changed, and now that P can be measured in questionnaire form.

Section III: Functions and Factors

a) Functions

A Discriminant Function Analysis (DFA) was carried out to examine how the three main groups in the analysis were best separated. The predictor variables entered into the analysis consisted of the personality scales of the EPQ and HOQ and the twelve sets of the DSSI. The a priori groups were Controls (n=52), Neurotics (n=110) and Psychotics (n=98). The hypothesis was that two discriminant functions would emerge consisting of the neurotic DSSI sets with N, and the psychotic DSSI sets with P, respectively.

A stepwise analysis was performed and four variables were dropped prior to the main analysis. These were: P, HOQ, state of Elation and Dissociative symptoms. It was particularly surprising to see P dropped at this stage of the analysis since it indicates that it is not a useful predictor variable for discrimination of the a priori groups even though, as seen in Section Four of Chapter Five, P scores are higher in psychotics as classed by the DSSI hierarchy.

Two discriminant functions emerged explaining 52% and 48% of the between group variance respectively. These functions were interpreted according to their loading patterns from the predictor variables. Function one was labelled as a Dysthymic States function with loadings from state of Depression and state of Anxiety. In addition, the L scale made a positive contribution to the function and there was a slight negative contribution from delusions of Persecution. The role of L in this factor is unclear. As noted before, there is debate as to what the scale actually measures. Considering it is frequently reported to correlate negatively with the P scale, it could be seen, along with the negative contribution from delusions of Persecution, as emphasizing the non-psychotic nature of the function.

The second function was labelled as a Clinical Psychoticism function with loadings from delusions of Grandeur and Persecution. A small contribution to this factor came from state of Anxiety too.

In combination, these functions clearly separated the groups in the analysis. The first function discriminated the Controls from the Neurotics and Psychotics while the second function separated the Psychotics from the other groups. Varimax rotation of the functions made no difference to their interpretation. Split sample discriminant analyses suggested these results were reliable.

While P was abandoned in an early part of the analysis, N played little part eventually in the Dysthymic states function. However, caution must be exercised in being too evaluative of N's role since much of its variance may have already been accounted for by preceding variables in the stepwise analysis. It can be seen from Appendix E that N has much of its variance in common with several DSSI sets, including states of Anxiety and Depression.

Examination of the reclassification of subjects on the basis of the discriminant function scores revealed a statistically significant degree of correct classifications ranging from 67% for Psychotics to 96% for controls. The groups were examined in more detail to try and discover why misclassifications were occurring. Of note was the fact that all the Psychotic depressives were reclassified as Neurotics, six of the Manic Depressives and four Paranoids were reclassified as controls. In addition, six schizophrenics were re-classified as Controls, and four as Neurotics.

The greater degree of misclassification of Psychotics is interesting in the light of their greater lack of conformity to the hierarchy compared to other groups. It is suggested that part of their failure to be correctly classified is due to a failure to endorse a wide enough range of delusional sets. The Psychotic Depressives, Manic Depressives and Paranoids would be expected to endorse only delusions of Contrition, Grandeur and Persecution respectively. The Schizophrenics, on the other hand, would be expected to endorse all these and delusions of Disintegration since Foulds (1976, Ch. 6) showed that mixed syndrome scoring is greater in the lower classes than in the highest class, to which one belongs. Table 7.1 in Appendix B confirmed that in general, this was the case. However, the fact that some Psychotics were

reclassified as Controls rather than as Neurotics may be attributed to the same reason as their failure to conform to the hierarchy, that is a failure to endorse Neurotic symptoms and Dysthymic states. This has been discussed in greater detail earlier in this chapter and will not be discussed further here.

The rate of correct reclassification suggests that the predictor variables used in this study can usefully replicate the broad TCS categories of Neurosis and Psychosis. Garside & Roth (1978) have suggested that DFA is circular, that it merely refines what is already there and that it just describes the diagnostic process used. Of course, DFA is limited by the variables submitted for analysis but it need not merely describe the diagnostic process. It may cut across assumptions about group distinctions and even provide more efficient criteria by which to separate the groups. In this study, the results of the DFA must be interpreted with reference to the value of the a prior groups. The method of allocation of subjects has already been discussed and it was noted that in no instance was a psychiatric patient asked to participate if there was doubt as to whether they were Psychotic or Neurotic. The rate of correct reclassifications suggests that the *original study* groups were probably, in general, reliable. The rate of misclassification may be a reflection of the large amount of variance (in terms of manifest psycho-pathology) within the groups.

Although the split sample analyses suggested that the DFA results were reliable for this sample, separate analyses need to be done with other psychiatric and non-psychiatric samples before these results can be viewed as reliable across samples.

b) Factors

The next part of the analysis was an examination of the relationship between the personality and pathological variables without the constraints of the a priori groups, through factor analysis. Eysenck & Claridge (1962) have argued that this is not a supererogative exercise. Slater noted that there is "little theoretical justification" for expecting factor analysis and Discriminant Function Analysis to yield the same vectors. Under highly favourable conditions, this has not been found to be the case (1960).

In this analysis, an attempt was made to follow factor analytic procedures in as objective a manner as possible, although it may be argued that this was not achieved (for example in the number of factors extracted).

The twelve sets of the DSSI, the EPQ and HOQ scores were submitted for analysis. Four main factors were hypothesized to emerge: a Psychoticism factor consisting of P and the psychotic sets of the DSSI; a Neuroticism factor consisting of N and the neurotic sets of the DSSI; an Extraversion factor including the HOQ, and a Lie scale factor.

The Scree test (Cattell, 1966) was employed to aid in the decision of the number of factors to be extracted. Contrary to Kaiser's unity rule which suggested extracting three factors, five factors were extracted for rotation. These explained 73% of the variance. (The four and six factor solutions were also inspected, before the choice of the five factor solution was made on psychological grounds). The five extracted factors were rotated to simple structure. The hyperplane counts were low and the solution failed to reach significance according to Bargmann's criteria (Sine & Kameoka, 1977).

The first factor to emerge was quite clearly a Neuroticism factor with loadings from all the Neurotic DSSI sets and N. Particularly high were the loadings from N and the states of Anxiety and Depression. The appearance of delusions of Contrition in this factor illustrates the confusion and controversy surrounding the Neurotic/Psychotic depression distinction. The results of the DFA, where all the Psychotic Depressives were re-classified as Neurotics, and the results here, would suggest that in certain ways, Psychotic depressives are more like Neurotics than they are like other Psychotics. Their tendency to gain lower P scores than other Psychotics (Eysenck & Eysenck, 1975) reinforces the point and this is also in line with psychodynamic tradition which does not distinguish firmly between reactive and endogenous depression and tends to see the same dynamic mechanisms (which Freud described (1917)) as responsible for both.

Whereas N had but a small part to play in the Dysthymic states function, it plays a major part here outside the constraints of the TCS groups. However, it has already been pointed out that not too much can be read into its performance in the DFA.

The second factor in this analysis was an Extraversion factor consisting of loadings from E and Hysteroidness.

The third factor was a Clinical Psychoticism factor with loadings from all the psychotic delusional sets of the DSSI, the Hysterical and Phobic sets and last, but not least, P. It is suggested that the inclusion of the neurotic items may be due to the heirarchical nature of the DSSI. The P scale which was pruned out of the DFA in the stepwise selection, played a major role in the Clinical Psychoticism factor.

This would suggest that while P is not a good discriminator of traditionally diagnosed psychotics from other groups, it is correlated with other psychotic measures. Table 5.49 in Chapter Five (Section Seven) shows the correlation of all the other measures with P. It can be seen that the highest correlations are with the delusional sets of Grandeur, Persecution and Disintegration, followed by state of Elation and delusions of Contrition. However, the correlations are not as high as might have been expected. For example P and delusions of Grandeur which is the largest correlation ($r=.47$) have only 22% of their variance in common.

What was evident in this analysis is the clear separation of Neurosis and Psychosis in the factors. This is supportive of the traditionally maintained distinction and of previous studies such as Trouton and Maxwell (1956) and, if Claridge's interpretation of the factor labels is accepted, Verma & Eysenck (1973).

The fourth factor to emerge was a personality factor with opposite pole loadings from L and P. The negative relationship of P and L has been noted before (Woody & Claridge, 1977, Eysenck & Eysenck 1975). There are no loadings of .3 or more on this factor from any of the DSSI Sets. It was labelled as a Social Desirability factor.

The fifth factor to emerge was a Mania factor. It was interesting to note in this respect that delusions of Grandeur was accompanied by state of Elation. This was seen as supportive of the hierarchy principle. The presence of obsessions on the factor reflect the tendency of Manics to endorse obsessional symptoms to a certain extent (although not sufficiently to conform to the hierarchy). In any event, they gain higher scores on the obsessional DSSI sets than on the other Class 2 sets. This combination of Mania and Obsessional symptoms was also found

by O'Neill (1978). As noted in Chapter Five, mania and obsessions are not viewed as co-occurring in traditional psychiatry, although psychotic depression and obsessions are viewed as co-occurring (Gittelson, 1966). This would suggest that Manics may be endorsing obsessional items inappropriately on the DSSI due to misinterpretation. A look at Table 7.1 in Appendix B demonstrates that Manics did endorse the DSSI obsessional sets more than they endorsed other Class 2 sets - but as noted before, they did not endorse such items sufficiently to gain admission to the Neurotic symptoms class. Manics are then positively endorsing such items without endorsing that they experience them as upsetting. This, together with the fact that at least two studies, using the DSSI, have found this association would suggest that misinterpretations of these items on the DSSI may be occurring. The possibility is that this finding is peculiar to the DSSI. Neither Surtees & Kendell (1978), de Jong et al (1984) nor Sturt (1981) using the PSE report this phenomenon although they were all testing out the hierarchical model. Further research is clearly needed to investigate this more fully. The Eysenckian suggestion that extraversion is related to psychotic mania (Verma & Eysenck, 1973, Eysenck & Eysenck, 1976, p.113) was not supported.

The correlation between the factors were inspected. As might have been expected, Neuroticism showed moderate and negative correlations with Clinical Psychoticism, Mania and Extraversion. Clinical Psychoticism correlated highly and positively with Mania but negligibly with the personality factors indicating a lot of overlap, and no overlap respectively. Interestingly, Mania has a low and negative correlation

with Extraversion (once again failing to endorse the suggest link between this type of psychosis and Extraversion) and a minimal positive correlation with Social Desirability

The null hypothesis that factors resembling E, P (plus the psychotic sets from the DSSI), N (plus the neurotics sets from the DSSI) and L would not emerge from this analysis was refuted. In addition, there was a vindication of the traditional separation of Neuroticism and Psychoticism. The four scales of the EPQ played a major part in four of the five factors.

c) The P scale and Psychosis

The final part of the analysis involved an investigation of why Psychotics score more on the P scale. It was hypothesized that Psychotics would score more on the scale as a result of certain items with a paranoid flavour. The preliminary section of this analysis involved a factor analysis of the P scale items for the whole sample. A Scree test was carried out in order to decide how many factors to extract. It was somewhat ambiguous but after examination of alternative solutions, a decision was made to extract three factors. These accounted for just over 30% of the variance to be accounted for. The factors were rotated to simple structure and the solution was significant ($P < .01$) according to Bargmann's criteria (Sine & Kamoka, 1977).

The factors were interpreted on the basis of the face value of the items. The first factor was labelled Affectionless Psychopathy. It contained elements of sadism and affectionlessness (not being upset at seeing a child or animal suffer, enjoyment of hurting loved ones, wanting to be feared, enjoying jokes that can hurt people, not trying to be polite, and claiming to have had a bad mother). Of course, this last item may be more of a reflection of reality and a lack of appropriate

nurturance. In addition, this factor shows items suggesting a lack of heed for social convention (good manners, cleanliness, punctuality) and a lack of heed of caution (annoyance at careful drivers, being in debt).

The second factor was bipolar and labelled as one of Paranoid Ideation. It mainly consisted of negative loadings from projected hostility items (being avoided by people, being told a lot of lies, having enemies, wishing harm, friendships breaking up through no fault of one's own). In addition, two items relating to caution had positive loadings on this factor (not liking being in debt and locking up the house carefully at night). It was interesting to note that responses scoring against the direction of the P scale (i.e. endorsing cautiousness rather than a lack of it) contributed to this factor. However, many paranoids worth their salt would surely need to carefully lock their house up at night to protect themselves from the enemies that wish to harm them! In addition, an item reflecting a lack of taste sensitivity loaded negatively on this factor.

The third factor was labelled Lack of Caution and suggested an altogether less harmful lack of care than in the first factor in that it is the sort of cautionlessness that does not affect others (being on the last minute for trains, not locking the house up carefully at night and thinking others spend too much time with savings and insurances). This factor correlated moderately ($r=.35$) with the first factor but not with the second ($r=.11$). Factors two and three had a low correlation with each other ($r=.18$).

Having identified the three factors, the groups in the analysis (Non-Psychotics and Psychotics) were compared in terms of frequency of endorsement. Two items on the first factor showed a significant association with group. "Would it upset you a lot to see a child or

animal suffer?" was given a positive answer significantly more frequently by the non-Psychotic group. This is probably the most sadistic item at face value in the P scale. However, positively endorsing the item may have reflected the rural nature of many of the subjects lives such that trapping animal pests (although not children!) is not seen as distressing. The numbers of subjects involved was too few (seven non-Psychotics and one Psychotic) to read much into this. There was also a significant tendency for Psychotics to positively endorse "Would you like other people to be afraid of you?"

All the items with a paranoid flavour on the second factor were positively endorsed significantly more frequently by Psychotics than by non-Psychotics. The items relating to caution and taste sensitivity were not endorsed differently by the groups. The pattern of frequency of endorsement on the items loading on this factor may be said to be in line with the expectations of the hypothesis; that is to say that Psychotics tend to endorse items with a paranoid content more frequently than non-Psychotics. The null hypothesis of no such association was refuted.

One item on the third factor showed a significant association between positive endorsement and Psychosis. This was the items relating to arriving on the last minute for a train.

When the P scores for the traditionally defined Psychotic and non-Psychotic groups were compared, it was shown that Psychotics gained significantly higher P scores. The sex difference that was shown to emerge in an earlier section of the analysis no longer emerged as significant. This suggests that the sex effect is dependant upon the way in which the sample is divided and that the effect is not all-pervasive.

When the P scores were adjusted by removing those items of paranoid ideation upon which Psychotics scored with greater frequency, and re-analyzed for significance of difference, no significant differences emerged, although Psychotics still had marginally higher scores. However, the difference was less than one. This suggests that the reason why Psychotics gain significantly higher P scores on the P scale is as a result of endorsing items of a paranoid nature. This is of interest in the light of the results produced by Teasdale, Segraves & Zacune (1971) using the PEN P scale. After removing the items (five in all) seemingly related to drug usage, they found that drug users still had significantly higher P scores than a control sample. They found that drug users positively endorsed eleven out of the twenty items more frequently than non-users. The drug-users however, did not endorse the paranoid items more frequently than the non-users but did endorse items relating to poor parents, poor health and having a hard life more frequently. The authors conclude that drug users obtain higher P scores for reasons beyond that of endorsing drug related items. They suggest that their higher scores on the P scale may reflect: a poor life, honest responding uninfluenced by social desirability, or a choice of making undesirable responses in their social activities and questionnaire replies. The implication of the present study is that the Psychotics obtained higher P scores for a rather specific reason - paranoia. Close parallels cannot be drawn due to the different versions of the scale used but it is of interest to note the contrast in conclusions about why two different abnormal groups gain higher P scores.

Claridge (1981) has argued that the P scale is weighted in favour of paranoid items. The findings of McPherson et al (1978) bear this out since their Paranoid groups were the highest P scorers. In addition, the

findings of Verma & Eysenck (1973) indicated that Paranoids had a higher mean score on the P factor than other psychotic groups. Claridge goes on to argue that psychosis is more than just paranoia and that the P scale is not capturing the full essence of psychosis. In particular, the scale does not tap "an emotionally unstable kind of 'introversion' (similar to (sic)) Kretschmer's cycloid-schizoid dimension' (p.92) or retarded kinds of psychosis (p.88).

The position adopted by Cattell (1970) would seem to be consistent in some ways with Claridge although the latter does not mention this (1981). As noted earlier in Chapter Three, Cattell found that Psychotics and non-Psychotics were quantitatively differentiated on objective test scores (Cattell, Tatro & Komlos, 1964) although Cattell & Specht Bolton (1969) argued that Psychotics showed abnormal expression in terms of deviant scores on factors that were similar to those of a normal group and made up of scores from objective tests. Cattell (1970) has also argued that certain factors are peculiar to pathological groups and relatively meaningless in non-pathological groups. In particular, he noted the factors (made up of a mixture of MMPI and 16PF items) of Psychasthenia, General Psychoticism, Hypochondria and Depression which have little variance in a normal population but a lot of variance in a clinical population.

Cattell argues then that although psychosis may be construed as related to normality on some dimensions that "half a dozen new factors of an almost purely pathological kind have to be added to a measuring instrument if it is to do full justice to the description of the psychotic." Twelve pathological first order factors have been added to the factors contained in the 16PF to form the Clinical Analysis Questionnaire (Delhees and Cattell, 1971). These abnormal factors are

made up of seven depressive factors, and five factors derived from the MMPI (Paranoid tendency, Psychopathic deviation, Schizophrenia, Psychasthenia and General Psychosis). At the second order level, three main pathological factors have emerged, Depression, Psychoticism and one that may be labelled Inhibition (Cattell & Kline, 1977, p.65). The Psychoticism factor consists of loadings from Paranoia (a belief one is being poisoned, persecuted, controlled, spied upon and that others are not to be trusted), General Psychosis (inability to cope, feelings of unworthiness and inferiority), Hypochondriasis (overconcern with bodily health), Psychasthenia (compulsive ideas and rituals), Guilt and Resentment (sleeplessness, agitation and depression), Psychopathic Deviation (immunity to criticism, amorality, little need of sleep and enjoyment of conflict) and Schizophrenia (irrational impulses, fancies, hallucinations and disorientation). This factor of Psychoticism has been confirmed by the findings of Krug and Laughlin (1977) with a sample of almost 2,000 normal and psychiatric subjects.

Thus it can be seen that Cattell's second order Psychoticism factor is broader than Eysenck's Psychoticism dimension since Cattell's includes the primary factors of General Psychosis, Hypochondriasis, Psychasthenia, Guilt and Resentment, and Schizophrenia. Such factors would seem to constitute those elements that Claridge (1981) argues P fails to cover. Further evidence of the validity of Claridge's argument may be seen in the results reported earlier by Foulds (1976) when he compared PDS scores on different DSSI classes. Not only did Extrapunitivity scores increase with hierarchy membership, but so did Intropunitivity scores - a finding not accounted for by Eysenckian Psychoticism.

Another interesting feature of Cattell's work is that the second order factor of Psychoticism is a "change factor" (Cattell & Kline, 1977, p.220). In this way, it would appear to ^{account for} ~~(be similar to)~~ P which, as has been noted in Chapter Three, seems to show decreases on psychiatric recovery (although this needs to be further investigated). If P does indeed change in this way, then, according to Foulds' (1965, 1976) definition it does not qualify as a personality dimension since he argues that personality traits represent the relative continuity of behavioural disposition in comparison with states, symptoms and signs of illness which are subject to change. Alternatively, one may argue that P is a trait, but that scores are affected by psychiatric illness. Such findings have already been demonstrated by Knowles & Kreitman (1965), Coppen & Metcalfe (1965), Kendell & DiScipio (1968), Hallam (1976) and Bianchi & Ferguson (1977), with the N scales of the predecessors of the EPQ. If this latter position is adopted, then it is inconsistent to argue that P scores measure a predisposition to psychosis unless, as I have argued in Chapter Three, P scores in those predisposed to psychosis are abnormally high even before the scores are affected (in terms of increase) by psychiatric state. This however, is an unlikely explanation since differences between different groups on P are small in absolute terms.

While in this study, it has been made clear that P is highly related to psychosis, it has emerged that this is the case because of Psychotics endorsing a few paranoid items that non-Psychotics do not tend to endorse. Contrary to the findings of Teasdale et al (1971) with drug users, the higher P scores of Psychotics did not seem to be due to mere generalised responding. This, and the points outlined above give rise to the issue of what the P scale measures (apart from paranoia).

The doubt that it measures psychosis per se has been raised by numerous psychologists as outlined in Chapter Three. In particular Bishop (1977) and Block (1977, 1978) were disturbed to note that other abnormal groups scored more on the P scale than Psychotics. In this study, it was seen that Psychotics scored more on P due to endorsing paranoid items. This would not necessarily explain why individuals with sex problems, alcoholics, prisoners and drug addicts score more on P and, as we have seen, Teasdale et al showed that this was not why drug users gain higher P scores either. In addition, this is clearly not why some normal groups have P scores comparable with Psychotics, e.g. art students (Eysenck & Eysenck, 1975). Clearly further research is needed to answer the question of why different groups of individuals have high P scores. Further P item analyses of responses derived from a range of large abnormal groups would possibly clarify this issue.

In clinical practice, the P scale seems to have little utility as yet. Claridge (1981) has queried whether the dimension makes psychological sense even though it is undoubtedly a dimension in the statistical sense. Research with the dimension has revealed a multitude of heterogenous findings. In practice, bald P scores even in combination with E, N and L, tell us little about diagnostics, although it may possibly tell us more about response to treatment (see Chapter Three). It is not easy to tell whether a high P score indicates a failure in mental health or healthy functioning since such scores overlap so much. To use an analogy cited by Slater (1960), body temperature is a specific indicator of 'fever' such that it may be assessed reliably by using a thermometer. Pulse rate and respiration vary so much among normal, healthy individuals that they cannot be reliably used to assess illness on their own. The P scale may be seen in

this light, or alternatively, as Foulds has argued "We are all more or less quick, more or less extrapunitive and we are so, with possibly some modification in the more or less, throughout our lives and we do not particularly mind. We do not, however, all have *flexibilitas cerea* or delusions of Grandeur" (1964, p.270). Both Griffith (1975) and Kendell (1975 p.135) have argued that the P scale has little in common with clinical psychosis. Griffith adds that P scale scores should be assessed in conjunction with symptom measures, since the P scale does not account for all psychotic behaviour.

Clearly P scores need to be interpreted in the context of other information. For example, Woody and Claridge (1977) have argued that P scores may interact with intelligence, and that when both variables are present to a high degree, creativity results. Claridge (1972) has suggested that intelligence is a moderator variable influencing the threshold for breakdown. In addition, McKinnon's study of the scores of creative architects in comparison to psychiatric patients showed that while both groups had high scores on abnormal scales, the architects also scored highly on ego strength too. Thus a different interpretation could be made of their scoring profile (cp Barron, 1965, pp.57-67). The specification equation of Cattell (1965) takes into account the combination of traits, states, abilities and situational variables for the prediction of behaviour. In other words, human responding needs to be interpreted in the context of a range of variables. The Eysencks (1975, 1976, pp.102-103) have argued for interpreting P scores in the context of L scale scores. As noted earlier, Claridge (1981) and Gourlay (1980) have not been convinced by this argument. A recent concession to the notion that the P scale as a psychiatric measure needs the backing of additional measures was granted by Eysenck, White & Eysenck (1976)

who suggested that in order to interpret the scale scores in psychiatric classification, symptoms, signs, the results of objective laboratory tests and physiological measures need to be added to the account.

In general, the findings of this research support the hierarchical model of Foulds. Responses collected from the DSSI demonstrated good diagnostic concordance between the DSSI diagnosis and the traditional diagnosis. In addition, there was evidence for a high rate of conformity to the hierarchy. The exceptions to the hierarchical principle were examined and it was found that that a reduction in the scoring criterion for conformity, converted the original non-conformers into conformers.

Clear relationships emerged between the Eysenckian scales of P and N, on the one hand, and the DSSI classes on the other. N scale scores increased up to the Neurotic Symptoms class, but not thereafter; whereas P scores increased up to the Delusions of Disintegration class. However, there was mixed support for the Eysenckian argument that Hysterics are Extravert Neurotics while Dysthymics are Introvert Neurotics. The lack of clarity in the results in this study is attributed to alterations that have occurred in the composition of the scale.

A discriminant analysis revealed clear separation the three study groups on the basis of the DSSI items rather than on the basis of the personality scales. However, in a factor analysis, the personality dimensions emerged as strong factorial contributors alongside the DSSI items, emphasizing the relationship between the two types of measurement.

A.T.O.

Finally, an examination of scoring on P scale items suggested that Psychotics have raised P scores because they tend to endorse a few specific items of a distinctly paranoid flavour more frequently than do Non-Psychotics. This suggests that the scores of Psychotics on the P scale are raised not because of a general personality trait of Psychoticism but because of a few almost pathological paranoid items. This may explain adequately why Psychotics have raised P scores but hardly explains why other abnormal groups (eg alcoholics) also have raised P scores. This scale needs further detailed investigation with a variety of other abnormal groups who are known to have raised P scores, in order to determine which particular items are responsible in those cases.

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APPENDIX A

RAW SCORES OF THE STUDY GROUPS
ON THE EPQ, HOQ AND DSSI.

APPENDIX A

The following pages contain tables of the raw scores of the psychiatric groups divided by sex on the following variables.

Age

E

P

N

L

HOC

DSSI class - 0 (Personal Health) to 4 (Delusions of Disintegration)

| | |
|-----------------------------|---|
| State of Anxiety | presence/absence degree of distress |
| Conversion symptoms | presence/absence degree of distress |
| delusions of Persecution | presence/absence degree of certainty |
| state of Elation | presence/absence frequency |
| Compulsions | presence/absence degree of distress |
| delusions of Disintegration | presence/absence degree of certainty |
| state of Depression | presence/absence degree of distress |
| Phobias | presence/absence degree of distress |
| delusions of Grandeur | presence/absence degree of certainty |
| Ruminations | presence/absence degree of distress |
| delusions of Contrition | presence/absence degree of certainty |
| Dissociative state | presence/absence degree of distress |

Controls - Females

[illegible]

Anxiety Neurotics - Female

[illegible]

Neurotic Depressives - Female

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|---|----|---|----|---|----|----|----|---|----|---|---|----|---|----|---|---|---|---|---|---|---|---|---|---|----|----|----|---|---|---|---|
| 31 | 0 | 3 | 0 | 3 | 0 | 7 | 0 | 13 | 0 | 16 | 0 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 |
| 43 | 2 | 14 | 2 | 1 | 0 | 21 | 0 | 18 | 1 | 27 | 1 | 1 | 3 | 6 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 10 | 2 | 2 | 0 | 0 |
| 36 | 1 | 12 | 1 | 6 | 0 | 13 | 0 | 3 | 0 | 18 | 1 | 3 | 5 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 5 | 0 | 0 | 0 | 0 |
| 37 | 0 | 10 | 0 | 2 | 0 | 12 | 0 | 12 | 0 | 16 | 1 | 2 | 3 | 5 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 3 | 0 |
| 35 | 1 | 18 | 1 | 1 | 0 | 15 | 0 | 11 | 0 | 29 | 0 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 |
| 50 | 0 | 6 | 0 | 3 | 1 | 15 | 2 | 19 | 0 | 17 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 2 | 5 | 0 | 0 | 0 | 0 |
| 42 | 0 | 0 | 0 | 3 | 1 | 15 | 3 | 13 | 0 | 22 | 2 | 5 | 12 | 1 | 1 | 1 | 3 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 6 | 14 | 2 | 5 | 0 | 0 |
| 49 | 0 | 15 | 0 | 6 | 0 | 15 | 0 | 8 | 0 | 25 | 1 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 12 | 0 | 0 | 0 | 0 |
| 24 | 4 | 4 | 6 | 8 | 5 | 19 | 13 | 4 | 0 | 16 | 3 | 6 | 11 | 3 | 7 | 1 | 2 | 2 | 2 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 7 | 16 | 1 | 2 | 0 | 0 |
| 55 | 0 | 18 | 0 | 3 | 0 | 13 | 0 | 6 | 0 | 38 | 1 | 6 | 10 | 1 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 6 | 14 | 2 | 3 | 0 | 0 |
| 56 | 0 | 5 | 0 | 0 | 0 | 1 | 0 | 18 | 0 | 12 | 1 | 2 | 4 | 2 | 3 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 | 9 | 0 | 0 | 0 | 0 |
| 33 | 7 | 5 | 9 | 12 | 6 | 21 | 9 | 4 | 5 | 21 | 4 | 7 | 9 | 7 | 11 | 4 | 4 | 5 | 6 | 7 | 9 | 5 | 8 | 6 | 9 | 7 | 9 | 7 | 9 | 3 | 5 | |
| 43 | 2 | 15 | 4 | 1 | 2 | 19 | 3 | 11 | 1 | 17 | 1 | 7 | 14 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 1 | 0 | 0 | 0 | 0 | 6 | 14 | 0 | 0 | 0 | 0 | |
| 36 | 2 | 8 | 3 | 3 | 2 | 22 | 2 | 18 | 0 | 17 | 1 | 6 | 8 | 1 | 1 | 3 | 3 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 7 | 12 | 1 | 1 | 0 | 0 | |
| 46 | 2 | 8 | 3 | 0 | 0 | 16 | 0 | 20 | 2 | 17 | 1 | 7 | 9 | 3 | 5 | 0 | 0 | 1 | 1 | 1 | 2 | 1 | 1 | 1 | 7 | 12 | 0 | 0 | 0 | 0 | | |
| 44 | 3 | 5 | 3 | 5 | 0 | 6 | 0 | 10 | 3 | 30 | 1 | 3 | 3 | 1 | 1 | 0 | 0 | 3 | 5 | 2 | 2 | 1 | 3 | 3 | 9 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 36 | 2 | 17 | 2 | 2 | 0 | 10 | 0 | 12 | 0 | 26 | 1 | 6 | 6 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 3 | 2 | 2 | 0 | 0 | |

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|--------|----------|---------|----------|---|---|----|---|----|---|----|---|----|---|---|---|---|---|----|---|----|---|---|
| 55 4 | 4 6 | 5 2 | 19 3 | 17 1 | 18 1 | 2 | 7 | 13 | 5 | 8 | 2 | 3 | 3 | 5 | 2 | 3 | 0 | 0 | 6 | 11 | 4 | 6 | 0 | 0 |
| 31 0 | 16 0 | 4 0 | 21 0 | 17 0 | 22 0 | 2 | 5 | 13 | 3 | 6 | 0 | 0 | 1 | 3 | 1 | 3 | 0 | 0 | 4 | 8 | 0 | 0 | 0 | 0 |
| 31 5 | 2 13 | 3 2 | 23 4 | 12 1 | 17 3 | 3 | 7 | 21 | 4 | 11 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 7 | 19 | 4 | 10 | 0 | 0 |
| 47 4 | 6 6 | 2 1 | 19 2 | 13 3 | 18 4 | 2 | 7 | 14 | 5 | 11 | 2 | 3 | 7 | 4 | 7 | 3 | 2 | 2 | 5 | 10 | 2 | 3 | 0 | 0 |
| 44 2 | 2 3 | 5 2 | 23 4 | 5 5 | 18 9 | 4 | 7 | 15 | 4 | 5 | 1 | 1 | 3 | 5 | 4 | 6 | 2 | 4 | 7 | 12 | 2 | 5 | 0 | 0 |
| 31 4 | 11 6 | 4 1 | 22 2 | 19 3 | 18 5 | 2 | 7 | 18 | 6 | 11 | 1 | 1 | 2 | 4 | 4 | 5 | 1 | 3 | 6 | 14 | 5 | 10 | 0 | 0 |
| 31 3 | 13 7 | 5 0 | 21 0 | 14 2 | 22 4 | 2 | 8 | 16 | 4 | 12 | 0 | 0 | 0 | 0 | 1 | 3 | 0 | 0 | 5 | 10 | 4 | 11 | 0 | 0 |
| 20 6 | 3 17 | 8 7 | 23 21 | 3 7 | 21 17 | 4 | 7 | 18 | 2 | 4 | 6 | 18 | 2 | 6 | 4 | 8 | 3 | 8 | 7 | 20 | 1 | 3 | 0 | 0 |
| 23 4 | 10 6 | 6 7 | 22 19 | 6 3 | 22 9 | 4 | 6 | 14 | 2 | 2 | 6 | 14 | 7 | 12 | 3 | 4 | 4 | 8 | 6 | 10 | 4 | 8 | 3 | 5 |
| 20 1 | 18 1 | 3 0 | 19 0 | 8 2 | 19 3 | 2 | 5 | 12 | 4 | 7 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 7 | 12 | 0 | 0 | 0 | 0 |
| 59 0 | 18 0 | 8 0 | 23 0 | 12 1 | 19 2 | 2 | 3 | 7 | 2 | 4 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 3 | 7 | 15 | 1 | 1 | 0 | 0 |

| | | | | | |
|----|----|---|----|----|----|
| 32 | 6 | 4 | 20 | 16 | 16 |
| 1 | 3 | 1 | 3 | 1 | 3 |
| 47 | 1 | 0 | 20 | 14 | 9 |
| 3 | 4 | 0 | 0 | 0 | 0 |
| 49 | 6 | 1 | 20 | 13 | 17 |
| 1 | 1 | 1 | 2 | 1 | 2 |
| 34 | 10 | 0 | 20 | 9 | 20 |
| 1 | 1 | 0 | 0 | 4 | 5 |
| 51 | 9 | 1 | 16 | 20 | 21 |
| 1 | 1 | 0 | 0 | 1 | 1 |
| 44 | 3 | 2 | 20 | 14 | 17 |
| 5 | 6 | 4 | 5 | 3 | 4 |
| 45 | 8 | 5 | 21 | 17 | 22 |
| 3 | 4 | 1 | 2 | 3 | 3 |
| 25 | 18 | 4 | 17 | 8 | 19 |
| 2 | 2 | 1 | 2 | 1 | 1 |
| 57 | 13 | 2 | 21 | 7 | 22 |
| 3 | 4 | 1 | 1 | 2 | 4 |
| 50 | 3 | 0 | 15 | 11 | 20 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| 33 | 4 | 1 | 21 | 14 | 12 |
| 4 | 10 | 1 | 3 | 0 | 0 |
| 38 | 11 | 2 | 19 | 14 | 25 |
| 2 | 3 | 1 | 1 | 1 | 1 |

Obsessionals - Female

| | | | | | | | | | | | | | | | | | | | | | | | | |
|----|----|---|----|----|----|---|---|----|---|----|---|---|---|----|---|----|---|---|---|----|---|----|---|---|
| 32 | 5 | 7 | 20 | 4 | 18 | 3 | 6 | 10 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 7 | 13 | 4 | 8 | 1 | 1 |
| 3 | 8 | 3 | 6 | 1 | 2 | | | | | | | | | | | | | | | | | | | |
| 34 | 7 | 3 | 23 | 11 | 12 | 2 | 7 | 18 | 5 | 10 | 2 | 2 | 0 | 0 | 4 | 4 | 1 | 3 | 6 | 15 | 5 | 10 | 0 | 0 |
| 7 | 11 | 1 | 1 | 2 | 6 | | | | | | | | | | | | | | | | | | | |
| 48 | 6 | 2 | 15 | 9 | 22 | 2 | 4 | 6 | 1 | 2 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 6 | 6 | 2 | 3 | 0 | 0 |
| 3 | 9 | 2 | 3 | 2 | 5 | | | | | | | | | | | | | | | | | | | |
| 32 | 5 | 1 | 19 | 14 | 17 | 2 | 4 | 8 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 4 | 0 | 0 | 5 | 10 | 4 | 4 | 0 | 0 |
| 0 | 0 | 0 | 0 | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 40 | 10 | 3 | 20 | 17 | 21 | 2 | 6 | 12 | 4 | 6 | 0 | 0 | 1 | 3 | 0 | 0 | 0 | 0 | 5 | 14 | 1 | 2 | 0 | 0 |
| 4 | 7 | 1 | 3 | 0 | 0 | | | | | | | | | | | | | | | | | | | |
| 24 | 5 | 8 | 18 | 12 | 18 | 3 | 6 | 11 | 3 | 3 | 5 | 7 | 1 | 3 | 4 | 4 | 1 | 1 | 6 | 12 | 4 | 4 | 1 | 1 |
| 4 | 6 | 5 | 9 | 3 | 6 | | | | | | | | | | | | | | | | | | | |
| 26 | 8 | 2 | 21 | 3 | 22 | 2 | 6 | 13 | 2 | 5 | 0 | 0 | 4 | 7 | 4 | 7 | 0 | 0 | 7 | 19 | 1 | 3 | 0 | 0 |
| 3 | 6 | 1 | 2 | 2 | 2 | | | | | | | | | | | | | | | | | | | |
| 31 | 11 | 1 | 21 | 10 | 21 | 2 | 6 | 12 | 2 | 5 | 0 | 0 | 2 | 3 | 4 | 4 | 0 | 0 | 5 | 11 | 3 | 4 | 0 | 0 |
| 4 | 10 | 1 | 3 | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 31 | 12 | 6 | 20 | 11 | 25 | 4 | 4 | 5 | 4 | 6 | 1 | 2 | 5 | 10 | 3 | 3 | 2 | 6 | 5 | 11 | 2 | 4 | 1 | 1 |
| 4 | 8 | 4 | 8 | 4 | 5 | | | | | | | | | | | | | | | | | | | |
| 37 | 17 | 2 | 20 | 18 | 31 | 2 | 5 | 10 | 1 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 6 | 10 | 2 | 3 | 0 | 0 |
| 4 | 7 | 0 | 0 | 0 | 0 | | | | | | | | | | | | | | | | | | | |
| 36 | 1 | 2 | 15 | 14 | 10 | 2 | 6 | 12 | 3 | 3 | 2 | 2 | 0 | 0 | 1 | 1 | 0 | 0 | 7 | 15 | 2 | 3 | 0 | 0 |
| 5 | 6 | 1 | 1 | 0 | 0 | | | | | | | | | | | | | | | | | | | |
| 24 | 6 | 2 | 20 | 16 | 10 | 2 | 6 | 12 | 2 | 5 | 0 | 0 | 0 | 0 | 4 | 7 | 0 | 0 | 7 | 18 | 5 | 13 | 0 | 0 |
| 6 | 18 | 0 | 0 | 3 | 5 | | | | | | | | | | | | | | | | | | | |
| 37 | 1 | 3 | 22 | 7 | 10 | 3 | 7 | 17 | 1 | 2 | 0 | 0 | 1 | 2 | 7 | 15 | 0 | 0 | 7 | 19 | 3 | 7 | 0 | 0 |
| 6 | 16 | 2 | 4 | 2 | 4 | | | | | | | | | | | | | | | | | | | |
| 40 | 4 | 2 | 18 | 15 | 12 | 2 | 6 | 10 | 3 | 4 | 0 | 0 | 1 | 2 | 3 | 4 | 0 | 0 | 7 | 14 | 2 | 2 | 0 | 0 |
| 6 | 12 | 0 | 0 | 1 | 2 | | | | | | | | | | | | | | | | | | | |
| 32 | 4 | 2 | 16 | 12 | 18 | 2 | 5 | 11 | 1 | 1 | 0 | 0 | 0 | 0 | 8 | 19 | 0 | 0 | 5 | 8 | 1 | 3 | 0 | 0 |

Psychotic Depressives - Female

[illegible]

Manic Depressives - Female

[illegible]

Paranoïds - Female:

[illegible]

Schizophrenics - Females

| | | | | | | | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|---|---|----|---|----|---|----|---|----|---|----|---|----|---|----|---|----|---|----|
| 46 | 17 | 7 | 22 | 7 | 24 | 4 | 6 | 12 | 3 | 5 | 6 | 13 | 7 | 20 | 6 | 8 | 5 | 15 | 5 | 11 | 2 | 4 | 6 | 12 |
| 6 | 16 | 4 | 10 | 5 | 8 | | | | | | | | | | | | | | | | | | | |
| 22 | 4 | 7 | 22 | 10 | 20 | 4 | 4 | 4 | 0 | 0 | 6 | 10 | 2 | 4 | 2 | 2 | 4 | 8 | 7 | 15 | 2 | 4 | 3 | 4 |
| 5 | 7 | 3 | 5 | 2 | 3 | | | | | | | | | | | | | | | | | | | |
| 38 | 11 | 4 | 22 | 12 | 23 | 4 | 5 | 12 | 4 | 7 | 1 | 1 | 1 | 1 | 5 | 12 | 6 | 15 | 6 | 11 | 5 | 8 | 4 | 3 |
| 4 | 7 | 5 | 4 | 3 | 6 | | | | | | | | | | | | | | | | | | | |
| 33 | 4 | 13 | 20 | 4 | 17 | 4 | 8 | 18 | 6 | 12 | 5 | 15 | 3 | 7 | 7 | 14 | 4 | 12 | 7 | 19 | 6 | 16 | 4 | 11 |
| 8 | 16 | 5 | 14 | 6 | 9 | | | | | | | | | | | | | | | | | | | |
| 41 | 12 | 2 | 21 | 12 | 26 | 4 | 5 | 9 | 1 | 2 | 6 | 6 | 6 | 15 | 4 | 4 | 2 | 4 | 1 | 1 | 3 | 3 | 1 | 1 |
| 3 | 4 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 23 | 19 | 8 | 15 | 7 | 28 | 4 | 7 | 15 | 2 | 4 | 5 | 14 | 7 | 17 | 6 | 10 | 6 | 16 | 6 | 14 | 4 | 4 | 6 | 17 |
| 5 | 9 | 3 | 9 | 4 | 5 | | | | | | | | | | | | | | | | | | | |
| 32 | 16 | 12 | 12 | 10 | 22 | 4 | 5 | 12 | 3 | 3 | 0 | 0 | 5 | 11 | 5 | 6 | 4 | 7 | 5 | 9 | 2 | 4 | 2 | 3 |
| 6 | 12 | 2 | 4 | 3 | 5 | | | | | | | | | | | | | | | | | | | |
| 27 | 16 | 7 | 21 | 11 | 25 | 4 | 4 | 10 | 3 | 8 | 3 | 7 | 3 | 9 | 3 | 6 | 3 | 6 | 3 | 4 | 3 | 5 | 4 | 12 |
| 3 | 5 | 3 | 7 | 3 | 7 | | | | | | | | | | | | | | | | | | | |
| 53 | 16 | 4 | 12 | 12 | 29 | 4 | 7 | 17 | 4 | 10 | 3 | 7 | 4 | 6 | 5 | 6 | 3 | 7 | 5 | 11 | 2 | 2 | 4 | 7 |
| 4 | 10 | 4 | 11 | 2 | 3 | | | | | | | | | | | | | | | | | | | |
| 19 | 12 | 12 | 15 | 10 | 29 | 4 | 5 | 10 | 6 | 13 | 7 | 13 | 6 | 12 | 6 | 9 | 6 | 12 | 6 | 10 | 3 | 5 | 7 | 16 |
| 5 | 9 | 7 | 15 | 5 | 7 | | | | | | | | | | | | | | | | | | | |
| 35 | 10 | 4 | 21 | 11 | 20 | 4 | 5 | 7 | 1 | 1 | 2 | 2 | 4 | 9 | 4 | 6 | 2 | 5 | 3 | 3 | 3 | 3 | 1 | 1 |
| 5 | 8 | 1 | 1 | 1 | 1 | | | | | | | | | | | | | | | | | | | |
| 50 | 8 | 7 | 20 | 8 | 24 | 4 | 5 | 11 | 3 | 4 | 6 | 12 | 4 | 11 | 3 | 6 | 5 | 14 | 7 | 12 | 4 | 6 | 7 | 8 |
| 5 | 9 | 7 | 10 | 4 | 7 | | | | | | | | | | | | | | | | | | | |
| 49 | 12 | 3 | 17 | 17 | 26 | 3 | 7 | 17 | 4 | 9 | 5 | 12 | 1 | 1 | 5 | 9 | 1 | 3 | 7 | 20 | 6 | 16 | 1 | 1 |
| 2 | 4 | 3 | 9 | 3 | 7 | | | | | | | | | | | | | | | | | | | |
| 32 | 14 | 9 | 20 | 9 | 24 | 4 | 5 | 10 | 4 | 9 | 7 | 11 | 3 | 7 | 4 | 6 | 7 | 16 | 7 | 13 | 4 | 7 | 4 | 9 |
| 3 | 6 | 4 | 8 | 2 | 5 | | | | | | | | | | | | | | | | | | | |
| 58 | 16 | 3 | 19 | 18 | 22 | 4 | 6 | 17 | 1 | 2 | 6 | 18 | 2 | 4 | 3 | 5 | 4 | 12 | | | | | | |

Controls - Male

| | | | | | | | | | | | | | | | | | | | | | | | | | | |
|----|----|----|----|----|----|---|---|---|---|---|---|---|---|---|---|---|---|---|---|----|---|----|---|---|---|---|
| 38 | 6 | 0 | 10 | 10 | 19 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 2 | 2 | 2 | 0 | 0 |
| 21 | 19 | 12 | 9 | 1 | 33 | 3 | 0 | 0 | 0 | 0 | 2 | 6 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | |
| 23 | 20 | 2 | 14 | 4 | 36 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 2 | 2 | 1 | 1 | 0 | 0 | 1 | 1 | 2 | 2 | 0 | 0 | 0 | |
| 26 | 18 | 6 | 1 | 2 | 25 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 25 | 15 | 2 | 3 | 4 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 26 | 21 | 3 | 2 | 12 | 29 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 42 | 14 | 5 | 5 | 4 | 27 | 0 | 0 | 0 | 7 | 2 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | |
| 37 | 8 | 6 | 13 | 11 | 15 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 45 | 11 | 2 | 6 | 9 | 25 | 0 | 1 | 1 | 3 | 5 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 24 | 16 | 6 | 15 | 9 | 25 | 0 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 30 | 20 | 6 | 14 | 3 | 24 | 0 | 2 | 2 | 1 | 2 | 0 | 0 | 2 | 3 | 1 | 1 | 0 | 0 | 1 | 2 | 0 | 0 | 0 | 0 | 0 | |
| 30 | 8 | 8 | 8 | 0 | 9 | 2 | 1 | 2 | 2 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | |
| 32 | 7 | 5 | 4 | 9 | 26 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 32 | 14 | 5 | 17 | 7 | 26 | 2 | 2 | 2 | 0 | 0 | 0 | 0 | 1 | 2 | 1 | 2 | 0 | 0 | 4 | 4 | 0 | 0 | 1 | 1 | 1 | |
| 22 | 18 | 4 | 14 | 12 | 25 | 1 | 2 | 2 | 0 | 0 | 0 | 0 | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | |
| 33 | 14 | 5 | 9 | 4 | 27 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 7 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 2 | |
| 56 | 1 | 7 | 8 | 6 | 14 | 1 | 3 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 28 | 8 | 3 | 1 | 17 | 21 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 26 | 17 | 2 | 10 | 5 | 29 | 0 | 2 | 3 | 1 | 2 | 0 | 0 | 4 | 8 | 0 | 0 | 1 | 3 | 1 | 1 | 1 | 2 | 1 | 3 | 3 | |
| 48 | 19 | 6 | 2 | 12 | 22 | 2 | 7 | 9 | 2 | 2 | 0 | 0 | 1 | 1 | 2 | 3 | 1 | 1 | 2 | 3 | 2 | 3 | 0 | 0 | 0 | |
| 60 | 11 | 5 | 3 | 10 | 18 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 4 | 6 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 2 | 2 | 2 | |
| 20 | 14 | 10 | 18 | 5 | 20 | 3 | 4 | 9 | 0 | 0 | 0 | 0 | 3 | 8 | 5 | 8 | 0 | 0 | 5 | 12 | 4 | 11 | 0 | 0 | 0 | |
| 46 | 5 | 3 | 12 | 7 | 23 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | |
| 40 | 17 | 9 | 1 | 12 | 32 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |
| 38 | 15 | 1 | 16 | 2 | 22 | 1 | 3 | 4 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | | | | | | |

[illegible]

Neurotic Depressives - Male

[illegible]

Hysterics - Male

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|---------|--------|---------|---------|---------|---|---|----|---|---|---|---|---|---|---|---|---|---|---|----|---|---|---|---|
| 43 4 | 14 6 | 4 3 | 22 3 | 8 4 | 21 6 | 2 | 7 | 14 | 3 | 3 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 7 | 15 | 3 | 5 | 0 | 0 |
| 27 2 | 8 3 | 4 2 | 18 2 | 4 0 | 22 0 | 2 | 7 | 14 | 3 | 6 | 0 | 0 | 0 | 0 | 2 | 4 | 0 | 0 | 6 | 11 | 0 | 0 | 0 | 0 |
| 51 0 | 19 0 | 6 0 | 9 0 | 12 0 | 27 0 | 2 | 0 | 0 | 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 2 | 4 | 1 | 1 | 0 | 0 |
| 27 2 | 7 5 | 1 2 | 20 4 | 14 3 | 24 5 | 3 | 7 | 15 | 4 | 7 | 0 | 0 | 0 | 0 | 3 | 5 | 1 | 3 | 7 | 14 | 1 | 2 | 0 | 0 |

Phobics - Male

[illegible]

Obsessionals - Male

[illegible]

Psychotic Depressives - Male

[illegible]

Paranooids - Male

[illegible]

Manic Depressives - Male

[illegible]

| | | | | | | | | | | | | | | | | | | | | | | | | |
|---------|----------|---------|----------|---------|----------|---|---|----|---|----|---|----|---|----|---|----|---|----|---|----|---|----|---|----|
| 33 4 | 14 6 | 8 4 | 21 10 | 13 2 | 24 4 | 4 | 5 | 10 | 2 | 5 | 7 | 17 | 3 | 6 | 5 | 9 | 4 | 10 | 7 | 19 | 2 | 4 | 5 | 12 |
| 51 2 | 16 4 | 2 0 | 9 0 | 9 0 | 20 0 | 4 | 1 | 1 | 2 | 2 | 0 | 0 | 5 | 10 | 1 | 1 | 4 | 8 | 0 | 0 | 1 | 1 | 0 | 0 |
| 27 3 | 21 6 | 10 1 | 7 1 | 10 5 | 36 12 | 4 | 5 | 11 | 2 | 5 | 6 | 16 | 1 | 0 | 1 | 2 | 4 | 8 | 3 | 7 | 1 | 1 | 0 | 0 |
| 25 0 | 16 0 | 0 1 | 12 2 | 1 1 | 30 1 | 4 | 4 | 6 | 2 | 4 | 0 | 0 | 2 | 3 | 1 | 2 | 4 | 12 | 3 | 5 | 0 | 0 | 0 | 0 |
| 36 0 | 6 0 | 3 2 | 9 2 | 14 3 | 17 6 | 4 | 1 | 1 | 0 | 0 | 6 | 8 | 0 | 0 | 0 | 0 | 2 | 4 | 2 | 2 | 2 | 3 | 1 | 2 |
| 26 0 | 2 0 | 7 0 | 18 0 | 14 3 | 14 8 | 4 | 6 | 13 | 3 | 5 | 5 | 12 | 0 | 0 | 1 | 2 | 3 | 9 | 4 | 11 | 5 | 10 | 2 | 3 |
| 28 7 | 5 14 | 14 6 | 21 15 | 2 6 | 13 10 | 4 | 4 | 8 | 4 | 8 | 3 | 4 | 3 | 6 | 4 | 7 | 5 | 11 | 5 | 10 | 5 | 6 | 0 | 0 |
| 44 3 | 7 5 | 5 3 | 15 9 | 11 1 | 14 2 | 4 | 5 | 7 | 2 | 3 | 0 | 0 | 5 | 9 | 2 | 2 | 4 | 10 | 2 | 4 | 4 | 9 | 0 | 0 |
| 30 2 | 18 3 | 11 4 | 13 10 | 15 3 | 28 5 | 4 | 5 | 9 | 2 | 3 | 2 | 5 | 7 | 20 | 3 | 4 | 5 | 15 | 2 | 3 | 1 | 1 | 6 | 18 |
| 24 5 | 21 10 | 14 4 | 20 7 | 2 4 | 29 4 | 4 | 4 | 8 | 2 | 2 | 3 | 3 | 5 | 9 | 4 | 4 | 7 | 12 | 4 | 5 | 0 | 0 | 7 | 16 |
| 20 3 | 13 5 | 3 0 | 13 0 | 6 3 | 28 5 | 4 | 4 | 6 | 3 | 4 | 2 | 3 | 3 | 6 | 7 | 13 | 5 | 8 | 4 | 8 | 4 | 7 | 2 | 4 |
| 24 2 | 17 4 | 5 1 | 18 3 | 8 1 | 28 2 | 3 | 2 | 5 | 0 | 0 | 1 | 2 | 2 | 4 | 1 | 2 | 1 | 3 | 4 | 9 | 0 | 0 | 2 | 6 |
| 17 2 | 12 4 | 7 4 | 17 10 | 2 3 | 26 3 | 4 | 5 | 7 | 5 | 7 | 3 | 7 | 2 | 3 | 3 | 5 | 3 | 9 | 2 | 5 | 1 | 3 | 6 | 14 |
| 29 4 | 6 8 | 10 3 | 16 5 | 3 4 | 17 8 | 4 | 4 | 7 | 4 | 10 | 4 | 8 | 3 | 3 | 2 | 2 | 3 | 6 | 4 | 10 | 5 | 7 | 0 | 0 |
| 21 1 | 14 1 | 9 2 | 15 3 | 10 0 | 30 0 | 4 | 3 | 4 | 3 | 3 | 0 | 0 | 4 | 10 | 1 | 1 | 3 | 6 | 2 | 4 | 1 | 1 | 5 | 8 |
| 31 6 | 6 9 | 5 2 | 21 4 | 13 4 | 17 5 | 4 | 8 | 11 | 6 | 13 | 3 | 5 | 4 | 5 | 6 | 10 | 7 | 14 | 3 | 9 | 4 | 8 | 3 | 6 |
| 18 7 | 18 16 | 7 4 | 23 9 | 14 4 | 29 7 | 4 | 7 | 13 | 6 | 12 | 7 | 20 | 6 | 17 | 6 | 9 | 6 | 17 | 7 | 13 | 3 | 6 | 7 | 17 |
| 26 5 | 18 13 | 3 5 | 19 12 | 15 2 | 28 6 | 4 | 6 | 14 | 4 | 8 | 7 | 15 | 3 | 6 | 4 | 10 | 7 | 20 | 7 | 16 | 2 | 5 | 6 | 15 |
| 24 7 | 14 16 | 11 3 | 23 9 | 11 3 | 23 7 | 4 | 5 | 9 | 3 | 6 | 6 | 16 | 6 | 10 | 4 | 7 | 3 | 9 | 7 | 18 | 4 | 8 | 5 | 15 |
| 20 6 | 10 11 | 8 5 | 16 7 | 15 5 | 23 5 | 4 | 6 | 8 | 3 | 3 | 3 | 7 | 6 | 14 | 7 | 17 | 7 | 11 | 5 | 12 | 5 | 11 | 6 | 12 |
| 21 1 | 15 1 | 5 0 | 19 0 | 8 1 | 37 2 | 4 | 0 | 0 | 0 | 0 | 0 | 0 | 4 | 8 | 2 | 2 | 3 | 9 | 2 | 2 | 1 | 3 | 4 | 10 |
| 57 5 | 7 10 | 5 1 | 19 3 | 17 5 | 23 12 | 4 | 7 | 17 | 5 | 12 | 7 | 15 | 2 | 4 | 5 | 10 | 4 | 12 | 6 | 15 | 5 | 10 | 2 | 4 |
| 30 4 | 11 5 | 5 0 | 10 0 | 5 3 | 32 5 | 4 | 2 | 3 | 3 | | | | | | | | | | | | | | | |

APPENDIX B
MEANS AND STANDARD DEVIATIONS OF
THE STUDY GROUPS ON THE TWELVE
SETS OF THE DSSI

| GROUP | Controls | | Neurotic Anxiety States | | Neurotic Depressives | | Hysterics | | Phobics | | Obsessionals | | Psychotic Depressives | | Manic Depressives | | Paranoids | | Schizophrenics | |
|-----------------------------|----------|------|-------------------------|------|----------------------|------|-----------|------|---------|------|--------------|------|-----------------------|------|-------------------|------|-----------|------|----------------|------|
| VARIABLES | X | SD | X | SD | X | SD | X | SD | X | SD | X | SD | X | SD | X | SD | X | SD | X | SD |
| S1 State of Anxiety | 1.11 | 1.57 | 4.77 | 1.70 | 3.76 | 2.29 | 6.00 | 2.07 | 5.93 | 1.21 | 5.32 | 1.43 | 5.80 | 1.47 | 3.41 | 2.21 | 4.31 | 2.16 | 4.96 | 1.80 |
| S2 Symptoms of Conversion | 0.44 | 1.15 | 1.44 | 2.06 | 1.10 | 1.65 | 3.53 | 1.24 | 2.00 | 1.18 | 1.94 | 1.45 | 2.20 | 1.68 | 1.12 | 1.69 | 1.36 | 1.70 | 2.96 | 1.70 |
| S3 Delusions of Persecution | 0.09 | 0.40 | 0.27 | 0.82 | 0.34 | 0.93 | 1.20 | 2.07 | 0.43 | 1.34 | 0.44 | 1.02 | 0.50 | 0.97 | 1.59 | 2.03 | 4.68 | 2.00 | 3.46 | 2.41 |
| S4 State of Elation | 1.17 | 1.76 | 0.66 | 1.45 | 0.93 | 1.36 | 1.80 | 2.36 | 1.28 | 1.97 | 1.17 | 1.26 | 1.70 | 1.33 | 3.41 | 2.15 | 1.37 | 1.74 | 3.61 | 2.11 |
| S5 Compulsions | 0.36 | 0.97 | 0.83 | 1.04 | 1.17 | 1.49 | 2.26 | 1.90 | 2.00 | 1.10 | 3.03 | 1.91 | 2.00 | 1.63 | 2.06 | 1.89 | 1.84 | 1.77 | 3.50 | 2.11 |
| S6 Delusions of Distraction | 0.19 | 0.99 | 0.33 | 1.03 | 0.24 | 0.95 | 1.00 | 1.25 | 0.86 | 1.17 | 0.47 | 0.79 | 0.50 | 0.70 | 0.35 | 0.70 | 0.63 | 0.68 | 3.96 | 1.66 |
| S7 State of Depression | 0.58 | 1.16 | 2.88 | 1.71 | 4.72 | 1.90 | 5.93 | 1.43 | 5.35 | 2.06 | 5.53 | 1.82 | 5.90 | 1.45 | 2.82 | 2.55 | 3.94 | 2.24 | 4.13 | 2.22 |
| S8 Phobias | 0.50 | 0.92 | 0.89 | 1.49 | 1.03 | 1.61 | 2.13 | 1.72 | 4.50 | 1.22 | 2.53 | 1.64 | 2.10 | 1.10 | 1.23 | 1.25 | 1.47 | 1.50 | 2.84 | 1.77 |
| S9 Delusions of Grandeur | 0.13 | 0.39 | 0.28 | 0.96 | 0.27 | 0.84 | 0.20 | 0.77 | 0.07 | 0.27 | 0.26 | 0.67 | 0.20 | 0.42 | 1.29 | 1.61 | 1.26 | 1.94 | 3.31 | 2.36 |
| S10 Ruminations | 0.73 | 1.24 | 0.78 | 1.16 | 1.24 | 1.55 | 2.73 | 1.90 | 2.00 | 1.47 | 3.88 | 1.84 | 3.60 | 1.43 | 2.59 | 2.16 | 2.89 | 2.08 | 3.80 | 2.04 |
| S11 Delusions of Contention | 0.13 | 0.48 | 0.61 | 1.46 | 0.76 | 1.48 | 1.93 | 2.28 | 0.79 | 1.05 | 1.11 | 1.25 | 2.90 | 1.52 | 1.23 | 1.39 | 2.05 | 1.68 | 2.53 | 2.00 |
| S12 Dissociative Symptoms | 0.15 | 0.57 | 0.55 | 1.29 | 0.59 | 1.29 | 2.33 | 1.99 | 1.21 | 1.31 | 1.15 | 1.18 | 1.60 | 1.77 | 1.64 | 1.90 | 1.63 | 1.25 | 2.79 | 1.59 |

Table 7.1 Showing observed Group Means and Standard Deviations on the Sets of the DSSL.

APPENDIX C

RETEST

APPENDIX C

One of the original intentions of this study was to examine the test - retest scores of as many of the sample as possible as a result of an apparent contradiction in Eysenck & Eysenck (1976). Eysenck & Eysenck (1976, pp.22, 38) have argued that P scores measure a predisposition to psychosis. However, they show that psychotics score more on P than many other groups, but also cite evidence that P scores of psychotics decrease with psychiatric improvement, (Verma & Eysenck 1973, Griffith 1975). This suggests that P scores and psychotic illness covary. If this is the case, then it may not be feasible to detect predisposition to psychosis with P scores unless the P scores of those predisposed to psychotic illness, but not yet suffering from it, are larger at outset than those not so predisposed to it. This has not, to the author's knowledge been tested.

The intention here was to use test and retest scores in groups of psychiatric improvers and non-improvers (as measured by DSSI class change) in the Psychotic and Neurotic groups. However, practical considerations rendered the task of collecting sufficient data within an appropriate time period impossible. Although ninety two psychiatric subjects were retested in all, it was not feasible to use all the data for the reasons outlined below. An analysis of covariance treatment of the data would have been indicated using Time as a covariate with values ranging from one to twelve months. However, this was not possible since Time was quite possibly related to the Independent Variable (Psychiatric Improvement) in that Psychiatric Improvement occurs over time. Also, rapid improvers are often discharged early from hospital and were more difficult to chase up in order to obtain retest data. The Improved group may not be representative of Psychiatric Improvers. In addition,

it is possible that Time was also related to the Dependant Variable (Personality Scores) in that Time with all its accompaniments of changes that occur in people's lives, may be hypothesized to lead to changes in personality scores. Also, as hinted above, there may well have been important covariates not accounted for in the analysis, such as discharge from hospital, change in drug regime, and changes in social and domestic circumstances that are likely to occur post-discharge. Of course, if P scores turned out to be stable, then these uncontrolled factors would not be important. If P scores turned out to show considerable reduction on retest (and this is a reasonable assumption on the basis of the findings of Verma & Eysenck (1973) and Griffith (1975), see Chapter Three of this thesis), it could not be reliably ascribed to psychiatric improvement.

An attempt was then made to see if it was possible to reduce the covariate effect by only examining the retest data from subjects retested within a three month period.

| Psychiatric sample | Male | Female | Total |
|----------------------|------|--------|-------|
| Schizophrenic | 6 | 8 | 14 |
| Manic Depressive | 2 | 0 | 2 |
| Psychotic Depressive | 0 | 3 | 3 |
| Paranoid | 3 | 1 | 4 |
| | 11 | 12 | 23 |
| Obsessional | 3 | 4 | 7 |
| Phobic | 1 | 0 | 1 |
| Hysteric | 1 | 2 | 3 |
| N. Anxiety | 3 | 0 | 3 |
| N. Depression | 4 | 5 | 9 |
| | 23 | 23 | 46 |

Table 7.2 Showing the distribution of the sample retested within a three month period.

When the psychiatric samples were further subdivided into neurotic and psychotic improvers and non-improvers, the n's ranged from 4 to 19 thus (Psychotic Improvers n = 19, Psychotic Non-Improvers n = 4, Neurotic Improvers n = 11, Neurotic Non-Improvers n = 12). Analysis of the data on groups that involve such small sizes is likely to be unreliable and ungeneralizable. Gradual increases in the time interval made little difference. For this reason, further attempts to evaluate the retest data statistically was abandoned. However, Tables 7.3 and 7.4 overleaf show the test and retest scores of the Improved and Unimproved Psychotics and Neurotics on P. The general trend in these Improved groups is of a reduction in scores in that well over half of the individuals in each Improved group show a reduction in P scores. In the Non Improved groups, three quarters of the Neurotics have increased P scores. This tendency in the Psychotics is not noted but then the numbers are too small to compare them in this way. It is perhaps worth mentioning though that the Non-Improved Neurotics included individuals who had deteriorated since first testing as well as individuals who had merely not improved.

Further research could investigate whether P scores are related to psychiatric improvement and psychiatric deterioration.

| P Scores | | |
|-------------------------------------|------|--------|
| | Test | Retest |
| Improved Psychotics n = 18 | 9 | 3 |
| | 3 | 1 |
| | 4 | 8 |
| | 6 | 5 |
| | 7 | 8 |
| | 9 | 7 |
| | 7 | 5 |
| | 3 | 2 |
| | 11 | 6 |
| | 8 | 7 |
| | 1 | 4 |
| | 4 | 3 |
| | 2 | 5 |
| | 10 | 4 |
| | 2 | 0 |
| | 2 | 2 |
| | 9 | 6 |
| | 3 | 3 |
| Non Improved Psychotics n = 5 | 7 | 5 |
| | 8 | 10 |
| | 4 | 3 |
| | 5 | 5 |
| | 5 | 4 |

Table 7.3 Showing Test and Retest Scores of Improved and Non Improved Psychotics on the P scale.

| P Scores | | |
|--------------------------------------|---|---|
| | Test | Retest |
| Improved Psychotics n = 11 | 8 5 7 3 3 5 6 2 3 1 4 | 8 3 5 1 1 4 3 1 0 8 7 |
| Non Improved Psychotics n = 12 | 1 0 7 3 2 3 0 3 0 1 6 6 2 | 2 1 11 4 0 4 2 4 2 1 9 11 3 |

Table 7.4 Showing test and Retest Scores of Improved and Non-Improved Neurotics on the P scale.

APPENDIX D

A DISCRIMINANT FUNCTION ANALYSIS-SPLIT SAMPLES

APPENDIX D
DISCRIMINANT FUNCTION ANALYSES OF SPLIT SAMPLE

| Group | A | B |
|-------------------------|-----|-----|
| Non Psychiatric Control | 26 | 26 |
| Neurotics | 55 | 55 |
| Psychotics | 49 | 49 |
| | 130 | 130 |

Table 7.5 indicating group sizes in the split sample Discriminant Function Analysis.

| Variable | Function I | Function II |
|-----------------------------|------------|-------------|
| N | 0.19955 | 0.10322 |
| L | 0.44128 | 0.00945 |
| State of Anxiety | 0.72035 | 0.09895 |
| Conversion Symptoms | 0.13035 | -0.33466 |
| Delusions of Persecution | -0.21986 | 0.62288 |
| State of Elation | 0.21060 | 0.11096 |
| Compulsions | -0.31169 | -0.09166 |
| Delusions of Disintegration | -0.25533 | 0.18056 |
| State of Depression | 0.62555 | -0.29350 |
| Delusions of Grandeur | 0.22311 | 0.38607 |
| Ruminations | -0.13681 | 0.21641 |
| Delusions of Contrition | -.026823 | 0.16787 |

Table 7.6 showing standardized Discriminant Function Coefficients for sample A (n = 130)

The first functions main contributor was state of Anxiety, and in addition, state of Depression makes a relatively large contribution while Compulsions makes a smaller negative contribution. This function was labelled as a Dysthymic States function. The second functions main contributor was delusions of Persecution. In addition there was a contribution from delusions of Grandeur and a smaller negative contribution from Conversion symptoms. This function was labelled as a Psychoticism function.

Table 7.7 below shows the coefficients for the rotated functions.

| Variable | Function I | Function II |
|-----------------------------|------------|-------------|
| N | 0.18782 | 0.12327 |
| L | 0.43794 | 0.05498 |
| State of Anxiety | 0.70627 | 0.17283 |
| Conversion Symptoms | 0.16422 | -0.31940 |
| Delusions of Persecution | -0.28302 | 0.59684 |
| State of Elation | 0.19801 | 0.13212 |
| Compulsions | -0.30056 | -0.12336 |
| Delusions of Disintegration | 0.27262 | 0.15323 |
| State of Depression | 0.65252 | -0.22732 |
| Delusions of Grandeur | 0.18204 | 0.40705 |
| Ruminations | -0.15843 | 0.20112 |
| Delusions of Contrition | -.028413 | 0.13927 |

Table 7.7 showing standardized discriminant function coefficients for rotated functions for sample A.

The contributors to the first rotated function were state of Anxiety, state of Depression and L. The function was labelled as a Dysthymic states function. Rotated Function II was made up of delusions of Persecution and delusions of Grandeur and was called a Psychoticism function.

| Group | Function I | Function II |
|-----------------|------------|-------------|
| Non-Psychiatric | 2.34842 | -1.16391 |
| Neurotic | 1.25615 | -0.77165 |
| Psychotic | -0.16386 | 1.48373 |

Table 7.8 showing Group Centroids on the Discriminant Function of Sample A.

| Actual Group | n | Predicted Group | | |
|-----------------|----|-----------------|------------|------------|
| | | Non-Psychiatric | Neurotic | Psychotic |
| Non Psychiatric | 26 | 100% (26) | 0% (0) | 0% (0) |
| Neurotic | 55 | 7.3% (4) | 89.1% (49) | 3.6% (2) |
| Psychotic | 49 | 12.2% (6) | 14.3% (7) | 73.5% (36) |

Table 7.9 showing the percentages of cases reclassified into the three groups in Sample A.

In the Sample A Discriminant Functions Analysis, 85.38% of cases were correctly reclassified. χ^2 statistic for this table demonstrated a significant association between a priori groups and predicted groups ($\chi^2 = 161.99$, 4df, $P < .01$).

| Variable | Function I | Function II |
|-----------------------------|------------|-------------|
| E | 0.18323 | -0.20011 |
| P | 0.23850 | -0.12338 |
| L | -0.13361 | 0.23332 |
| State of Anxiety | -0.11748 | 0.40412 |
| Delusions of Persecution | 0.29693 | 0.36192 |
| Compulsions | -0.47337 | -0.00301 |
| Delusions of Disintegration | 0.22826 | 0.22963 |
| State of Depression | -0.58788 | 0.33799 |
| Phobic Symptoms | -0.13879 | -0.21808 |
| Delusions of Grandeur | 0.46602 | 0.50227 |
| Ruminations | 0.37607 | -0.15369 |

Table 7.10 showing standardized Discriminant Function Coefficients for sample B (n = 130).

The first function was really a bipolar one with positive contributions from delusions of Grandeur, Ruminations and delusions of Persecution and negative contributions from state of Depression and Compulsions. Its primary function was seen as discriminating between

Psychotic beliefs and Neurotic states. At the same time, it discriminated the two types of Obsessions, Ruminations and compulsions. This factor was labelled as a Neuroticism vs Psychoticism factor. The second function was unipolar and had its main contributions from delusions of Grandeur, state of Anxiety, delusions of Persecution and state of Depression. This factor was labelled as a Psychoticism factor since the contributions of Ideas of Reference ruled out the idea of neuroticism.

Table 7.11 below shows the coefficient of the rotated functions.

| Variable | Function I | Function II |
|-----------------------------|------------|-------------|
| N | -0.27022 | -0.02440 |
| P | -0.25936 | 0.06954 |
| L | 0.25594 | 0.08237 |
| State of Anxiety | 0.35911 | 0.21945 |
| Delusions of Persecution | 0.02446 | 0.46749 |
| Compulsions | 0.34775 | -0.32119 |
| Delusions of Disintegration | -0.01393 | 0.32348 |
| State of Depression | 0.66213 | -0.14638 |
| Phobics | -0.04439 | -0.25466 |
| Delusions of Grandeur | 0.00591 | 0.68513 |
| Ruminations | 0.38143 | 0.13983 |

Table 7.11 showing the standardized discriminant function coefficients for rotated functions for sample B.

The rotated functions of sample B were clearer than the unrotated ones. Rotated function one is made up of state of Depression Ruminations, state of Anxiety and Compulsions thus reuniting the Obsessional sets. It was labelled as a Dysthymic/Obsessional function. The second rotated function was clearly a Psychotic one being made up of delusions of Grandeur, delusions of Persecution and delusions of Disintegration.

| Group | Function I | Function II |
|-----------------|------------|-------------|
| Non-Psychiatric | -1.68077 | -0.62533 |
| Neurotic | 0.97541 | -0.79155 |
| Psychotic | -0.14688 | 1.22028 |

Table 7.12 showing group centroids on the Discriminant Functions of Sample B.

| Actual Group | n | Predicted Group | | |
|-----------------|----|-----------------|------------|------------|
| | | Non-Psychiatric | Neurotic | Psychotic |
| Non Psychiatric | 26 | 96.2% (25) | 0% (0) | 3.8% (0) |
| Neurotic | 55 | 12.7% (7) | 81.8% (45) | 5.5% (3) |
| Psychotic | 49 | 20.4% (10) | 12.2% (6) | 67.3% (36) |

Table 7.13 showing the percentage of cases reclassified into the three groups in Sample B.

In the sample B Discriminant Function Analysis 79.23% of cases were correctly reclassified.

Chi² statistics from this table demonstrated a positive significant association between the a priori and predicted groups. Chi² = 128.00, 4df, p(<.01).

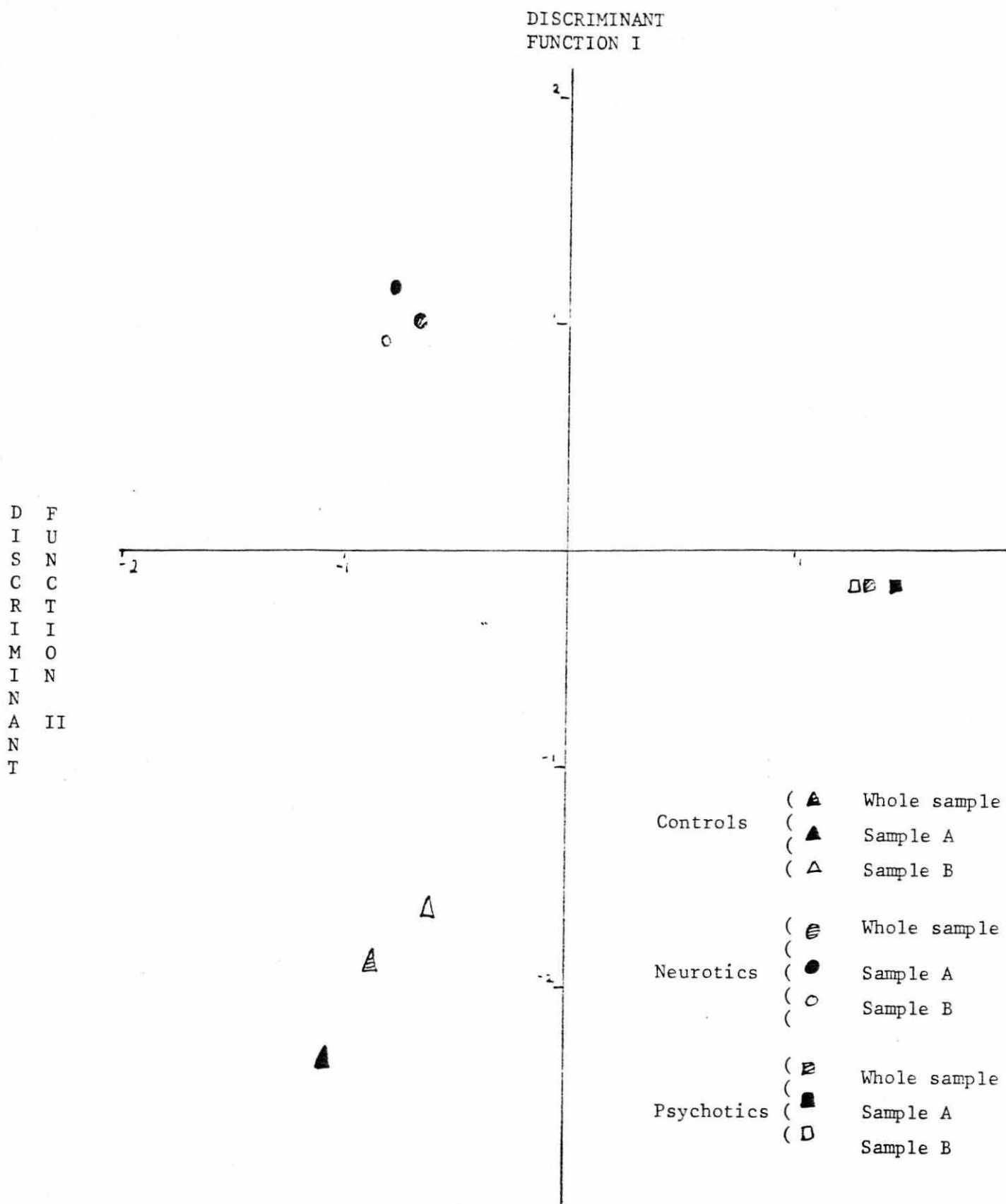


Fig. 7.1. Showing position of Group Centroids on the discriminant function for whole and split sample analyses.

APPENDIX E

FACTOR ANALYSIS OF EPQ, HOQ AND DSSI

Key

Correlation matrix

Four factor solution

Six factor solution

Key for Tables 7.14 to 7.16

| | |
|-----|-----------------------------|
| V5 | E |
| V6 | P |
| V7 | N |
| V8 | L |
| V9 | HOQ |
| V11 | state of Anxiety |
| V13 | symptoms of Conversion |
| V15 | delusions of Persecution |
| V17 | state of Elation |
| V19 | Compulsions |
| V21 | delusions of Disintegration |
| V23 | state of Depression |
| V25 | Phobias |
| V27 | delusions of Grandeur |
| V29 | Ruminations |
| V31 | delusions of Contrition |
| V33 | symptoms of Dissociation |

| | V5 | V6 | V7 | V8 | V9 | V11 | V13 | V15 | V17 | V19 |
|-----|----------|----------|----------|----------|----------|----------|----------|---------|----------|----------|
| V5 | 1.00000 | 0.20574 | -0.21200 | -0.18218 | 0.67135 | -0.20417 | -0.05668 | 0.03561 | 0.23260 | -0.04869 |
| V6 | 0.20574 | 1.00000 | 0.16815 | -0.28274 | 0.20884 | 0.06420 | 0.25674 | 0.42463 | 0.37754 | 0.22548 |
| V7 | -0.21200 | 0.16815 | 1.00000 | 0.02418 | -0.27261 | 0.54493 | 0.54839 | 0.31663 | 0.20395 | 0.50877 |
| V8 | -0.18218 | -0.28274 | 0.02418 | 1.00000 | -0.20688 | 0.17440 | 0.08986 | 0.01961 | -0.12593 | 0.10376 |
| V9 | 0.67135 | 0.20884 | -0.27261 | -0.20688 | 1.00000 | -0.26842 | -0.03546 | 0.10739 | 0.21320 | -0.04079 |
| V11 | -0.20417 | 0.06420 | 0.54493 | 0.17440 | -0.26842 | 1.00000 | 0.54684 | 0.31274 | 0.22522 | 0.58703 |
| V13 | -0.05668 | 0.25674 | 0.34839 | 0.08986 | -0.03546 | 0.54684 | 1.00000 | 0.39848 | 0.31072 | 0.50900 |
| V15 | 0.03561 | 0.42463 | 0.31663 | 0.01961 | 0.10739 | 0.31274 | 0.39848 | 1.00000 | 0.41333 | 0.50569 |
| V17 | 0.23260 | 0.37754 | 0.20395 | -0.12593 | 0.21320 | 0.22522 | 0.31072 | 0.41333 | 1.00000 | 0.50674 |
| V19 | -0.04869 | 0.22548 | 0.50877 | 0.10376 | -0.04079 | 0.58703 | 0.50900 | 0.50569 | 0.50674 | 1.00000 |
| V21 | 0.02965 | 0.40134 | 0.30913 | 0.00878 | 0.14394 | 0.33400 | 0.52761 | 0.41387 | 0.49541 | 0.55215 |
| V23 | -0.33559 | 0.07212 | 0.61725 | 0.22797 | -0.35217 | 0.69397 | 0.43146 | 0.26714 | 0.13608 | 0.49185 |
| V25 | -0.27200 | 0.15127 | 0.46716 | 0.16303 | -0.21567 | 0.56613 | 0.52916 | 0.37977 | 0.29002 | 0.56130 |
| V27 | 0.21502 | 0.47398 | 0.12076 | -0.11573 | 0.33158 | 0.18090 | 0.30929 | 0.55012 | 0.62242 | 0.41307 |
| V29 | -0.07003 | 0.28235 | 0.52460 | -0.00931 | -0.09154 | 0.56104 | 0.49635 | 0.51803 | 0.51457 | 0.68436 |
| V31 | -0.17509 | 0.31460 | 0.48819 | 0.01142 | -0.07919 | 0.48319 | 0.47552 | 0.58144 | 0.41543 | 0.54340 |
| V33 | -0.04660 | 0.41731 | 0.47666 | -0.01908 | 0.01422 | 0.48720 | 0.54370 | 0.62148 | 0.50022 | 0.61060 |

| | V21 | V23 | V25 | V27 | V29 | V31 | V33 |
|-----|---------|----------|----------|----------|----------|----------|----------|
| V5 | 0.02965 | -0.33559 | -0.27200 | 0.21502 | -0.07003 | -0.17509 | -0.04660 |
| V6 | 0.40134 | 0.07212 | 0.15127 | 0.47398 | 0.28235 | 0.31460 | 0.41731 |
| V7 | 0.30913 | 0.61725 | 0.46716 | 0.12076 | 0.52460 | 0.48819 | 0.47666 |
| V8 | 0.00878 | 0.22797 | 0.16303 | -0.11573 | -0.00931 | 0.01142 | -0.01908 |
| V9 | 0.14394 | -0.35217 | -0.21567 | 0.33158 | -0.09154 | -0.07919 | 0.01422 |
| V11 | 0.33400 | 0.69397 | 0.56613 | 0.18090 | 0.56104 | 0.48319 | 0.48720 |
| V13 | 0.52761 | 0.41387 | 0.52916 | 0.30929 | 0.49635 | 0.47552 | 0.54370 |
| V15 | 0.41387 | 0.26714 | 0.37977 | 0.55012 | 0.51803 | 0.58144 | 0.62148 |
| V17 | 0.49541 | 0.13608 | 0.29002 | 0.62242 | 0.51457 | 0.41543 | 0.50022 |
| V19 | 0.55215 | 0.49185 | 0.56130 | 0.41307 | 0.68436 | 0.54340 | 0.61060 |
| V21 | 1.00000 | 0.27605 | 0.48722 | 0.55202 | 0.49535 | 0.50197 | 0.68443 |
| V23 | 0.27605 | 1.00000 | 0.50512 | 0.08934 | 0.56463 | 0.55597 | 0.47686 |
| V25 | 0.48722 | 0.50512 | 1.00000 | 0.28219 | 0.50805 | 0.45835 | 0.50438 |
| V27 | 0.55202 | 0.08934 | 0.28219 | 1.00000 | 0.40800 | 0.40769 | 0.49184 |
| V29 | 0.49535 | 0.56463 | 0.50805 | 0.40800 | 1.00000 | 0.61256 | 0.61692 |
| V31 | 0.50197 | 0.55597 | 0.45835 | 0.40769 | 0.61256 | 1.00000 | 0.60777 |

Table 7.14 Showing Matrix of Intercorrelations of variables entered into Factor Analysis (see Key for variables overleaf).

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|-----|----------|----------|----------|----------|
| V5 | -0.12007 | 0.94467 | 0.09906 | -0.03911 |
| V6 | 0.49150 | 0.03017 | 0.01380 | -0.38829 |
| V7 | -0.03675 | -0.08977 | 0.76075 | -0.14983 |
| V8 | -0.00209 | -0.06153 | 0.00581 | 0.52310 |
| V9 | 0.21564 | 0.62937 | -0.22947 | -0.02386 |
| V11 | 0.00399 | 0.05544 | 0.78205 | 0.20769 |
| V13 | 0.40913 | 0.03763 | 0.33330 | 0.20013 |
| V15 | 0.73342 | -0.06137 | 0.03787 | -0.02650 |
| V17 | 0.55059 | 0.20989 | 0.13325 | -0.10245 |
| V19 | 0.40216 | 0.10890 | 0.50241 | 0.14989 |
| V21 | 0.85653 | -0.03521 | -0.04509 | 0.13208 |
| V23 | -0.06899 | -0.12369 | 0.80414 | 0.06552 |
| V25 | 0.40305 | -0.16052 | 0.33487 | 0.24373 |
| V27 | 0.77351 | 0.13416 | -0.11462 | -0.07786 |
| V29 | 0.32082 | 0.04505 | 0.60945 | -0.07720 |
| V31 | 0.45569 | -0.14901 | 0.40156 | -0.11198 |
| V33 | 0.63362 | -0.05671 | 0.30279 | -0.04675 |

Table 7.15 Showing four factor solution

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 |
|-----|----------|----------|----------|----------|----------|----------|
| V5 | -0.04235 | 0.94526 | 0.07889 | -0.00679 | -0.01960 | 0.10575 |
| V6 | 0.15976 | 0.08536 | -0.32475 | -0.41530 | -0.03220 | 0.02676 |
| V7 | 0.06739 | -0.08710 | -0.05519 | -0.11012 | -0.00127 | 0.66745 |
| V8 | 0.04698 | -0.00610 | -0.08722 | 0.66611 | 0.02221 | -0.00922 |
| V9 | 0.04502 | 0.07592 | -0.11633 | -0.02628 | -0.03151 | -0.12184 |
| V11 | 0.37856 | 0.01584 | 0.14152 | 0.11470 | -0.03921 | 0.56420 |
| V13 | 0.69977 | 0.04845 | -0.00151 | -0.00334 | 0.03203 | 0.10810 |
| V15 | 0.06916 | 0.04716 | -0.69239 | 0.06292 | -0.08916 | 0.12362 |
| V17 | -0.02224 | 0.04290 | 0.03857 | -0.06101 | -0.87607 | -0.02274 |
| V19 | 0.24378 | 0.03543 | -0.03127 | 0.13538 | -0.41299 | 0.33138 |
| V21 | 0.56205 | -0.00017 | -0.34298 | -0.01713 | -0.15360 | -0.15285 |
| V23 | 0.06211 | -0.08613 | -0.08717 | 0.12202 | 0.05455 | 0.75146 |
| V25 | 0.56439 | -0.21045 | 0.03281 | 0.07493 | -0.14210 | 0.10104 |
| V27 | 0.12230 | 0.10716 | -0.31222 | -0.05892 | -0.47194 | -0.14095 |
| V29 | 0.05141 | -0.01500 | -0.10105 | -0.02081 | -0.39628 | 0.50325 |
| V31 | 0.01116 | -0.09586 | -0.42107 | -0.02737 | -0.15575 | 0.43146 |
| V33 | 0.35589 | -0.01662 | -0.33723 | -0.10125 | -0.13314 | 0.22583 |

Table 7.16 Showing six factor solution

APPENDIX F

FACTOR ANALYSIS OF P SCALE ITEMS

Correlation Matrix

Four factor solution

Five factor solution

Six factor solution

Eight factor solution

| | V2 | V6 | V9 | V11 | V18 | V22 | V26 | V30 | V33 | V37 |
|-----|----------|----------|----------|---------|----------|---------|---------|----------|---------|----------|
| V2 | 1.00000 | -0.04880 | 0.08470 | 0.03403 | -0.02201 | 0.05551 | 0.16665 | 0.00809 | 0.09024 | 0.16041 |
| V6 | -0.04880 | 1.00000 | 0.33329 | 0.10334 | 0.18593 | 0.07751 | 0.06939 | 0.07759 | 0.04055 | 0.15769 |
| V9 | 0.08470 | 0.33329 | 1.00000 | 0.09668 | 0.14414 | 0.11513 | 0.05811 | -0.01970 | 0.05210 | 0.12281 |
| V11 | 0.03403 | 0.10334 | 0.09668 | 1.00000 | 0.09510 | 0.13910 | 0.19931 | 0.11158 | 0.09707 | 0.17979 |
| V18 | -0.02201 | 0.18593 | 0.14414 | 0.09510 | 1.00000 | 0.06052 | 0.24946 | 0.01061 | 0.20533 | 0.17970 |
| V22 | 0.05551 | 0.07751 | 0.13153 | 0.13910 | 0.06052 | 1.00000 | 0.22537 | 0.19044 | 0.18154 | 0.19166 |
| V26 | 0.16665 | 0.06939 | 0.05811 | 0.19931 | 0.24946 | 0.22537 | 1.00000 | 0.21485 | 0.40659 | 0.26588 |
| V30 | 0.00809 | 0.07759 | -0.01970 | 0.11158 | 0.01061 | 0.19044 | 0.21485 | 1.00000 | 0.13700 | 0.01930 |
| V33 | 0.09024 | 0.04055 | 0.12281 | 0.09707 | 0.20533 | 0.18154 | 0.40659 | 0.13700 | 1.00000 | 0.22820 |
| V37 | 0.16041 | 0.15769 | 0.12281 | 0.17979 | 0.17970 | 0.19166 | 0.26588 | 0.01930 | 0.22820 | 1.00000 |
| V43 | 0.16041 | 0.15769 | 0.12281 | 0.17979 | 0.17970 | 0.19166 | 0.26588 | 0.12098 | 0.22468 | 0.19080 |
| V46 | 0.10562 | 0.26749 | 0.02651 | 0.14194 | 0.06549 | 0.08926 | 0.15615 | 0.10453 | 0.22006 | 0.12694 |
| V50 | 0.21224 | 0.09406 | -0.01313 | 0.13363 | 0.10167 | 0.17078 | 0.21651 | 0.22237 | 0.10630 | 0.18285 |
| V53 | 0.06538 | 0.25463 | 0.01961 | 0.04990 | 0.14948 | 0.12923 | 0.24254 | 0.02161 | 0.05210 | 0.13466 |
| V57 | 0.08892 | 0.26672 | 0.14118 | 0.21450 | 0.18481 | 0.12923 | 0.16681 | 0.16936 | 0.09278 | 0.18425 |
| V61 | 0.07199 | 0.17984 | 0.05501 | 0.22316 | 0.12575 | 0.10780 | 0.39075 | 0.07386 | 0.18441 | 0.13677 |
| V65 | 0.15530 | -0.03990 | -0.08570 | 0.04960 | 0.06020 | 0.23114 | 0.26277 | 0.32357 | 0.11931 | 0.06727 |
| V67 | 0.11794 | 0.09658 | 0.08443 | 0.07579 | 0.06398 | 0.06398 | 0.16673 | 0.04902 | 0.13565 | 0.12220 |
| V71 | 0.08887 | 0.18714 | -0.06120 | 0.18651 | 0.08151 | 0.00217 | 0.17681 | 0.04083 | 0.14146 | 0.18884 |
| V74 | 0.18252 | 0.11496 | 0.21004 | 0.02598 | 0.04744 | 0.11873 | 0.12028 | 0.06353 | 0.19145 | 0.05644 |
| V76 | 0.13402 | -0.14107 | -0.16643 | 0.03403 | -0.08933 | 0.16321 | 0.23037 | 0.14833 | 0.06091 | 0.07072 |
| V79 | 0.09929 | 0.08920 | 0.14646 | 0.13098 | 0.12181 | 0.09224 | 0.35553 | 0.10286 | 0.16847 | 0.17858 |
| V83 | 0.13483 | 0.08350 | 0.13204 | 0.22549 | 0.10343 | 0.20826 | 0.36533 | 0.21757 | 0.31785 | 0.11024 |
| V87 | 0.00632 | -0.02803 | -0.00840 | 0.07079 | 0.12707 | 0.19387 | 0.14575 | 0.30787 | 0.15529 | -0.00740 |
| V90 | 0.07107 | 0.10861 | 0.02526 | 0.36647 | 0.05870 | 0.07888 | 0.18750 | 0.11266 | 0.20713 | 0.16422 |

| | V43 | V46 | V50 | V53 | V57 | V61 | V65 | V67 | V71 | V74 |
|-----|---------|---------|----------|---------|----------|---------|----------|---------|----------|----------|
| V2 | 0.17892 | 0.10562 | 0.21224 | 0.06538 | 0.08892 | 0.07199 | 0.15530 | 0.11794 | 0.08887 | 0.18252 |
| V6 | 0.04367 | 0.26749 | 0.09406 | 0.25463 | 0.26672 | 0.17984 | -0.03990 | 0.09658 | 0.18714 | 0.11496 |
| V9 | 0.03935 | 0.02651 | -0.01313 | 0.01961 | 0.14118 | 0.05501 | -0.08570 | 0.08443 | -0.06120 | 0.21004 |
| V11 | 0.07537 | 0.14194 | 0.13363 | 0.04990 | 0.21450 | 0.22316 | 0.04960 | 0.07579 | 0.18651 | 0.02598 |
| V18 | 0.22545 | 0.06549 | 0.10167 | 0.14948 | 0.18481 | 0.12575 | 0.06020 | 0.25392 | 0.08151 | 0.04744 |
| V22 | 0.07512 | 0.08926 | 0.17078 | 0.04100 | 0.12923 | 0.10780 | 0.23114 | 0.06398 | 0.00217 | 0.11873 |
| V26 | 0.31038 | 0.15615 | 0.21651 | 0.24254 | 0.16681 | 0.39075 | 0.26277 | 0.16673 | 0.17681 | 0.12028 |
| V30 | 0.12098 | 0.10453 | 0.22237 | 0.02161 | 0.16936 | 0.07386 | 0.32357 | 0.04902 | 0.04083 | 0.06353 |
| V33 | 0.22006 | 0.22006 | 0.10630 | 0.05210 | 0.09278 | 0.18441 | 0.11931 | 0.13565 | 0.14146 | 0.19045 |
| V37 | 0.19080 | 0.12694 | 0.18285 | 0.13466 | 0.18425 | 0.13677 | 0.06727 | 0.12220 | 0.18884 | 0.05644 |
| V43 | 1.00000 | 0.14167 | 0.15883 | 0.02224 | 0.13973 | 0.15341 | 0.24251 | 0.17241 | 0.10558 | 0.13440 |
| V46 | 0.14167 | 1.00000 | 0.12950 | 0.07299 | 0.31848 | 0.15103 | 0.12568 | 0.07277 | 0.17698 | 0.14752 |
| V50 | 0.15883 | 0.02950 | 1.00000 | 0.08617 | 0.09029 | 0.06223 | 0.28280 | 0.04683 | 0.07795 | -0.02083 |
| V53 | 0.02224 | 0.07299 | 0.08617 | 1.00000 | 0.08429 | 0.15033 | 0.05197 | 0.10492 | 0.17465 | 0.00000 |
| V57 | 0.13973 | 0.31848 | 0.08429 | 0.08429 | 1.00000 | 0.09927 | 0.01064 | 0.03758 | 0.16892 | 0.30698 |
| V61 | 0.15341 | 0.15103 | 0.15033 | 0.15033 | 0.09927 | 1.00000 | 0.06022 | 0.02963 | 0.16425 | 0.05964 |
| V65 | 0.24251 | 0.12568 | 0.28280 | 0.05197 | 0.01064 | 0.06022 | 1.00000 | 0.18982 | 0.02204 | 0.05155 |
| V67 | 0.17241 | 0.07277 | 0.04683 | 0.10492 | 0.03758 | 0.02963 | 0.18982 | 1.00000 | 0.09143 | 0.26667 |
| V71 | 0.10558 | 0.17698 | 0.07795 | 0.17465 | 0.16892 | 0.16425 | 0.02204 | 0.09143 | 1.00000 | 0.02227 |
| V74 | 0.13440 | 0.14752 | -0.02083 | 0.00000 | 0.30698 | 0.05964 | 0.05155 | 0.26667 | 0.02227 | 1.00000 |
| V76 | 0.12892 | 0.08921 | 0.27591 | 0.16048 | -0.01737 | 0.07199 | 0.36988 | 0.04903 | 0.16261 | -0.00141 |
| V79 | 0.21498 | 0.17117 | 0.05728 | 0.08155 | 0.20573 | 0.09289 | 0.18748 | 0.17407 | 0.18414 | 0.15912 |
| V83 | 0.19227 | 0.21329 | 0.16750 | 0.06255 | 0.11758 | 0.18379 | 0.30781 | 0.15014 | 0.08738 | -0.02207 |
| V87 | 0.23280 | 0.18088 | 0.09519 | 0.06259 | 0.11758 | 0.18379 | 0.30781 | 0.15014 | 0.08738 | -0.02207 |
| V90 | 0.08112 | 0.22096 | 0.14434 | 0.00000 | 0.16681 | 0.09881 | -0.00255 | 0.02028 | 0.09322 | 0.08901 |

Table 7.17 Showing matrix of intercorrelations of P scale items

| | V76 | V79 | VR3 | VR7 | VR9 |
|-----|----------|---------|---------|----------|----------|
| V2 | 0.13802 | 0.09929 | 0.13483 | 0.00632 | 0.07107 |
| V6 | -0.14107 | 0.08920 | 0.18350 | -0.02803 | 0.10861 |
| V9 | -0.16643 | 0.04646 | 0.13204 | -0.00840 | 0.02526 |
| V11 | 0.03403 | 0.13098 | 0.22549 | 0.07079 | 0.36647 |
| V18 | -0.08933 | 0.12181 | 0.10343 | 0.12707 | 0.05870 |
| V22 | 0.16321 | 0.09224 | 0.20826 | 0.19387 | 0.07888 |
| V26 | 0.23037 | 0.35553 | 0.36533 | 0.14575 | 0.18750 |
| V30 | 0.14833 | 0.10286 | 0.21257 | 0.30787 | 0.11266 |
| V33 | 0.06091 | 0.16847 | 0.31285 | 0.15529 | 0.20713 |
| V37 | 0.07072 | 0.17358 | 0.11024 | -0.00740 | 0.16422 |
| V43 | 0.17892 | 0.21499 | 0.19222 | 0.23280 | 0.08112 |
| V46 | 0.08391 | 0.17117 | 0.21329 | 0.18098 | 0.22996 |
| V50 | 0.27591 | 0.05728 | 0.16750 | 0.09519 | 0.14434 |
| V53 | 0.16048 | 0.08155 | 0.06255 | 0.06259 | 0.00000 |
| V57 | -1.01232 | 0.20573 | 0.26288 | 0.11758 | 0.16681 |
| V61 | 0.07199 | 0.09289 | 0.15907 | 0.18879 | 0.09881 |
| V65 | 0.36982 | 0.18768 | 0.31053 | 0.30781 | -0.00255 |
| V67 | 0.04903 | 0.17407 | 0.13519 | 0.15014 | 0.02028 |
| V71 | 0.16261 | 0.18414 | 0.18404 | 0.08738 | 0.09322 |
| V74 | -1.00141 | 0.15912 | 0.06410 | -0.02207 | 0.08901 |
| V76 | 1.00000 | 0.07821 | 0.10744 | 0.18202 | -0.02451 |
| V79 | 0.07821 | 1.00000 | 0.28619 | 0.04694 | 0.14056 |
| V83 | 0.10744 | 0.28619 | 1.00000 | 0.27153 | 0.13252 |
| V87 | 0.18902 | 0.04694 | 0.27153 | 1.00000 | 0.05257 |
| V90 | -0.02451 | 0.14056 | 0.13252 | 0.05257 | 1.00000 |

Table 7.17 contd.

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 |
|-----|----------|----------|----------|----------|
| V2 | 0.18597 | 0.03692 | 0.14302 | 0.11542 |
| V6 | 0.15765 | 0.40678 | -0.19277 | -0.08485 |
| V9 | 0.00088 | 0.47422 | 0.03240 | -0.07325 |
| V11 | 0.23942 | 0.06324 | -0.36329 | 0.12058 |
| V18 | 0.31933 | 0.22233 | 0.12203 | -0.05884 |
| V22 | 0.05202 | 0.09111 | -0.01464 | 0.33202 |
| V26 | 0.06584 | -0.06566 | 0.07782 | 0.17034 |
| V30 | -0.13161 | 0.02983 | -0.11615 | 0.56648 |
| V33 | 0.34395 | 0.10406 | 0.03841 | 0.15655 |
| V37 | 0.44761 | 0.08234 | -0.02352 | -0.04477 |
| V43 | 0.28366 | 0.06566 | 0.19031 | 0.22702 |
| V46 | 0.10051 | 0.23275 | -0.21795 | 0.23101 |
| V50 | 0.19239 | -0.12531 | -0.02213 | 0.29866 |
| V53 | 0.36853 | -0.03501 | 0.00053 | -0.07498 |
| V57 | 0.03732 | 0.44216 | -0.23094 | 0.20737 |
| V61 | 0.40015 | -0.01360 | -0.12414 | 0.02942 |
| V65 | -0.01270 | -0.13616 | 0.22638 | 0.68294 |
| V67 | 0.12108 | 0.24139 | 0.31204 | 0.09761 |
| V71 | 0.37018 | -0.03862 | -0.16150 | 0.00131 |
| V74 | -0.02115 | 0.47403 | 0.18107 | 0.10948 |
| V76 | 0.19851 | -0.37331 | 0.10300 | 0.37747 |
| V79 | 0.29216 | 0.13245 | 0.04672 | 0.14033 |
| V83 | 0.16424 | 0.12957 | -0.07474 | 0.42182 |
| V87 | -0.03972 | -0.20554 | -0.01000 | 0.50234 |
| V90 | 0.17996 | 0.09802 | -0.33466 | 0.10291 |

Table 7.18 Showing four factor solution

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 |
|-----|----------|----------|----------|----------|----------|
| V2 | 0.28021 | -0.07486 | 0.06368 | -0.00948 | 0.01707 |
| V6 | -0.21334 | 0.87200 | 0.07841 | 0.00750 | 0.45107 |
| V9 | 0.19464 | 0.57400 | -0.08752 | -0.01244 | -0.04328 |
| V11 | -0.04782 | 0.00389 | 0.03801 | -0.52370 | 0.06029 |
| V18 | 0.51359 | 0.13340 | -0.06119 | -0.00223 | 0.18039 |
| V22 | 0.10020 | 0.06143 | 0.29860 | -0.08231 | -0.01411 |
| V26 | 0.43937 | -1.18292 | 0.10502 | -0.21571 | 0.52336 |
| V30 | -0.08997 | 0.08485 | 0.54732 | -0.09336 | -0.08667 |
| V33 | 0.57543 | -0.08173 | 0.04182 | -0.23712 | 0.03633 |
| V37 | 0.24741 | 0.01148 | -0.06730 | -0.19253 | 0.23597 |
| V43 | 0.37486 | -1.05389 | 0.17260 | -0.00801 | 0.07055 |
| V46 | 0.04195 | 0.19765 | 0.17562 | -0.27839 | 0.01772 |
| V50 | 0.00338 | -0.04073 | 0.53134 | -0.04600 | 0.17227 |
| V53 | 0.03590 | 0.10163 | 0.02015 | 0.07761 | 0.46045 |
| V57 | 0.12460 | 0.30869 | 0.11124 | -0.31242 | -0.07075 |
| V61 | 0.09730 | 0.00124 | 0.02861 | -0.21302 | 0.27048 |
| V65 | 0.13185 | -0.07704 | 0.70845 | 0.21152 | -0.00024 |
| V67 | 0.43071 | 0.09669 | 0.06701 | 0.15401 | 0.02083 |
| V71 | 0.02992 | 0.01213 | 0.01714 | -0.20322 | 0.29468 |
| V74 | 0.45938 | 0.21982 | -0.01377 | -0.01187 | -0.24340 |
| V76 | 0.01440 | -0.25482 | 0.42431 | 0.11229 | 0.21095 |
| V79 | 0.52290 | -0.00708 | 0.06091 | -0.15763 | 0.05911 |
| V83 | 0.19065 | 0.02556 | 0.32869 | -0.24278 | -0.01839 |
| V87 | 0.02387 | 0.00939 | 0.47922 | -0.02096 | -0.03158 |
| V90 | -0.01046 | -0.00974 | -0.00899 | -0.56291 | -0.04410 |

Table 7.19 Showing five factor solution

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 |
|-----|----------|----------|----------|----------|----------|----------|
| V2 | 0.03352 | -0.07379 | 0.29463 | -0.06716 | -0.04106 | 0.31418- |
| V6 | -0.10024 | 0.02559 | 0.00531 | 0.04715 | -0.03719 | 0.00851 |
| V9 | 0.07605 | 0.27732 | -0.18843 | -0.02070 | -0.00364 | 0.22696 |
| V11 | 0.05880 | 0.01790 | 0.00471 | 0.04118 | -0.50804 | -0.05941 |
| V18 | -0.49615 | 0.15078 | -0.14521 | 0.02562 | 0.07615 | -0.01547 |
| V22 | 0.05469 | 0.03605 | 0.06813 | 0.27223 | -0.07714 | 0.08373 |
| V26 | 0.60210 | -0.09110 | 0.20296 | 0.07570 | -0.12125 | -0.01348 |
| V30 | -0.08139 | 0.04045 | 0.03021 | 0.53079 | -0.08678 | -0.01587 |
| V33 | 0.42151 | -0.12363 | -0.04969 | 0.09384 | -0.19667 | 0.09125 |
| V37 | 0.25485 | 0.08622 | 0.18802 | -0.13126 | -0.19806 | 0.08742 |
| V43 | 0.32710 | -0.05606 | 0.10309 | 0.16191 | 0.01854 | 0.13909 |
| V46 | -0.02434 | 0.17409 | 0.02470 | 0.16859 | -0.28488 | 0.12427 |
| V50 | -0.01377 | 0.05227 | 0.35476 | 0.18560 | -0.07542 | 0.00754 |
| V53 | 0.13538 | 0.28809 | 0.27466 | -0.06087 | 0.06937 | -0.10633 |
| V57 | -0.04308 | 0.23164 | -0.06115 | 0.12897 | -0.31454 | 0.26707 |
| V61 | 0.30437 | 0.09647 | 0.05297 | 0.06606 | -0.12959 | -0.12689 |
| V65 | 0.03611 | -0.06756 | 0.30683 | 0.56579 | 0.18514 | 0.08149 |
| V67 | 0.29123 | 0.03396 | 0.06766 | 0.08501 | 0.12736 | 0.25485 |
| V71 | 0.11766 | 0.13712 | 0.22258 | -0.04836 | -0.21059 | -0.05076 |
| V74 | 0.00115 | 0.04901 | -0.05970 | -0.01865 | -0.00785 | 0.68145 |
| V76 | -0.06544 | -0.10012 | 0.61405 | 0.22103 | 0.09413 | -0.00818 |
| V79 | 0.24987 | -0.01807 | 0.08014 | 0.04517 | -0.14825 | 0.16941 |
| V83 | 0.21352 | -0.02219 | -0.00578 | 0.35311 | -0.21769 | 0.05850 |
| V87 | 0.13540 | -0.01438 | -0.06988 | 0.58688 | 0.03406 | -0.12135 |
| V90 | 0.00664 | -0.04641 | -0.03628 | -0.00167 | -0.55960 | 0.02711 |

Table 7.20 Showing six factor solution

| | Factor 1 | Factor 2 | Factor 3 | Factor 4 | Factor 5 | Factor 6 | Factor 7 | Factor 8 |
|-----|----------|----------|----------|----------|----------|----------|----------|----------|
| 12 | 0.04226 | -0.06793 | 0.29482 | -0.08740 | -0.02631 | 0.29276 | -0.05083 | -0.00149 |
| V6 | -0.04956 | 0.86340 | 0.00675 | 0.02731 | -0.00117 | 0.01225 | -0.08692 | 0.03536 |
| V9 | 0.04871 | 0.36074 | 0.18523 | -0.04414 | -0.01984 | -0.02076 | 0.31550 | 0.08565 |
| V11 | 0.07485 | 0.02264 | -0.07455 | 0.02597 | -0.50497 | 0.06671 | -0.03774 | 0.01345 |
| V18 | 0.02232 | 0.07426 | -0.15650 | -0.01086 | -0.04405 | -0.02877 | 0.05547 | 0.73067 |
| V22 | 0.15046 | 0.09215 | 0.05949 | 0.24952 | -0.06007 | 0.16256 | 0.16325 | -0.03531 |
| V26 | 0.93655 | -0.07472 | 0.00314 | -0.01511 | 0.03641 | 0.04637 | 0.06681 | 0.02017 |
| V30 | 0.04461 | 0.06123 | -0.01239 | 0.48985 | -0.06359 | 0.09198 | 0.06783 | -0.07124 |
| V33 | 0.34802 | -0.10637 | 0.11689 | 0.07739 | -0.14594 | -0.05902 | 0.03213 | 0.14213 |
| V37 | 0.14003 | 0.07739 | 0.04600 | -0.16149 | -0.21000 | 0.23956 | -0.04464 | 0.17121 |
| V43 | 0.11932 | -0.10248 | 0.13146 | 0.14128 | -0.01161 | 0.10106 | -0.07492 | 0.27449 |
| V46 | -0.00097 | 0.14853 | 0.20426 | 0.19844 | -0.21960 | -0.11205 | -0.27604 | -0.02966 |
| V50 | -0.06135 | 0.06774 | -0.10265 | 0.12154 | -0.15804 | 0.60366 | 0.04117 | 0.06303 |
| V53 | 0.19747 | 0.26208 | -0.08184 | -0.05664 | 0.15726 | 0.11179 | -0.22791 | 0.06348 |
| V57 | -0.04444 | 0.22231 | 0.27494 | 0.12600 | -0.26954 | -0.06587 | -0.11103 | 0.04664 |
| V61 | 0.39930 | 0.10585 | -0.07596 | 0.04959 | -0.06062 | -0.07581 | -0.07707 | -0.00306 |
| V65 | 0.04078 | -0.08732 | 0.07325 | 0.51387 | 0.16242 | 0.31896 | -0.01989 | 0.05754 |
| V67 | -0.01308 | -0.00373 | 0.23335 | 0.06851 | 0.11053 | 0.03940 | -0.04051 | 0.35950 |
| V71 | 0.08115 | 0.08231 | 0.01213 | -0.04188 | -0.13618 | 0.02748 | -0.45253 | 0.04316 |
| V74 | 0.01541 | 0.07429 | 0.68616 | -0.02589 | 0.03765 | -0.06085 | 0.07379 | 0.01633 |
| V76 | 0.10129 | -0.12723 | 0.02657 | 0.21540 | 0.16567 | 0.39828 | -0.28416 | -0.13154 |
| V79 | 0.24085 | -0.03197 | 0.21057 | 0.02963 | -0.07812 | -0.01034 | -0.11166 | 0.07623 |
| V83 | 0.24912 | 0.00095 | 0.10210 | 0.32943 | -0.15444 | -0.01386 | -0.00352 | 0.02725 |
| V87 | 0.00074 | -0.04987 | -0.09017 | 0.62629 | 0.01604 | -0.10326 | -0.08633 | 0.16596 |
| V90 | 0.02779 | -0.04964 | 0.00734 | -0.02115 | -0.58593 | 0.04823 | -0.01502 | -0.01376 |

Table 7.21 Showing eight factor solution