MENTAL HEALTH:

A TEST OF A THREE DIMENSIONAL MODEL

by

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MENTAL HEALTH: A TEST OF A THREE DIMENSIONAL MODEL

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Abstract

The present study attempts to support a three dimensional model of mental health according to which mental health is defined in terms of three basic dimensions, called biological, cultural, and psychological. Factor analytic techniques were used to test the model. Approximately one thousand patients of the Family Practice Teaching Unit in Vancouver, B.C., filled out a self administered questionnaire which cortained physical symptoms items, assumed to measure the biological dimension postulated by the model, social functioning items, assumed to measure the cultural dimension, and subjective distress items, assumed to measure the psychological dimension. Responses to this questionnaire were subjected to factor analyses which showed that either a two factor or a three factor solution would be an appropriate description of the patterns of responses obtained. In the three factor solution the items clustered in a manner expected from the three dimensional model, thus providing support for that model. On the other hand, from a

statistical perspective, the two factor solution was also acceptable. One of the factors in this solution could be identified with the biological dimension of the three dimensional model. The other factor was a mixture of the cultural and psychological dimensions of the three dimensional model. It was concluded that the three dimensional model was supported but that the adequacy of a two dimensional model was not ruled out.

...And the end of all our exploring

Will be to arrive where we started

And know the place for the first time.

T.S.Eliot

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INTRODUCTION

Chapter 1

Theoretical Models of Mental Health

"The extensive literature on conceptions of mental health (e.g., see Jahoda, 1958, for a comprehensive discussion)... demonstrate the absence of a consensus on what constitutes mental health" (Strupp and Hadley, 1977). Many theoretical models have been proposed. One way of integrating several of these models has been outlined by Coles (1975); it consists of three dimensions labeled "abnormality biologically defined", "abnormality socially defined", and "abnormality subjectively defined". These dimensions were isolated from various definitions of mental health and mental illness. The model is based on the pathological or biological, the cultural, and the subjective or psychological models of mental illness, and also incorporates the statistical concept. In order to appreciate this model it is helpful to first consider each of the dimensions separately. These will be discussed in roughly chronological order.

1.1 Biological Models

Concepts based on a biological dimension have defined mental health as the absence of disease. This model assumes that a definition of mental disease exists. However, there

is no clear definition of mental disease, although there are lists of mental diseases. Consequently, the use of biological indications of disease to define, albeit, by exclusion, mental health is essentially dependent upon prior knowledge of that state. Thus biological measures alone provide an inadequate definition of mental illness.

1.2 Social/Cultural Models

The initial use of a social dimension to define mental illness was by researchers who defined abnormality in terms of their own cultural norms, and assumed that deviance from social norms is determined by a composite of behaviours relevant to specific norms which are invariant across cultures. Benedict (1934) criticized this viewpoint, and argued instead for cultural relativity: the view that one culture cannot be evaluated using the categories of another. She cites three types of evidence to support this view: these are examples of behaviour which are considered abnormal in our culture but normal in others, behaviour which does not occur in our culture but called abnormal by Benedict, and behaviour which is considered normal in our culture but abnormal in others.

Benedict's types of evidence have been criticized by Wegrocki (1939), Coles (1973), and Callieri and Frighi (1966). Wegrocki argues that behaviour which is considered abnormal in our culture cannot necessarily be equated with

the same patterns of behaviour in other cultures. Coles, following Wegrocki, states: "The self-mutilation of the Plains Indians was probably encouraged in much the same way as circumcision or shaving is encouraged in our culture - it is something that every man did when he reached a certain age. In which case, it is not to be equated with the self-mutilation often observed in a mental hospital." Callieri and Frighi and Wegrocki question the statement that there are types of abnormality that do not occur in our culture: Callieri and Frighi suggest that the equivalents would be found upon a more thorough examination, and Wegrocki offers present-day psychiatric labels for Benedict's examples.

The social/cultural model of mental illness has been criticized by Callieri and Frighi (1966) and Heimler (1967) for equating social deviance with mental illness. Callieri and Frighi state: "psychological abnormality, of course, is distinct from social abnormality. Thus it is impossible, for example, to explain the primary symptoms of schizophrenia in terms of social context, otherwise there would be as many psychiatric conditions as there are cultures." Heimler says: "it is now possible to distinguish between clinical and social illness. A man or a woman may suffer a great deal with crippling emotional problems and yet, with the help of doctors and social workers, the person may be able to function in society quite

normally. In other words, he may still be ill clinically and yet be able to discharge his obligations to his family and society and earn his living. On the other hand, someone who has no clinical symptoms at all may be quite unable to fit into society; clinically without symptoms, he may still be socially incapacitated." Thus social deviance alone cannot provide a sufficient definition of mental illness.

1.3 The Statistical Concept

The statistical concept was mentioned by Foley (1935) as a means of operationalizing the social/cultural model of mental illness. Although the statistical concept could be used for comparison of an individual with reference to a group norm or with reference to an individual norm, the statistical concept has been largely concerned with group norms. A modification of the statistical concept replaces group norms with ideal norms, and only one extreme of the distribution is regarded as abnormal.

There are two major problems with the statistical concept. The first has to do with the selection and weighting of behaviours. To establish a statistical norm, it is necessary to define the population from which the norm is to be derived. Norms vary with societies, and they vary with age, sex, and other characteristics of individual societal members. Foley (1935) says that abnormality is specific to particular reactions or responses, but not all

reactions or responses are equally relevant to mental health. Therefore, some decision must be made as to which behaviours will be selected and how they will be weighted; this decision goes beyond the realm of statistics.

The second major problem with the statistical concept concerns the equivalence of observed behaviours; simply observing the frequency of certain responses may not be adequate. Behaviours which would appear to be equivalent, and which would be treated as equivalent by the statistical concept, may be the result of entirely different motives. For example, if a lecturer, after 20 minutes or so, started his lecture from the beginning again, this would be regarded as normal if it were because there had been a lot of late-comers; but abnormal if it were because he'd forgotten the events of the preceding period, and was not aware that he was repeating himself. Wegrocki (1939) says: "Obviously abnormal behavior is <u>called</u> abnormal because it deviates from the group. It is not, however, the <u>fact</u> of deviation which makes it abnormal but its causal background."

Coles (1973) says: "while it is obvious that abnormal behaviour is statistically either more or less frequent than normal behaviour, mere frequency of a response does not justify defining it as abnormal for our purposes. However, although the statistical concept is not a sufficient criteria of normality/abnormality, it cannot be totally

ignored. In general usuage, normality implies that the majority of any population has the attribute in question, and it would not be acceptable for the psychopathologist to define normality in such a way as to exclude the majority. Thus, statistical infrequency is a necessary, but not a sufficient, criterion of abnormality."

1.4 Psychological Models

The conventional model based upon a psychological dimension stresses the function of a behaviour for determining mental health. For example, Wegrocki (1939) defines mental illness as "the tendency to chose a type of reaction which represents an escape from the conflict-producing situation instead of facing the problem".

The most widely known model of mental health which was derived from a psycholcgical perspective is Jahoda's (1958) concept of positive mental health. Positive mental health is probably a uni-dimensional concept, although it is characterized by six major points: (1) awareness of self, correspondence between perceived self and real self, self acceptance, and a sense of identity; (2) motivation and investment in living; (3) balance of psychic forces as described by the psychoanalytic orientation, a unifying outlook on life, and resistance to stress; (4) regulation of behaviour from within, and independent behaviour; (5) freedom from need distortion, and empathy or social

sensitivity; and (6) environmental mastery expressed in the ability to love, work, and play, adequacy in interpersonal relations, meeting of situation requirements, adaptation and adjustment to reality, and problem solving. Jantzen (1969) gives a good summary of these six major points, although she fails to indicate that the points are the criteria for positive mental health and she fails to cite Jahoda as their source. Positive mental health may not, however, be synonomous with mental health particularly when the latter is defined as the absence of illness. Scott (1958) says: "Jahoda suspects that positive mental health, as she defines it, may indeed represent a dimension orthogonal to that represented by the conventional psychological symptoms of mental illness." Thus it appears that the concept of positive mental health does not add to a theoretical model of mental illness. Furthermore, the problem with the psychological model, in general, is that it does not take into account factors which are not psychological in their nature, such as genetic or organically caused behaviours. Thus the psychological model alone cannot provide a sufficient definition of mental illness.

1.5 Multi-dimensional Models

The biological, the social/cultural, and the psychological models discussed so far can be combined with the statistical concept to form a three dimensional model of

mental health that avoids the inadequacies of each of the models taken separately. This is the three dimensional model suggested by Coles (1975) which was mentioned at the beginning of this chapter. Coles presents a cube with the three dimensions labeled "abnormality biologically defined", "abnormality socially defined", and "abnormality subjectively defined", and gives examples of various disorders which would fall at particular points within the cube. This model is the most complete; it avoids many of the problems of the uni-dimensional models which could not account for types of mental illness characterized by the other dimensions.

McLean (1971) has also suggested a multi-dimensional model of mental health. He gives a number of characteristics of "psychologic health" which are similar to the types of characteristics mentioned by Jahoda (1958). McLean also mentions biologic health, healthy social conduct, religious health, and spiritual health. The biologic health and the healthy social conduct are analogous to the biological and the social/cultural dimensions discussed earlier. The religious and spiritual dimensions, which were not clearly differentiated by McLean, may be components of the subjective (psychological) dimension mentioned earlier. Thus it would appear that the model suggested by McLean could be more parsimoniously represented

by the three dimensional model proposed by Coles (1975).

And finally, Strupp and Hadley (1977) have suggested a three dimensional model of mental health that takes into account three vantage points from which an individual's mental health may be judged: society, the individual patient, and the mental health professional. "Society is primarily concerned with the maintainance of social relations, institutions, and prevailing standards of sanctioned conduct. Society and its agents tend to define mental health in terms of behavioral stability, and conformity to the social code. The individual client evaluating his own mental health uses a criterion distinctly different from that used by society. The individual wishes first and foremost to be happy, to feel content. He thus defines mental health in terms of highly subjective feelings of well-being - feelings with a validity all their own. Some individuals will experience contentment coincident with behavioural adaptation and there will be agreement by the individual and society that he is mentally sound. But the agreement is, nonetheless, between independent evaluations made from different vantage points, and it is quite conceivable that an individual may define himself as mentally sound quite independent of society's or the mental health professional's opinion. Most mental health professionals tend to view an individual's functioning

within the framework of some personality structure which transcends social adaptation and subjective well-being (although clinical judgement's of another's mental health are often significantly influenced by these latter two criteria). The professional thus defines mental health with respect to some theoretical model of a 'healthy' personality structure that may on occasion result in a diagnosis of mental health or pathology at variance with the opinion of society and/or the individual."

The vantage points of the society and the individual patient in Strupp and Hadley's (1977) model are clearly the social/cultural and the psychological dimensions in the model suggested by Coles (1975). The vantage point of the mental health professional is not exactly the same as the biological dimensior, although replacing the mental health professional with a psychiatrist would result in greater similarity. Since Strupp and Hadley are concerned with therapeutic outcomes, they collapse their model: they consider all combinations of positive and negative adaptive behaviour (society), positive and negative sense of well-being (individual), and positive and negative personality structure (professional) in order to determine the appropriate labels, "success" or "failure", to attach to the therapeutic outcome depending upon the overall evaluation from the three vantage points. In contrast, Coles states:

"the essence of all multidimensional concepts is that 'mental health' is a conjuctive concept, such that behaviour is considered normal, in the sense of healthy, to the extent that it satisfies all the criteria of normality; while 'mental illness' is a disjuctive concept which requires the satisfaction of any one criterion of abnormality."

In conclusion, mental health has been defined as a uni-dimensional concept based upon one of three models - the biological, the social/cultural, or the psychological model. The statistical concept offers a way of measuring mental health using any one of the three models. Although the biological, social/cultural, and psychological models provide good explanations of the concept "mental health"; each model alone is inadequate. Therefore, the three dimensional model proposed by Coles (1975) appears to be the most complete. Mental health has also been defined using other multi-dimensional models, such as those proposed by McLean (1971) and Stupp and Hadley (1977). McLean's model can be reduced to the three dimensional model, seemingly without any loss of information; and Strupp and Hadley's model appears to be the same three dimensional model from a slightly different vantage point. Thus it is possible, though not desirable, to collapse the three dimensional model, and it is possible, although not necessary, to expand it. The next step is to determine how to measure mental health using this three dimensional model.

Chapter 2

Research Definitions of Mental Health

Research definitions of mental health represent attempts to operationalize the theoretical concepts. The research definitions derived from each of the theoretical models - the biological model, the social/cultural model, the statistical concept, the psychological model, and the multi-dimensional model - will be presented in this chapter in the same order as the models were presented in the previous chapter.

2.1 Research Definitions Based on Biological Models

Research definitions of mental illness based on a biological dimension have typically used specific symptoms or signs as a criterion, with the data coming from the screening of an entire sample with the aid of questionnaires, inventories, checklists, or rating scales, or from psychiatrists' records, in order to obtain psychiatric diagnoses. The shortcomings of defining mental illness in this way include the questionable reliability of diagnostic procedures, automatic limitation of the size of the population to those individuals "under the care of a psychiatrist", the assumption that individuals who have not seen a psychiatrist are mentally healthy, and geographical variations in hospital admissions which may indicate

community tolerance of deviance rather than variations in the proportion of mentally ill individuals. The shortcomings of psychiatric screening of the sample are that it is expensive and unreliable, and the lack of standardization of diagnostic classification systems may make it impossible to compare various studies using this method.

2.2 Research Definitions Based on Social/Cultural Models

Research definitions using the social dimension focus on conformity or its opposite, failure of positive striving. Mental health is assumed to be an antecedent of adjustment, if not its equivalent. The degree of a given individual's adjustment to the community or some other reference group is measured by community consensus, by conformity to a law or some other visible sign of social norms, or by comparison to some externally defined set of requirements for a given social system. Scott (1958) says that these criteria should tend toward convergence, but the criteria may be expected to yield somewhat different results. "When adjustment is assessed by community consensus, one finds considerable divergence of opinion among various segments of the public regarding what constitutes good and poor adjustment" (Scott, 1958). Beilin (1957) concluded that it is meaningless to discuss adjustment in the abstract or to contemplate the prediction of adjustment in general; "one must specify

adjustment to what, adjustment to whose standards." The second way of measuring adjustment, by looking at conformity to a law or some other visible sign of social norms, was criticized in the previous chapter for the assumption that social deviance or criminal behaviour is equivalent to mental ilness. The third method of measuring adjustment, which compares the individual to some externally defined set of requirements, can be criticized on the grounds that it does not provide any guidelines for determining the set of requirements to be used. Adjustment has been assumed to be synonomous with conformity and lack of adjustment with mental illness; but is it possible to be overly adjusted? Coles (1973) has suggested that the extreme conforming of institutional neurosis may be an example of over conformity and mental illness. And, finally, what if the community or the reference group is sick? How does one determine the degree of mental health of an individual who is conforming to a sick society? "Thus, although adjustment appears to be a more conceptually adequate criterion of mental health than does exposure to psychiatric treatment, the necessity for considering different personal frames of reference and the demands of different social structures poses seemingly unsurmountable obstacles to the establishment of mutually consistent operational definitions" (Scott, 1958).

2.3 Research Definitions Based on The Statistical Concept

McQuitty (1954) discusses a number of ways of conceptualizing mental health using the statistical approach, and he discusses the pattern of responses on a psychological test battery that should be found if the conceptualizations are correct. Other than a topological approach, which assumes that there are many types of mental illness with each type having a unique pattern of characteristics, all of the conceptualizations that McQuitty discusses define mental health in some way which involves social conformity. These conceptualizations may be summarized as follows: (1) Single pattern conformity assumes that personality characteristics common to community persons are indicative of mental health. The pattern of characteristics which reflects the maximum mental health is the common or typical characteristic, and a person is mentally healthy to the extent that he conforms to this single, typical pattern. (2) Conformity to cultural patterns assumes that many patterns of characteristics reflect mental health. The extent to which an individual conforms to a pattern which is particular to a group of community subjects is the degree to which that individual may be said to reflect culture harmony. There may be relatively independent kinds of culture harmony; that is, a person may reflect culture harmony in one pattern of

responses and show a lack of it in another. (3) Weighted indices of conformity to culture patterns assume that both mental illness and mental health express themselves in any one of many characteristics. This view also assumes that an individual may reflect mental illness in some characteristics and mental health in others. Differential weights are assigned to both symptoms of mental illness and signs of mental health, with particularly large weights being given to extreme symptoms of mental illness. (4) A revision of the weighted indices of conformity to culture patterns method which incorporates a correction for a linkage effect. Individual differences in kinds, numbers, and influences of item orderings and linkages are also assumed. (5) Characteristic centered culture harmony assumes various patterns of characteristics and assumes each characteristic reflects the same degree of harmony and mental health. And (6) Conformity to factors of culture harmony assumes so many patterns of harmonious characteristics that isolating all of them would be impossible. It is hypothesized that mentally healthy individuals possess characteristics which can be interpreted, primarily, in terms of one culture factor and that less mentally healthy subjects require several additional factors to give equally complete interpretations.

After employing all of the methods mentioned in the

preceding paragraph, McQuitty (1954) states a number of hypotheses which were supported by his work; although he states that these hypotheses still require further investigation. These include the following three points which are related to conformity: (1) Mental illness and mental health may express themselves in any one of a rather large number of response patterns. (2) The extent to which a person confoms to a pattern of characteristics may be thought of as an assessment of the extent to which he reflects culture harmony. Culture harmony in each psychological area is pcsitively related to the degree of personality integration in that area. And (3) The author synthesizes conformity, personality integration, and behaviour syndromes as follows: "instead of speaking of generalized conformity to some central tendency, we may speak of conformity to patterns of behavior within psychological areas. People are both integrated and mentally healthy within these areas to the extent that they conform to behavior patterns, or syndromes, which are characterized by a significant number of community people."

Scott (1958) says that many psychological test batteries lack an underlying conception of mental health, but he refers to McQuitty's (1954) work as being a "notable exception". Most of McQuitty's methods involve social conformity and most are uni-dimensional. However, it seems

that McQuitty has skirted the entire issure of a definition of mental health by suggesting a large number of conceptualizations of mental health which may be defined along one or more dimensions and which are characterized in one or more ways. Thus it is not clear just how McQuitty conceptualizes mental health or how the results of his research can be used for establishing an operational definition of mental health.

2.4 Research Definitions Based on Psychological Models

One research definition based upon a psychological dimension emphasizes states of well-being. According to this definition, the degree of mental health may be assessed by manifestations of subjective happiness, self-confidence, and morale. Scott (1958) says that these criteria of mental health correlate somewhat with independent diagnoses by physicians. The problem with this definition is that, under some circumstances, psychological defense mechanisms could operate to prevent a person from reporting, or becoming aware of, his own underlying unhappiness and disturbance. Jahoda (1958) points out that unhappiness is a function not only of a person's behavioural patterns, but is also a product of the person's environment: a person is happy if what he wants is in harmony with what life has to offer. And, as Coles (1973) points out, there may be situations where happiness would be inappropriate. In addition, this

research definition omits consideration of behaviours which are free from subjective distress, although other research definitions may use the behaviours as an indication of mental illness.

Other research definitions using the psychological dimension have defined mental health by objective symptoms measured by rating scales or questionnaires. These measures are usually assumed to be uni-dimensional. The advantages offered by these methods are that the data can be collected in a relatively easy and inexpensive manner, the criteria for evaluating mental health are more explicit than many other research definitions, and the findings are more objective than a standard clinical interview. The disadvantages are that the paper and pencil methods may be inflexible, artificial, or unrelaible; and there is no way of knowing if different items or different methods of scoring would have yielded different results. McQuitty (1954) says: "there is a reason for our lack of knowledge concerning the potentialities of personality inventories. Each investigator in the area has had to decide what inventory test items to try out, and he has had to decide what method to use is assigning 'weights' to item responses for the assessment of psychological well-being. Consequently, having finished a study, an investigator knows relatively little about how much more promising results

might have been obtained if he had used either different items or a different method of weighting item responses. He has two independent classes of variables, items and methods of 'weighting', and he does not know to which to attribute whatever success he has achieved. He is much like the experimentalist who has two uncontrolled variables and does not know which is responsible for his results. The only difference is that the test constructor is in a more difficult plight because, instead of having merely two uncontrolled variables, he has two uncontrolled classes of them."

2.5 Research Definitions Based on Multi-dimensional Models

Although a number of multi-dimensional models of mental health have been proposed (see chapter 1), these models have not generated any research criteria. The only research definitions involving more than one dimension are those employing test batteries, such as McQuitty's work (1954) which was discussed previously. These test batteries are assumed to involve more than one dimension since they consist of tests which are supposed to measure different concepts. "Mental health defined by responses to a battery of tests is bound to turn out multidimensional to the extent that the inter-correlations among test items are low" (Scott, 1958). The disadvantage of this type of research criteria is that it may be difficult to obtain a sufficient

number of subjects, especially if the test battery is lengthy.

In conclusion, research definitions of mental health based on the biological, the social/cultural, and the psychological models have involved psychiatric diagnosis, conformity, or states of well-being. The use of any of these definitions poses problems which appear to be insurmountable. The research definitions based on multi-dimensional models have involved the use of test batteries. Thus it would appear that the most appropriate research definition of mental health based on the three dimensional model would employ some sort of questionnaire or rating scale, or a combination of them, which would cover the biological, social, and psychological components of the model. And this was, in fact, what was done. The next chapter reviews the various measures which were considered to measure the components of the three dimensional model.

Chapter 3

Measures of Health

In the previous chapter, the conclusion was reached that a research definition based on the three dimensional model of mental health should employ paper and pencil measures covering the biological, the social, and the psychological components of the model. In order to obtain a sufficient number of subjects to adequately test the model, the constraint of self-administered measures which could be completed quickly and easily was added. A review of the literature was conducted to find measures of the biological, social, and psychological components of the model; that is, measures of medical problems, social functioning, and subjective distress. These measures will be discussed in alphabetical order within each component; the components will be presented in the same order used in the previous chapters.

Available Measures

3.1 Medical Problems

California Medical Survey (Snow and Manson, 1962). A self report inventory with separate forms for men, women, and children. It contains twelve subgroups of questions dealing with medical-organic conditions (sensory, eye, ear, and skin; respiratory; cardiovascular and blood; digestive;

neuromuscular and skeletal; genitourinary; medical background; gynecology - menstruation; gynecology - surgery; gynecology - menopause; gynecology - sterility; and gynecology - pregnancy) and five subgroups dealing with psychiatric-psychological conditions (energy level; habits and traits; anxiety and stress; sexual and social; and psychiatric). The administration time is estimated to be 10 minutes.

Cornell Index (Weider, Brodman, Mittelman, Weschler, and Wolff, 1946). A self report inventory devised to serve as a standardized psychiatric history, an adjunct to interview by a clinician, and a screening device to statistically differentiate people with serious personality and psychosomatic disturbances from the rest of the population. The standard form contains 101 questions; the short form contains 62 questions. The questions refer to neuropsychiatric and psychosomatic symptoms; they are answered "yes" or "no". The administration time is not specified. The use of the Cornell Index appears to have been superseded by the Cornell Medical Index Health Questionnaire.

Cornell Medical Index: Health Questionnaire (Brodman, Erdmann, Lorge, and Wolf, 1949, and see Buros, 1972). A self report inventory devised to aid the clinician, both in diagnosis and as a screening procedure, in dealing with

people aged 14 and over. There are separate forms for men and women. It contains 195 questions divided into eighteen subgroups according to content (eyes and ears; respiratory; cardiovascular; digestive; musculoskeletal; skin; nervous system; genitourinary; fatiguability; frequency of illness; miscellaneous diseases; habits; inadequacy; depression; anxiety; sensitivity; anger; and tension). The questions are answered "yes" or "no". Administration time is estimated to be 10 to 30 minutes. An extensive review article by Abramson (1966) citing almost every study prior to 1965 which used the Cornell Medical Index concluded: "It is of relatively little value as an indicator of the presence of specific disorders, or of general somatic health."

Cumulative Illness Rating Scale (Linn, Linn, and Gurel, 1968). A rating scale, completed by the physician, devised to assess physical impairment. Ratings are made on a five point "degree of severity" scale ranging from "none" to "extremely severe" for 13 body areas.

Physical Symptoms Inventory (Wahler, 1968). A self report inventory devised to measure the degree of "physical complaining behavior". Ratings are made on a six point scale ranging from "almost never" to "nearly every day" for the frequency of occurence of 42 physical complaints. Administration time is estimated to be 5 to 10 minutes.

Measures such as Rose and Blackburn's (1968)

cardiovascular survey and Rose's (1967) chest pain questionnaire are too specific to be considered for use in this study; and measures such as the Columbia Adult Inventory (Lorge, Tuckman, and Zeman, 1953) are suitable only for limited segments of the general population. The Seriousness of Illness Rating Scale (Wyler, Masuda, and Holmes, 1968) is also innappropriate since it is concerned with comparison of different illnesses rather than with the assessment of a person's general health.

3.2 Social Functioning

Cheadle, Cushing, Drew, and Morgan's (1967) rating scale. This measure was designed for rating work performance of psychiatric patients. It contains 12 bipolar items with five verbally described categories per item. This rating scale is used by the British Ministry of Labour in the Industrial Rehabilitation Units.

Community Adaptation Schedule (Roen and Burnes, 1968). A self repost inventory devised as a research tool for use in community mental health research. It contains 217 questions covering six major areas (work community; family community; social community; larger community; commercial community; and professional community) and 33 subareas, some of which do not have to be completed by all the respondents. It requires at least sixth grade reading ability; administration time is estimated to be 30 to 50 minutes.

Distefano and Pryor's (1970) rating scale. This measure was designed for rating work performance of psychiatric patients. Ratings are made on a five point scale ranging from "superior" to "poor" for 24 items covering four areas (work habits and skills; interpersonal relations; reading and math comprehension; and general characteristics).

Ethridge's (1968) rating scale. This measure was designed for rating work performance of psychiatric patients. It contains 20 items with four labels per item; each label is a behavioural example. The items cover four areas (work skills, habits, and tolerance; socialization and attitudes toward others; personality characteristics; and general observations).

Heimler Scale of Social Functioning (Heimler, 1967). A comprehensive measure of social problems to be answered in a personal interview. There are separate forms for housewives, single students, married students, single employed, married employed, single unemployed, married unemployed, single retired, and married retired persons. It contains 55 or 60 questions, depending on the form used; 25 or 30 questions cover five areas (work and interests; financial security or satisfaction; friendship and social contacts; family relationships; and personal and sexual satisfaction), 30 questions form a negative index, and 5

form a synthesis scale. Except for the five synthesis items, the questions are scored "yes", "perhaps", or "no".

Katz Adjustment Scales (Katz and Lyerly, 1963, and see Michaux, Katz, Kurland, and Ganserseit, 1969, and Goodacre, Coates, Coles, Kendall, and MaCurdy, 1973). These rating scales about socially expected activities or free time activities are answered in interviews. The socially expected activities scales contain 16 items describing family and social responsibility, social activities, self care, home adjustment, and community activities. The items on Forms S2 and R2: Level of Performance of Socially Expected Activities, for the patient interview and the relative or other informant interview respectively, are rated "is not doing it", "is doing it some", or "is doing it regularly". The items on Forms S3 and R3: Level of Expectation, for the patient and the informant respectively, are rated "didn't expect him to be doing", "expected him to be doing some", or "expected him to be doing regularly". The free time activities scales contain 23 items covering hobbies, social and community activities, and self improvement activities. The items on Forms S4 and R4: Level of Free Time Activities, for the patient and informant interviews respectively, are rated "frequently", "sometimes", or "practically never". The items on Form R5: Level of Satisfaction with Free Time Activities for an

informant interview are rated "satisfied with what he does here", "would like to see him do more of this", or "would like to see him do less".

Minnesota Follow-up Study Rehabilitation Rating Scale (Wolff, 1961). This measure was designed for rating work performance of psychiatric patients. It contains 15 items with five response categories per item; the items cover three areas (work, activity, or task; people; and general observations).

M - R Fergus Falls Patient-Employee Rating Scale (Ravensborg, 1968). This measure was designed for rating work performance of psychiatric patients. It contains eight items about job behaviour with three response categories per item.

Normative Social Adjustment Scale (Barrabee, Barrabee, and Finesinger, 1955). A measure of social adjustment is made by recording clinical impressions during an interview. In general, the interview is structured to cover social activities in four areas (employment; economics; family life; and community), although the interviewee is free to discuss topics at will, even if he jumps from one area to another. The interviewer records numerical values for various behavioural descriptions in each area, and the sum for each area represents a profile of social adjustment.

Occupational Therapy Trait Rating Scale (Clark, Koch, and Nichols, 1965). This measure was designed for rating work performance of psychiatric patients. It contains 21 items covering five areas (creativity; dominance-manipulativeness; energy; social isolation; and orderliness).

Social Dysfunction Rating Scale (Linn, Sculthorpe, Evje, Slater, and Goodman, 1969). A rating scale completed on the basis of a personal interview. It contains 21 items covering three areas (self system; interpersonal system; and performance system). Items are rated on a six point scale ranging from "not present" to "very severe". Inter-rater reliabilities range from .54 to .86 depending on the item.

3.3 Subjective Distress

Katz Adjustment Scales (Katz and Lyerly, 1963) Form S5: Satisfaction with Free Time Activities for a patient interview. This form is identical to Form R5, which was described previously, except that the items are rated "satisfied with what I do here", "would like to do more of this", or "would like to do less of this".

M.M.P.I. A Scale (Welsh, 1956). The Minnesota Multiphasic Personality Inventory is a self report inventory consisting of approximately 550 questions, the exact number depending upon the form used. The questions are answered "yes" or "no", and, on some forms, "cannot say". It was

designed to provide scales covering many aspects of personality. The A scale, or first factor scale, consists of 39 items; it is described as a measure of personal discomfort, distress, general emotional upset, and anxiety. However, these items are not usually given in isolation, and the administration time for the complete M.M.P.I. is estimated to be 30 to 90 minutes.

Multiple Affect Adjective Check List (Zuckerman and Lubin, 1965). A check list containing 132 adjectives which are grouped into three scales (anxiety; depression; and hostility). There are two forms: one has a general time focus, the other refers to today. A review of studies using these scales (Zuckerman and Lubin, 1968) reports that the scales did not discriminate accurately between patients and normals, but they effectively measured changes in distress in a large number of studies.

Symptom Rating Scale (Kellner and Scheffield, 1973). A self report inventory designed to measure changes in distress. There are three forms: the Week Form, the Day Form, and the Hour Form. All forms contain 38 somatic and psychological symptoms which are rated on a four point scale ranging from "not at all" to "extremely, could not have been worse". Scores on four factor analytically derived subscales (anxiety; depression; somatic symptoms; and inadequacy) can be computed.

Vancouver Home Care Project Satisfaction Scales (Goodacre, Coates, Coles, Kendall, and MaCurdy, 1973). A self report inventory containing 52 or more items, the exact number depending upon the number of family members. The items cover five areas (family members; financial situation; home; neighborhood; and current events and social problems). The items are rated by marking one of six faces which range from most happy to most unhappy in appearance.

Yorklea Distress Scale (Quirk, Coates, Moyer, and Diamond, unpublished (b)). The Yorklea Distress Scale, consisting of 32 questions, was developed through a principal component factor analysis of the Yorklea Mental Health Scale (Quirk, Coates, Moyer, and Diamond, unpublished (a)), a self report inventory containing 72 questions which are answered "agree, yes, often, true", "undecided, in between, sometimes, uncertain", or "disagree, no, never, false". Unlike the M.M.P.I. A Scale, the Yorklea Distress is administered separately from the Yorklea Mental Health Scale.

Discussion

Medical problems can be measured by the California Medical Survey, the Cornell Index, the Cornell Medical Index, the Cumulative Illness Rating Scale, and the Physical Symptoms Inventory. Of these measures, the California Medical Survey and the Physical Symptoms Inventory appear to

be the only self report inventories which can be completed quickly and which would adequately cover the biological component of the three dimensional model of mental health.

Social functioning can be measured by Cheadle, Cushing, Drew, and Morgan's rating scale, the Community Adaptation Schedule, Distefano and Pryor's rating scale, Ethridge's rating scale, the Heimler Scale of Social Functioning, the Katz Adjustment Scales, the Minnesota Follow-up Study Rehabilitation Rating Scale, the M - R Fergus Falls Patient-Employee Rating Scale, the Normative Social Adjustment Scale, the Occupational Therapy Trait Rating Scale, and the Social Dysfunction Rating Scale. Of these measures, the Heimler Scale of Social Functioning appears to be the only one which can be completed quickly, be appropriate for use with a non-psychiatric population, and which would adequately cover the social component of the three dimensional model.

Subjective distress, or its opposite, self satisfaction, can be measured by the Katz Adjustment Scale, the M.M.P.I. A Scale, the Multiple Affect Adjective Check List, the Symptom Rating Scale, the Vancouver Home Care Project Satisfaction Scales, and the Yorklea Distress Scale. Of these measures, the Symptom Rating Scale and the Yorklea Distress Scale appear to be the only self report inventories which can be completed quickly and which would adequately

cover the psychological component of the model.

Thus the most appropriate measure to test the three dimensional model of mental health would be based upon the California Medical Survey or the Physical Symptoms Inventory; the Heimler Scale of Social Functioning; and the Symptom Rating Scale or the Yorklea Distress Scale. According to the Continuing Report (Project T.E.A.M., 1972) and Coles (unpublished), a questionnaire of this type was employed by Project T.E.A.M. The following chapter will describe this measure.

METHODS

Chapter 4

Description of the Entire Sample

This chapter describes the questionnaire used by Project T.E.A.M., its administration, and the representativeness of the questionnaire sample.

4.1 The Questionnaire

The Project T.E.A.M. Questionnaire was a 112 item self report inventory formed by combining 38 items from the California Medical Survey, 30 items from the Heimler Scale of Social Functioning, and the 32 item Yorklea Distress Scale with 7 "original" items relating to physical complaints and 5 items relating to overall satisfaction with treatment received. The Heimler items for the negative index and the synthesis scale were omitted; all other Heimler items were used in the Project T.E.A.M. Questionnaire. The items from the California Medical Survey were selected on the basis of face validity in order to give coverage of the area; the "original" items were added to complete this coverage (see Coles, unpublished). The items were presented under four headings as follows: I. Health - the 7 "original" and the 38 California Medical Survey items, plus 9 items from the Yorklea and 1 from the Heimler; II. Treatment Satisfaction - this section consisting of the 5

satisfaction items was completed only on questionnaires administered after treatment was finished; III. Personal - the remaining 29 Heimler items plus 20 items from the Yorklea; and IV. General - the remaining 3 Yorklea items. The treatment satisfaction items were worded in the past tense and had five response alternatives; all the other items were worded in the present and had three response alternatives. There were separate forms for married employed, single employed, married unemployed, single unemployed, married retired, and single retired persons, married students, single students, and (married) housewives. The forms differed in the wording of ten of the Heimler questions relating to family relationships, finances, and work. In addition, five Heimler items relating to family relationships were completed by married persons only; there were no comparable items on the forms for single persons. The five questions which appeared only on the forms for married persons were omitted in the present study so that there would be the same number of questions per subject. Since the treatment satisfaction items (all the items in Part II) were not answered on the questionnaires completed before treatment (see section 4.2), the total number of items was reduced by an additional five. The remaining 102 questions are listed in Appendix A.

4.2 Administration of the Questionnaire

The Project T.E.A.M. Questionnaires were completed by patients attending the Family Pratice Teaching Unit (690 West 11th Avenue, Vancouver, B.C.) during the period from July 1, 1973 to June 30, 1974. Patients were asked to complete the questionnaire at the commencement of an episode of service (prior to seeing a staff member), at the conclusion of an episode of service, and two weeks after the end of treatment, (see Stoddart, 1976 for a definition of 'episode of service'). Although some episodes of service may have started earlier than July 1, 1973, and some may have been completed after June 30, 1974; the majority of the questionnaires were completed within that period. The cover page on all forms of the questionnaire explained why questionnaires were being used and gave instructions for their completion (see Appendix B). Note that there are instructions for questicnnaire respondents other than the patient when the patient did not speak English, was senile, or was too ill or tco ycung to complete the questionnaire themsleves. Only questionnaires completed at the commencement of an episode of service were used in the present study. In some cases, a patient had completed more than one such questionnaire as the result of visiting the Family Practice Teaching Unit for two or more complaints at different times during the year in which the data was

collected. In these cases, only the first questionnaire completed was selected for use in this study. The elimination of all but the first questionnaire per patient resulted in 949 questionnaires.

4.3 Representativeness of the Entire Sample

After the completion of a questionnaire, a staff member of the Family Practice Teaching Unit recorded identifying and demographic information. The demographic information consisted of the sex, age, and educational level of the patient, and up to four diagnoses. The distributions of sex, age, and educational level in the entire sample are presented in the next chapter. The diagnostic information was recorded using the Canuck Book Classification System which employs the 371 categories now known as the International Classification of Health Problems in Primary Care (WONCA, 1975) plus some additional categories (such as "previous problem is being resolved") generated by Family Practice Teaching Unit staff to cover problems specific to the clinic (James, 1977). Since very few patients had more then one diagnosis recorded; (primary, secondary, tertiary, and quaternary diagnoses had 1.5%, 76.5%, 93.6%, amd 98.9% missing respectively), only the primary diagnoses were considered.

In order to use the diagnostic information, it was necessary to reduce the number of categories. The initial

approach to this category reduction was to convert the Canuck Book diagnoses to indices of seriousness of illness (see Wyler, Masuda, and Holmes, 1968). The first attempt was not satisfactory since it resulted in the assignment of almost all of the diagnoses to the middle index of seriousness. Further attempts, which involved making finer discriminations concerning the seriousness of illness, were impossible since the diagnostic information only provided a label for the patient's problem, and thus did not provide any information about severity.

The reduction of the number of diagnostic categories was achieved by grouping diagnoses according to the type of problem. The Canuck Book diagnoses which occurred in the sample of questionnaire respondents are listed according to the six category "types" in Appendix C. Category 1 consists of essentially healthy people, for example, those requesting routine examinations or preventative health measures. Category 2 consists of all diagnoses with a large social or psychological component, i.e., diagnoses without a clear organic pathology. Category 3 consists of diagnoses referring to problems of the genitourinary system. Category 4 consists of musculoskeletal and skin problems. Category 5 consists of digestive, cardiovascular and pulmonary, and nervous system problems. Category 6 contains all the remaining diagnoses: ear and eye problems, viruses,

infections, and other generalized reactions.

Canuck Book diagncses were readily available for the population of patients who attended the Family Practice Teaching Unit during a previous year. This information was used to determine the representativeness or the sample of questionnaire respondents. The diagnoses of all patients attending the Family Practice Teaching Unit during the period of July 1, 1971 to June 30, 1972 were classified as category types 1, 2, 3, 4, 5, or 6; and the proportions of each of these category types were computed for the sample of questionnaire respondents and for the 1971/1972 patient population (see Table 1). Note that the proportions appear to be fairly similar for the two groups. A chi-square was computed, even though statistial significance was expected due to the large number of observations (almost 9,000); a value of 23.07 with five degrees of freedom was obtained. A phi prime (which can range in value between zero and one) was then calculated to determine the magnitude of the difference between the groups; a value of .05 was obtained. This indicates that the statistical difference between the two groups can be attributed almost entirely to the large number of observations, and that the questionnaire respondents are a typical diagnostic sample of the patients who attend the Family Practice Teaching Unit.

Table 1

Comparison of Diagnostic Categories of Questionnaire Respondents to a Previous Year Patient Population

	Diagnostic Categories*					
	1	2	3	4	5	6
71/72 Patients (N = 7898)	21.6%	13.3%	11.1%	18.9%	16.6%	18.5%
Present Study (N = 935)	20.4%	11.1%	9.8%	19.6%	14.3%	24.5%

Chi-square = 23.07 with 5 degrees of freedom

Phi prime = .05

* see Appendix C for Diagnostic Categories

The following chapter describes the selection of questionnaires for factcr analysis, reports comparisons between the factored sample and the entire sample of questionnaire respondents for the demographic information, and discusses the representativeness of the factored sample.

Chapter 5

Description of the Factored Sample

In the previous chapter, the questionnaire, its administration, and the sample of questionnaire respondents were described. This chapter describes the factored sample, that subgroup of the entire sample which was used to test the three dimensional model of mental health.

5.1 Selection of Questionnaires for Factor Analysis

The selection of questionnaires for factor analysis was made on the basis of completeness. The number of missing questionnaire items was computed for each subject, and a distribution of the number of missing items was generated in order to determine how much missing data was permissable (see Table 2). Because of the large increase in frequency shown at 47 missing items, the 136 subjects (14% of the entire sample) with 47 or more missing items were excluded from factor analysis. Fourty-seven missing items corresponds to the number of items in Parts III and IV of the questionnaire. Thus subjects who misunderstood the instructions at the beginning of Part II (the treatment satisfaction items) and did not complete the remainder of the questionnaire, or respondents other than the patients who did not wish to answer questions about themselves would have 47 or more missing items.

Table 2

Frequency of Missing Items

#	F	#	F	#	F	#	F
0	485	16	1	40	4	63	1
1	130	18	1	41	1	65	1
2	41	20	1	42	7	70	1
3	29	21	3	44	1	71	1
4	21	23	3	46	1	73	3
5	13	24	3	47	82	74	1
6	9	26	2	48	13	75	2
7	1	28	2	49	4	78	2
8	3	30	1	50	6	81	1
9	5	32	2	51	2	90	2
10	4	33	1	52	2	91	1
11	7	34	1	53	1	97	1
12	12	35	6	54	3	100	1
13	3	36	1	57	2	102	1
14	1	38	2	58	1		
15	3	39	2	59	1		

= number of missing items F = frequency

5.2 Demographic Information for the Factored Sample

The factored sample consisted of the 813 subjects with fewer than 47 missing questionnaire items. Demcgraphic information had been recorded for most of these subjects. Table 3 shows the proportion of males and females in the factored sample and in the entire sample. Note that the proportions appear to be quite similar.

The age of subjects ranged from 1 to 91, thus is was necessary to create a small number of age categories. The criteria for these categories were that each category should span approximately the same range, and that the category limits should be as similar as possible to those commonly used, (for example, 65 is often used as the mandatory age of retirement). Five age categories were created: under 20, 20 to 34, 35 to 49, 50 to 64, and 65 and over. Table 4 shows the proportion of subjects in the factored sample and in the entire sample in each age category. These proportions appear quite similar for the 35 to 49, 50 to 64, and 65 and over categories; however, the proportion of subjects under 20 appears to be smaller in the factored sample, (and consequently the proportion of subjects in the 20 to 34 category is larger in the factored sample than in the entire sample).

Table 3

Comparison of Sex of Entire Sample and Factored Sample

	Sex	
	M	F
Entire Sample (N = 922)	36.6%	63.4%
Factored Sample (N = 787)	35.5%	64.5%

Table 4

Comparison of Age of Entire Sample and Factored Sample

	Age				
	1-19	20-34	35-49	50-64	65-91
Entire Sample (N = 897)	19.0%	58.5%	12.3%	6.7%	3.6%
Factored Sample (N = 774)	15.9%	62.1%	12.1%	6.7%	3.1%

The educational information about the subjects was recorded using a seven category system for the highest educational level attained. The categories were: no education, elementary school, some high school, completed high school, technical or vocational school, some university, and university degree. Table 5 shows the proportion of subjects in the factored sample and in the entire sample in each educational category. Note that the proportions of the lower educational levels (no education, elementary school, and some high school) are smaller in the factored sample, while the proportions of the higher categories (completed high school, technical or vocation school, some university, and university degree) are larger in the factored sample than in the entire sample.

Table 6 shows the proportion of subjects in the factored sample and in the entire sample in each diagnostic category. Note that the proportions appear to be quite similar.

5.3 Representativeness of the Factored Sample

Table 7 shows the correlations between the various demographic variables, (except the diagnostic categories since they are on a nominal scale), and between the demographic variables and the number of missing questionnaire items. Note that the correlations are close

Table 5

Comparison of Education of Entire Sample and Factored Sample

	Educational Level*						
	1	2	3	4	5	6	7
Entire Sample (N = 889)	8.8%	4.3%	19.8%	20.7%	11.8%	17.2%	17.4%
Factored Sample (N = 760)	5.4%	2.9%	18.8%	22.0%	12.5%	19.9%	18.6%

* 1 = no education
2 = elementary school
3 = some high school
4 = completed high school
5 = technical or vocational school
6 = some university
7 = university degree

Table 6

Comparison of Diagnoses of Entire Sample and Factored Sample

	Diagnostic Categories*					
	1	2	3	4	5	6
Entire Sample (N = 935)	20.4%	11.3%	9.8%	19.6%	14.2%	24.6%
Factored Sample (N = 800)	20.2%	11.6%	10.1%	19.5%	14.1%	24.4%

* see Appendix C for Diagnostic Categories

Table 7

Correlations of Demographic Information

and The Number of Missing Questionnaire Items

variables	correlation	N
sex* - age	-.05	897
sex - educ	-.00	889
age - educ	.29	867
sex - # miss	-.06	922
age - # miss	.02	897
educ - # miss	-.27	889

miss = the number of missing questionnaire items

* sex is coded with the higher value assigned to females

to zero, except for the correlations between between age and educational level, and between educational level and the number of missing questionnaire items. The observed correlation between age and educational level can be attributed to a large extent to the fact that the subjects in the lowest age category (under 20) are not old enough to have attained the higher educational categories.

In order to further investigate the relationships between the demographic variables and the number of missing questionnaire items, a step-wise multiple regression procedure was employed. The diagnostic categories were dummy coded, and missing data was handled by listwise deletion of cases (see Table 8). Although the regression could predict only seven per cent of the total variance, educational level was highly significant in predicting the number of missing items (as expected from the observed correlation between these variables). Age and sex also helped in the prediction. The role of educational level in predicting the number of missing questionnaire items can be accounted for in two ways. First, subjects with lower educational levels would be more likely to have failed to complete the questionnaire than subjects at the higher educational levels due to reading difficulties. Poor reading skills could be expected to make it hard for

Table 8

Regression of Demographic Variables on the Number of Missing Questionnaire Items

variable	B	std error B	F
educ	-2.87	.37	59.47
age	1.77	.70	6.34
sex*	-2.80	1.32	4.47

variables not in the equation	F
dummy 1**	0.43
dummy 2	0.11
dummy 3	0.12
dummy 4	0.04
dummy 5	0.04

adjusted R square = .07

* sex is coded with the higher value assigned to females
** diagnostic categories are coded as follows:

	value of dummy variable				
category	1	2	3	4	5
1	1	0	0	0	0
2	0	1	0	0	0
3	0	0	1	0	0
4	0	0	0	1	0
5	0	0	0	0	1
6	-1	-1	-1	-1	-1

subjects to understand the instructions and the questions. Also subjects with reading difficulties would require more time to read the questionnaire items and consequently, would be more likely to have failed to complete the questionnaire during the time spent waiting to see a staff member. The other way in which educational level could be expected to predict the number of missing questionnaire items has to do with non-patient respondents. Patients in the lowest age category (under 20) would also be in the lower educational categories; and this group of young subjects could be expected to contain a large percentage of the questionnaires which were answered by non-patient respondents. It would be expected that higher numbers of missing items would occur on questionnaires completed by a respondent other than the patient, than on patient answered answered questionnaires, as a result of the questionnaire instructions for non-patient respondents, and also because the respondents may not have had enough information to answer all the questions for the patient.

A second multiple regression was performed to determine the extent to which the demographic variables could be used to predict whether or not a particular subject was included in the factored sample (see Table 9). The dummy coding and missing data procedures described in the previous paragraph

Table 9

Regression of Demographic Variables on the Selection for the Factored Sample

variable	B	std error B	F
educ	0.05	.01	71.63

variables not in the equation	F
sex	3.32
age	0.90
dummy 1*	0.77
dummy 2	0.01
dummy 3	0.01
dummy 4	0.01
dummy 5	0.70

adjusted R square = .08

* diagnostic categories are coded as follows:

	value of dummy variable				
category	1	2	3	4	5
1	1	0	0	0	0
2	0	1	0	0	0
3	0	0	1	0	0
4	0	0	0	1	0
5	0	0	0	0	1
6	-1	-1	-1	-1	-1

were also used for this regression. Although the regression could predict only eight per cent of the total variance, note that educational level is again a powerful predictor, while age and sex are no longer significant predictors. The additional information from this regression, combined with the previous information, indicates that there is definitely a non-zero, though extremely small, relationship between educational level and selection for the factored sample. Thus the factored sample is a typical sample of Family Practice Teaching Unit patients to the extent than any sample of respondents to a self administered paper and pencil measure would be a typical sample of their population.

The following chapter describes the procedures employed to test the three dimensional model of mental health using the factored sample.

RESULTS AND DISCUSSION

Chapter 6

The Test of the Model

The previous chapter described the selection of questionnaires for factor analysis, the demographic information for the factored sample, and the representativeness of the factored sample. This chapter describes the procedures which were used to test the three dimensional model of mental health and discusses the results. All analyses were done using SPSS version 6.02 (see Nie, Hull, Jenkins, Steinbrenner, and Bent, 1975).

6.1 Treatment of Missing Data

The selection of questionnaires for the factored sample was made on the basis of completeness (see section 5.1); the 813 questionnaires with less than 47 missing items were chosen for factor analysis. In order to use the information on all these questionnaires, it was necessary to make some substitution for missing items. The means and standard deviations (based on all the available responses) were computed for each item. The means were then rounded to the nearest integer, and substituted for missing items. Appendix D shows the item distributions after the substitutions for missing data, and also indicates the number of mean substitutions made. More complex methods,

i.e. iterative methods, for the treatment of missing data were not employed as substantial improvement over mean substitution was not expected.

6.2 The Factor Analyses

The first analysis performed was a principal components. The number of factors was not specified since this analysis was used to obtain the eigenvalues for the factors (see Appendix E). A plot of the eigenvalues indicated that a two, three, or eleven factor solution was the most appropriate for explaining the data. Principal component analyses were then performed for two, three, and eleven factors. The factor loadings for the eleven factor solution showed only two items with high loadings on the eleventh factor. These two items previously had loadings near zero on all the factors; thus the increase in the variance accounted for by the eleven factor solution appeared to be the result of these two items entering into the solution. In addition to the eleventh factor, many of the other factors in the eleven factor solution were not clearly defined, (i.e. there were very few items with high loadings on these factors, and the items which did load on the factors also had non-zero loadings on other factors). Consequently, plans for factoring the eleven factors to obtain a three factor solution were abandoned.

Since the two and three factor principal components solutions accounted for only a small amount of the variance, image analyses were performed. Programming limitations restricted the number of variables to 100; items 11 (Do you cough up blood?) and 27 (Do you have fits or convulsions?), the two items with the smallest standard deviations, were omitted from further analysis. In the first image analysis, the number of variables was not specified in order to obtain the eigenvalues for the factors (see Appendix F). A plot of the eigenvalues indicated that a two, three, or seven factor solution was the most appropriate for explaining the data. Image analyses were then performed for two, three, and seven factors. The factor loadings for the seven factor solution could not be explained theoretically, that is, the items which had non-zero loadings on any particular factor appeared to be totally unrelated in content. The item distributions for the items loading on a factor were then examined; and the distributions were remarkedly similar. Thus the seven factor solution appeared to be an artifact of the item distributions.

Next, rotations of the two and three factor image analyses were performed. For each of the solutions,

varimax, quartimax, equimax, and oblique rotations (direct oblimin) with deltas of 0, -.1, -.2, -.3, -.4, -.5, -1, -1.5, -2, -2.5, -3, -4, -5, -6, -7, -8, -9, and -10 were generated. For both the two and three factor solutions, the oblique rotation with a delta of zero, (the rotation which allowed the highest correlations between factors), was the most interpretable (according to Thurstone's rules of simple structure). These rotations were then compared to the varimax principal components analysis results; for both the two and three factor sclutions, the principal components varimax was better. Oblique rotations (direct oblimin) with deltas of 0, -1, -2, -3, -4, -5, and -6 were performed for the two and three factor principal components solutions; for both two and three factors the oblique rotation with a delta of zero was best (see Appendix G and Appendix H).

The two and three factor rotations were then rescaled in order to allow comparisons across factors. The rescaling procedure was accomplished by multiplying each factor loading by the square root of the quantity the total number of items (100) divided by the sum of the squared loadings for that factor. The rescaled loadings are shown in Table 10 and Table 11. In each of these tables, large loadings (with an absolute value of at least 1.95) are indicated by upper case letters for the item source, and smaller loadings (with an absolute value of at least .95 but less than 1.95)

Table 10
Rescaled* Loadings for Two Factors

	Item	Factors 1	Factors 2	Sources** 1	Sources** 2
1	SORENESS	-.14	1.45		o
2	HEADACHES	.01	1.56		y
3	TINGLING	.09	1.89		y
4	ITCHINESS	.19	.66		
5	LUMP	-.06	.44		
6	VARICOSE V	-.22	.63		
7	STIFF	-.35	1.26		c
8	RASH	.21	.25		
9	BLOOD URINE	.11	.59		
10	BLOOD BOWEL	.16	.89		
12	NOSEBLEEDS	-.16	.50		
13	GUMS BLEED	.06	.99		c
14	OPEN WOUND	.36	.36		
15	BLADDER PRB	-.12	1.17		c
16	BOWEL PRB	.13	1.01		c
17	PILES	-.13	.70		
18	GENITAL PRB	.42	.48		
19	HAVE CHLDRN	-.24	.36		
20	PERSPIRE EX	.02	1.68		c
21	COLD SWEATS	.31	1.76		y
22	HOT CLD SPEL	.05	1.96		C
23	DIZZY	.19	1.88		c
24	RESTLESS	.98	1.20		y
25	FACE TWITCH	.50	.90		
26	ARMS TWITCH	.26	.95		c
28	WEIGHT PRB	.03	.88		
29	INDIGESTION	.01	1.64		c
30	ACID STOM	.22	1.32		y
31	PUFFED OUT	.09	1.78		c
32	APETITE GOOD	.30	.00		
33	BELCH	.23	.60		
34	STOM PRB	.46	1.74		c
35	NAUSEATED	.18	1.95		C
36	FALL ASLEEP	.57	1.62		c
37	SLEEP BADLY	.60	1.64		c
38	SLEEP ENOUGH	.64	1.24		c
39	AWAKE TIRED	.59	1.72		c
40	FEEL WEAK	.56	1.93		y
41	TIRE QUICKLY	.39	2.11		C
42	WORN OUT	.21	2.26		C
43	SHORT BREATH	.13	2.25		C
44	BREATHNG PRB	.06	1.89		c
45	CAN RELAX	1.12	1.42	h	h
46	WORRYNG TYPE	1.02	1.31	y	y
47	WORRY SICK	1.28	1.43	y	y
48	NERVOUS	1.02	1.86	y	y
49	TREMBLE	.98	1.28	c	c
50	EAR PRB	.25	.62		
51	EYE PRB	-.13	.82		
52	NOSE PRB	.03	.64		

	Item	Factors 1	Factors 2	Sources** 1	Sources** 2
53	THROAT PRB	-.03	.88		
54	CHEST PRB	-.09	1.31		o
55	HEART PRB	-.28	.83		
56	MEET PEOPLE	-1.06	.13	h	
57	AVOID PEOPLE	.77	.23		
58	ENJOY ENTERT	-.73	.25		
59	BE ON GUARD	1.57	.33	y	
60	BLOOD BOIL	1.16	.34	y	
61	PEOPLE BOSSY	1.16	.24	y	
62	SELF CONSCI	1.38	.55	y	
63	MISUNDERSTOD	1.58	.46	y	
64	CANT TEL ALL	1.37	.35	y	
65	CAN CONFIDE	-1.08	-.14	h	
66	SOLVE PRB	1.25	.19	y	
67	PEOPLE CARE	-1.36	.13	h	
68	LIKE WORK	-1.53	.29	h	
69	LIKE PEOPLE	-1.35	.58	h	
70	RIGHT WORK	-1.38	.19	h	
71	GET AHEAD	-.99	-.08	h	
72	BETTER OFF	-1.15	.35	h	
73	ABLE TO SAVE	-1.05	.11	h	
74	SPEND EASE	-1.53	.34	h	
75	SECURE	-1.85	.13	h	
76	FEEL SECURE	-1.90	.07	h	
77	SATISFIED	-1.20	-.05	h	
78	LIKE FAM LIF	-1.23	.16	h	
79	HOBBIES	-1.28	-.28	h	
80	PEOPLE CARED	-1.53	.02	h	
81	HELP FAM	-1.10	.08	h	
82	HELP FRIEND	-.63	.05		
83	ENJOY SEX	-.62	-.33		
84	ENJOY CHLDRN	-1.01	.16	h	
85	BROOD	1.81	.23	y	
86	REGRET	1.69	.24	y	
87	THINGS WRONG	2.08	.22	Y	
88	NOTHNG WORTH	1.96	.21	Y	
89	CANT START	1.67	.59	y	
90	DAYDREAM	1.17	.21	y	
91	DISTRACTED	1.32	.48	y	
92	THOUGHT BOTH	1.46	.52	y	
93	CANT DECIDE	1.48	.38	y	
94	LIKES CHANGE	1.33	.44	y	
95	FEEL USELESS	1.62	.49	y	
96	THNK NO GOOD	1.46	.45	y	
97	HAPPY CHLDH	-1.80	.19	h	
98	SECURE CHLDH	-1.64	-.02	h	
99	GOOD PREP	-2.07	.29	H	
100	ONE PHILOS	-.09	.10		
101	OWN DEATH	.44	.17		
102	AV LOT WORSE	.89	.32		

* see section 6.2 for rescaling procedure

** small loadings: o=original, c=CMS, h=Heimler, y=Yorklea
large loadings: O=original, C=CMS, H=Heimler, Y=Yorklea

Table 11
Rescaled* Loadings for Three Factors

	Item	Factors 1	2	3	Sources** 1	2	3
1	SORENESS	-.33	1.57	-.10		o	
2	HEADACHES	.29	1.57	.18		y	
3	TINGLING	.63	1.84	.33		y	
4	ITCHINESS	.64	.57	.22			
5	LUMP	-.01	.45	.06			
6	VARICOSE V	-.15	.67	.17			
7	STIFF	-.65	1.42	-.06		c	
8	RASH	.19	.24	-.15			
9	BLOOD URINE	.16	.59	-.04			
10	BLOOD BOWEL	.28	.89	-.03			
12	NOSEBLEEDS	-.09	.52	.14			
13	GUMS BLEED	.55	.93	.33			
14	OPEN WOUND	.62	.28	-.03			
15	BLADDER PRB	.19	1.16	.30		c	
16	BOWEL PRB	-.23	1.11	-.40		c	
17	PILES	-.88	.90	-.54			
18	GENITAL PRB	1.01	.33	.19	c		
19	HAVE CHLDRN	-.34	.42	.06			
20	PERSPIRE EX	.72	1.60	.51		c	
21	COLD SWEATS	.44	1.77	-.15		y	
22	HOT CLD SPEL	.48	1.94	.25		c	
23	DIZZY	.30	1.92	-.09		c	
24	RESTLESS	1.37	1.07	-.35	y	y	
25	FACE TWITCH	1.12	.76	.15	c		
26	ARMS TWITCH	.88	.83	.31			
28	WEIGHT PRB	.35	.84	.21			
29	INDIGESTION	.02	1.71	-.05		c	
30	ACID STOM	.18	1.36	-.20		y	
31	PUFFED OUT	.71	1.71	.40		c	
32	APETITE GOOD	.14	.01	-.32			
33	BELCH	.28	.59	-.12			
34	STOM PRB	.35	1.79	-.44		c	
35	NAUSEATED	.43	1.96	.03		c	
36	FALL ASLEEP	.37	1.68	-.57		c	
37	SLEEP BADLY	.65	1.64	-.40		c	
38	SLEEP ENOUGH	.12	1.34	-.87		c	
39	AWAKE TIRED	.59	1.74	-.43		c	
40	FEEL WEAK	.25	2.02	-.66		Y	
41	TIRE QUICKLY	.26	2.19	-.41		C	
42	WORN OUT	.51	2.27	.04		C	
43	SHORT BREATH	.45	2.26	.12		C	
44	BREATHNG PRB	.15	1.94	-.02		c	
45	CAN RELAX	.77	1.45	-1.05		h	h
46	WORRYNG TYPE	.98	1.27	-.72		y	
47	WORRY SICK	.97	1.43	-1.11		y	y
48	NERVOUS	1.14	1.81	-.61	y	y	
49	TREMBLE	1.49	1.13	-.25	c	c	
50	EAR PRB	-.21	.72	-.55			
51	EYE PRB	-.39	.93	-.15			
52	NOSE PRB	-.33	.74	-.32			

Item	Factors 1	2	3	Sources** 1	2	3
53 THROAT PRB	-.14	.94	-.09			
54 CHEST PRB	-.22	1.40	-.08		o	
55 HEART PRB	-.31	.90	.13			
56 MEET PEOPLE	.41	-.08	1.86			h
57 AVOID PEOPLE	1.47	.01	.06	y		
58 ENJOY ENTERT	.68	.02	1.60			h
59 BE ON GUARD	1.94	.11	-.72	y		
60 BLOOD BOIL	1.97	.07	-.11	Y		
61 PEOPLE BOSSY	2.38	-.13	.24	Y		
62 SELF CONSCI	2.19	.26	-.25	Y		
63 MISUNDERSTOD	1.92	.25	-.76	y		
64 CANT TEL ALL	.97	.32	-1.21	y		y
65 CAN CONFIDE	.08	-.29	1.63			h
66 SOLVE PRB	1.45	.03	-.66	y		
67 PEOPLE CARE	-.22	.03	1.80			h
68 LIKE WORK	-.23	.17	2.02			H
69 LIKE PEOPLE	-.26	.50	1.73			h
70 RIGHT WORK	-.25	.09	1.80			h
71 GET AHEAD	-.05	-.19	1.40			h
72 BETTER OFF	-.39	.32	1.35			h
73 ABLE TO SAVE	-.18	.03	1.38			h
74 SPEND EASE	-.49	.28	1.81			h
75 SECURE	-.71	.07	2.11			H
76 FEEL SECURE	-.76	.01	2.13			H
77 SATISFIED	-.48	-.09	1.35			h
78 LIKE FAM LIF	.15	-.01	1.91			h
79 HOBBIES	-.31	-.38	1.61			h
80 PEOPLE CARED	-.03	-.15	2.18			H
81 HELP FAM	.65	-.19	2.12			H
82 HELP FRIEND	1.06	-.25	1.77	h		h
83 ENJOY SEX	.22	-.47	1.09			h
84 ENJOY CHLDRN	.15	.02	1.58			h
85 BROOD	2.06	.01	-.98	Y		
86 REGRET	2.12	-.01	-.75	Y		
87 THINGS WRONG	2.21	-.00	-1.24	Y		y
88 NOTHNG WORTH	1.49	.12	-1.65	y		y
89 CANT START	1.82	.42	-.97	y		y
90 DAYDREAM	2.10	-.09	-.02	Y		
91 DISTRACTED	1.95	.23	-.35	Y		
92 THOUGHT BOTH	2.36	.21	-.23	Y		
93 CANT DECIDE	2.35	.06	-.26	Y		
94 LIKES CHANGE	1.45	.31	-.78	y		
95 FEEL USELESS	2.26	.22	-.55	Y		
96 THNK NO GOOD	1.59	.30	-.84	y		
97 HAPPY CHLDH	-.39	.07	2.30			H
98 SECURE CHLDH	-.39	-.13	2.06			H
99 GOOD PREP	-.67	.20	2.44			H
100 ONE PHILOS	-.18	.14	-.02			
101 OWN DEATH	.97	.02	.13	y		
102 AV LOT WORSE	.71	.28	-.72			

* see section 6.2 for rescaling procedure
** small loadings: o=original, c=CMS, h=Heimler, y=Yorklea
large loadings: O=original, C=CMS, H=Heimler, Y=Yorklea

are indicated by lower case letters for the item source. On the two factor solution, note that the social functioning items and many of the subjective distress items load on the first factor, while the medical items and a few of the distress items with psychophysical overtones load on the second factor. On the three factor solution, note that many of the subjective distress items load on the first factor, the medical items tend to load on the second factor, and the social functioning items load on the third factor.

A careful comparison of the two and three factor solutions shows that the additional factor in the three factor solution is not merely the result of splitting the first factor in the two factor solution. The three factor solution appears to be easier to interpret; in general, the very small loadings are closer to zero and the large loadings are slightly larger in the three factor solution than in the two factor solution. Table 12 gives additional information for comparing the two solutions. Note that the three factor internal consistencies are smaller than the two factor internal consistencies by a very slight amount; but the factor correlations are also smaller by a slight amount and the three factor solution accounts for slightly more variance than the two factor solution. Thus the three factor solution appears to be slightly better overall than the two factor solution.

Table 12

Comparison of the Two and Three Factor Solutions

	Two Factor Solutions	Three Factor Solutions
Internal Consistencies		
Factor 1	.85	.83
Factor 2	.84	.75
Factor 3	-	.75
Factor Correlations		
Factors 1 & 2	.29	.24
Factors 1 & 3	-	-.25
Factors 2 & 3	-	-.24
Variance Cummulated Over Factors	16.8%	19.4%

6.3 Discussion

The results of the factor analyses showed that the items from the Yorklea Distress Scale did not tend to load on the same factor. In contrast, the Heimler social functioning items tended to load on the same factor; and when the loadings for solutions with a large number of factors were examined, the individual subscales loaded on separate factors. In an attempt to determine if this observation about the Yorklea was the result of the measure itself or the result of an inherent difficulty in separating subjective distress from medical problems and social functioning, the development of the Yorklea Distress Scale was examined (see Appendix I). The items in the Yorklea are based on a number of concepts which may not be highly related to one another, and the measure itself appears to be the first (and unrevised) version. Thus the measure itself must be at fault to some extent.

The present study assumed that the California Medical Survey and the original items were an adequate measure of medical problems, that the Heimler items were an adequate measure of social functioning, and that the Yorklea items were an adequate measure of subjective distress. Despite the weakness of the assumptions, the results of the factor

analyses showed that it is possible to identify these components of mental health. Thus the present study indicates that mental health is multi-dimensional, and that the three dimensional model provides the best theoretical formulation of this concept.

Chapter 7

Conclusions

The present study was undertaken in order to provide support for a three dimensional model of mental health based upon biological, social, and psychological components. The biggest obstacle to this type of research is the scarcity of valid measures. Ideally a researcher should be able to choose at least three or four measures of each component of health from a pool of dozens and dozens of instruments. The measures selected would be the most appropriate for use with the subjects in the study. Validity studies conducted in a variety of populations for each measure would guide the researcher in his selections. Clearly, the present situation is far removed from the ideal. Today's researcher must choose from an extremely limited number of measures. In addition, all the measures (except the M.M.P.I. and the Cornell Medical Index) are most notable for their total lack of information concerning their validity in even one population. Thus a major direction for further research is that of the establishing the validity of existing measures with various types of subjects and developing additional measures of different aspects of the components of mental health.

The obstacle concerning the available measures of the components of mental health has had the effect of imposing a severe limitation on the type of research which can be done in the area. Ideally, the researcher should administer a battery of tests consisting of many measures of each component of mental health to a large sample of subjects. In this way it would be possible to look at test scores based on the responses to a number of items rather than looking at the item responses themselves. As long as researchers are restricted to analysing item responses, the results of factor analyses will not be able to account for a large per cent of the variance, and powerful support for the theoretical models will not be possible.

A further implication of this research concerns the theoretical models themselves. Numerous researchers have bemoaned the lack of a clear definition of mental health. Although the three dimensional model of mental health provides a good theoretical explanation of the concept, the components of the model are clearly not easy to separate. Indeed, it may be the case that medical problems, social functioning, and subjective distress are all both the causes

and effects of many complex relationships. Thus even multi-dimensional models of mental health may be too simplistic to provide good criteria for research definitions of the phenomenon. One approach to this problem is to concentrate on defining what is not mental health. Perhaps in this way it will be possible to obtain a better understanding of the concept of mental health.

Appendix A

The Questionnaire

There are separate forms for married employed, single employed, married unemployed, single unemployed, married retired, and single retired persons, married students, single students, and (married) housewives. Except for ten of the questions (where the differences are noted), all questions are identical on all the forms.

1. Are you suffering from soreness, tenderness, aches or pains?
2. Are you bothered by headaches or pains in the head?
3. Do parts of your body often have feelings like burning, tingling, crawling, or like "going to sleep"?
4. Are you suffering from itchiness, or undue sensitivity of the skin?
5. Do you have a lump, mass or swelling?
6. Do you have varicose veins or swellings of the veins in your legs?
7. Are you suffering from stiffness of the muscles or joints?
8. Do you have a rash or skin discoloration?
9. Do you have blood in your urine?
10. Do you have blood in your bowel movements?
11. Do you cough up blood?
12. Do you have nosebleeds?
13. Do your gums bleed?
14. Do you have any cuts, sores, boils or open wounds?
15. Do you have any bladder problems, such as troubling in passing your water, or having to pass water very often?
16. Are you having problems with your bowels, or bowel movements?
17. Do you have piles or hemorrhoids?
18. Is there something wrong with your genital or private organs?
19. Are you able to have children?
20. Do you perspire excessively?
21. Are you bothered by "cold sweats"?
22. Do you get hot and cold spells?
23. Do you feel dizzy, or faint?
24. Do you have periods of such great restlessness that you cannot sit still very long?
25. Do you have twitchings of your head, face or shoulders?

26. Do you have twitches in your arms and legs?
27. Do you have fits or convulsions?
28. Are you suffering from weight problems?
29. Do you suffer from indigestion?
30. Are you bothered by acid (sour) stomach several times a week?
31. Do you feel full or puffed out after you eat?
32. Is your appetite good?
33. Do you belch after you eat?
34. Does your stomach trouble you?
35. Do you feel nauseated?
36. Do you have trouble falling asleep?
37. Do you sleep badly?
38. Do you get enough sleep?
39. Do you wake up tired in the morning?
40. Do you feel weak all over much of the time?
41. Do you become tired after working a short time?
42. Do you feel all worn out?
43. Do you get short of breath?
44. Do you have trouble breathing?
45. Can you relax?
46. Are you the worrying type?
47. Do you have worries that get you down physically (make you physically ill)?
48. Are you bothered by nervousness, irritability, tension?
49. Do you shake or tremble for no reason?
50. Is there something wrong with your ears?
51. Is there something wrong with your eyes?
52. Is there something wrong with your nose?
53. Is there something wrong with your throat?
54. Is there something wrong with your chest?
55. Is there something wrong with your heart?
56. Do you enjoy making acquaintances?
57. Do you cross the street in order not to meet someone you see?
58. Do you enjoy entertaining or treating people?
59. Do you have to be on guard or control yourself, even with friends?
60. Does your blood boil when a person stubbornly refuses to admit he's wrong?
61. Are some people so bossy that you feel like doing the opposite of what they request even though you know they are right?
62. Are you self-conscious about your appearance, or about being the center of attention in a group?
63. Is the way you do things apt to be misunderstood by others?
64. Do you feel unable to tell anyone all about yourself?
65. Do you have a close friend in whom you can confide?

66. Would you like it if you could find someone who would tell you how to solve your personal problems?
67. Outside your family, do you feel there are people who really care about you?
68. a) employed: Do you like the work you are doing?
    b) unemployed: Are you content to be out of work at the present time?
    c) retired: Do you like retirement?
    d) student: Do you like school?
    e) housewife: Do you enjoy running a home?
69. a) employed: On the whole, do you like the people you work with?
    b) unemployed: If being out of work continued beyond six months would you still be content?
    c) retired: Do you like your social surroundings?
    d) student: Do you feel accepted by your fellow students (schoolmates)?
    e) housewife: Do you have enough daily social contacts?
70. a) employed: Do you feel you are in the right kind of work?
    b) unemployed: Can you see yourself working in the foreseeable future?
    c) retired: Is your life as full as you would wish?
    d) student: Do you feel you are in the right setting?
    e) housewife: Does your work give you enough satisfaction?
71. a) employed: Do you have enough opportunity for getting ahead in your work?
    b) unemployed: Have you any desire or ambition to work?
    c) retired: Is your health satisfactory to you?
    d) student: When your studies are over, do you regard going out to work as an attractive prospect?
    e) housewife: Are you content to remain a housewife?
72. a) employed: Do you live more comfortably than you did two years ago?
    b) unemployed: same as employed
    c) retired: same as employed
    d) student: Is your pocket money or allowance enough?
    e) housewife: Can you manage on your house-keeping money without a lot of anxiety?
73. a) employed: Are you able to save?
    b) unemployed: same as employed
    c) retired: same as employed
    d) student: Do you earn extra money?
    e) housewife: Have you any income, other than housekeeping money?
74. Do you feel at ease about spending?

75. a) employed: Are you reasonably secure financially?
    b) unemployed: same as employed
    c) retired: same as employed
    d) student: Do you feel happy about your family's finances?
    e) housewife: Generally speaking, does being a housewife satisfy you?
76. a) employed: Do you FEEL financially secure?
    b) unemployed: same as employed
    c) retired: same as employed
    d) student: Do you feel that your future prospects are reasonably good?
    e) housewife: same as employed
77. a) married: Are you really satisfied with your marriage?
    b) single: Do you like being single?
78. a) married: Do you enjoy family life?
    b) single: Do you like the company of the opposite sex?
79. Have you any really satisfying hobbies or interests?
80. Do you feel there were people in your childhood who really cared?
81. Would you want others in your primary family (e.g. parents, brothers, sisters) to turn to you with their problems?
82. Would you want your friends to turn to you with their problems?
83. Does sex bring you much enjoyment?
84. Do you like to be with children?
85. Do you brood?
86. Do you do things which you regret afterward (do you regret things more, more often, than others seem to)?
87. Do you have the feeling that things always turn out wrong for you?
88. Do you have the feeling that nothing is worthwhile anymore?
89. Do you have periods of time when you cannot take care of things because you cannot get going?
90. Do you daydream?
91. Do you find it hard to keep your mind on a task or job?
92. Will an unimportant thought run through your mind and bother you for days?
93. Have you met problems so full of possibilities that you have been unable to make up your mind about them?
94. Do you find that your interests in people and amusements tend to change fairly rapidly?
95. Do you feel useless at times?
96. Do you think you are no good at all?

97. When you look back do you feel happy about your childhood?
98. Did you have a secure childhood?
99. On the whole, do you think your childhood was a good preparation for adult life?
100. Of all the different philosophies which exist in this world, do you think that there is probably only one which is correct?
101. Do you find it difficult to think in terms of your own death being inevitable?
102. In spite of what people say, do you think the lot of the average man is getting worse, not better?

Appendix B

The Questionnaire Cover

Project T.E.A.M.
THE EFFECTIVENESS OF A MULTIDISCIPLINARY HEALTH CARE TEAM IN MEETING PATIENT DEMANDS

INTRODUCTION

The staff of the Family Practice Teaching Unit, in conjunction with with the university, is attempting to determine the needs of their patients, and how effectively they can meet those needs. To this end, it would be appreciated if you would answer the questions printed on the following pages.

You may be asked to complete this form three times: at the beginning of any treatment you may receive; at the conclusion of your treatment; and approximately 2 weeks after the conclusion of your treatment.

If you are not the patient, but have brought in a dependent, we would like you to describe the health of the patient under Section I, but describe yourself under Sections II, III, and IV.

WHAT TO DO

Each question on the following pages is followed by 4 boxes, each with a statement (answer) above it. Please select the answer which most nearly applies to you and place a check (✓) or a cross (X) in its box.

With the first three columns, on each occasion the responses given to the question should reflect your feelings at the time of answering. The fourth column (to the right of the vertical line) should be marked if the question relates to a problem for which you are visiting the Family Practice Unit at the present time.

It is most important that you ANSWER EVERY QUESTON.

Work at your own speed, but do not spend too long on any one question.

The completed form should be returned to the person who gave it to you. All your answers will be kept strictly confidential.

Appendix C

The Diagnostic Categories

Category 1

370 General Medical Examination (High Risk Patients, Routine, Insurance, Job, School, Sports, Etc.)
371 Advice Including Management of Non-attending Patient
372 "Non-disease"; Examination and Investigation to Rule Out a Specific Disease Including Exposure to Disease "One system Medicals"
374 Desensitization
375 Prophylactic Inoculation Including Vaccination
376 Shots for Treatment
379 Letters, Forms, Certificates, and Prescriptions Without Examination or Interview
381 Pap Smear
383 Oral Contraceptive Advice Excluding Complications
384 Other Contraceptive Advice and Follow-up Visits Excluding Complications
385 Diagnosis of Pregnancy
386 Prenatal Visit
387 Post Partum Visit With or Without Problems as Specified
388 Well Baby Care Including "6 Week Check" and Neonatal Care
390 Previous Problem Has Been Resolved
391 Well Patient
396 Other Problems Outside the "Patient" (e.g. Blood Donor, Manifestation of Anxiety in 3rd Party, Consulting About Another, Etc.)
700 General Medical Examination, No Disease Detected, Routine, or Periodic, Excluding Infant's First Year of Life
701 General Medical Examination Required by Agency (e.g. School, Insurance Company, Employer, Camp, Etc.)
739 Other Methods of Contraception
925 First Half History

Category 2

060 Obesity
075 Senile and Presenile Dementia
076 Alcoholism and Alcoholic Psychoses, and Drug Dependence Adic
078 Schizophrenia, All Types, and Paranoid States
079 Depression, All Types and Degrees, and Mania and Manic-Depressive Psychosis (Including Post Partum)
080 Anxiety Neurosis
081 Hysterical Neurosis, Including Compensation Neurosis and Conversion Hysteria
085 Other Neuroses Adic and Neuroses Nos Including Hypochondriasis
087 Insomnia and Other Sleep Disorders Adic
088 Tension Headache
089 Situational Disturbances Including Grief Reaction
092 Frigidity, Impotence, Anhedonia, and Other Psychosomatic Diseases of Genitourinary System Adic
095 Other Mental Disorders Adic
328 Tiredness Nos
617 Hypochondriacal Neurosis, Hypochondriasis
619 Other Neurosis Adic
804 Depressive Neurosis, Neurotic Depression
823 Other Drug Dependence Habituation Addiction Including Cannabis, Lsd, Barbiturates, Etc.
903 Social Isolation
914 Disturbance in Marital Adjustment
915 Disturbance in Parent-child Relationship
923 Emotional Problems
924 Vague Anxiety and Depression

Category 3

021 Gonococcal Infections - All Sites
022 Other Veneral Disease Adic
027 Proven Urogenital Moniliasis and Trichomoniasis NOT Classified Under Vaginitis
038 Fibroid and Other Benign Neoplasms of Uterus
040 Breast Neoplasms (Benign)
042 Other Female Organs Neoplasms (Benign)
051 Prostate Neoplasms (Malignant)
189 Acute and Chronic Glomerulo-nephritis and Nephrosis Adic, Excluding Pyelonephritis
190 Acute Pyelonephritis, Pyelitis, or Pyelocystitis Adic
191 Chronic Pyelonephritis Adic
192 Urinary Calculus - All Sites
193 Cystitis, Etc. Adic and Urinary Infection Nos
194 Other Diseases of Kidney, Ureter, Bladder Adic Including Orthostatic Albuminuria
195 Urethritis, Non Veneral Including Meatitis, Etc. Adic
196 Benign Prostate Hypertrophy, Etc. Adic
197 Prostatitis
198 Hydrocoele
199 Orchitis and Epididymitis Excluding Mumps
201 Other Diseases of Male Genitalia Adic
204 Diseases of Ovary, Fallopian Tube, and Parametrium Adic Including Salpingitis, Pelvic Inflammatory Disease, Ovarian Retention Cysts
206 Vaginitis Nos
208 Other Infections of Uterus and Vulva Including Bartholinitis, Vulval Abscess
210 Menopausal Symptoms Excluding Psychiatric
211 Amenorrhoea
214 Polymenorrhoea
215 Dysmenorrhoea Including Mittelschmerz and Ovulation Pain
216 Other Disorders of Menstruation Adic
217 Other Diseases of Female Genitalia Adic
228 Spontaneous Abortion and Nos Including Missed and Incomplete
232 Complications of Puerperium Adic
279 Undescended Testicle
315 Pains Referable to the Genito-urinary System Adic
316 Enurisis Not Clearly of Psychological Origin
319 Abnormal Urinary Constituents Nec, Adic
607 Other Diseases of the Male Genitalia Adic
626 Intermenstrual (Metrorrhagia), Menometrorrhagia, Postmenopausal Bleeding, Other Disorders of Menstruation Adic
628 Other Diseases of the Female Genitalia Including Endometriosis
629 Sterility, Reduced Fertility (Male or Female)
631 Urogenital Trichomoniasis (Proven)
780 Pain Referable to Genital Organs Including Dyspareunia

Category 4

009 Herpes Zoster
010 Herpes Simplex - All Sites
019 Warts - All Sites
024 Dermo-phytosis (Athlete's Foot, Tinea, Ringworm, Etc.)
028 Pediculosis
036 Skin Neoplasms (Benign) Including Seborrhoeic Wart and Senile Wart
062 Gout
107 Hordeolum, Stye, Infected Meibomian Cyst
233 Boil and Carbuncle Including Cellulitis, Abscess, Excluding Inside Nose, and Ear, Perianal, Vulval, and Breast
236 Pilonidial Cyst, Fistula, Pyoderma, Pyogenic Granuloma, and Other Infections of Skin and Subcutaneous Tissue Adic
238 Eczema and Dermatitis - Cause Identified, Including Diaper Rash, Excluding Sunburn
239 Eczema and Dermititis, Cause Not Known or Nos, and Infantile Eczema
241 Pityriasis Rosea
243 Psoriasis and Related Disorders Adic
247 Corns and Callosities
248 Ingrowing Toenail and Other Diseases of Nail Adic
249 Alopecia, Folliculitis, and Other Diseases of Hair Adic
250 Acne and Rosacea and Rhinophyma
251 Subaceous Cyst
252 Pompholyx and Other Diseases of Sweat Glands Adic
253 Urticaria
254 Other Diseases of Skin and Subcutaneous Tissue
255 Rheumatoid Arthritis and Allied Conditions
256 Osteoarthritis and Allied Conditions
258 Scapulo-humeral Myofibrosis, "Frozen Shoulder" Rotator Cuff Syndrome, Bursitis of Shoulder, Etc.
259 Other Non-articular Rheumatism Adic Including Fibrositis, Myalgia, Etc.
260 Costochondritis, Tietze's Syndrome
261 Synovitis, Bursitis, Excluding Shoulder, and Tenosynovitis Adic
262 Low Back Pain and Backache Nos - Normal Lumbar Movements, No Neuropathy, Excluding "Back Strain" Lumbalgia
264 Prolapsed Lumbar Disc - Neurological, Operative, or Radiological Diagnosis
271 Flat Foot, Hallux Valgus, and Varus, Spinal Curvature and Other Acquired Deformities Excluding Congenital Deformities
274 Other Diseases of Musculo-skeletal System and Connective Tissue

(Category 4 Continued)

300 Oedema, Swelling of a Limb
334 Fracture, Ribs
337 Fracture of Radium and Ulna Including Colles
338 Fracture Carpal, Metacarpal, Tarsal, Metatarsal
343 Dislocation of Knee and Patella Including Acute Damage to Meniscus
347 Sprains and Strains of Wrist and Hand
348 Sprains and Strains of Ankle
349 Sprains and Strains of Lumbar, Sacral, and Illiac Regions Excluding Sacro-coccygeal Joint
350 Sprains and Strains of Neck Including "Whiplash"
351 Sprains and Strains of Knee and Leg
352 Sprains and Strains of Shoulder and Upper Arm Excluding Elbow
353 Sprains and Strains of Foot and Toes
354 All Other Sprains and Strains
356 Lacerations, Open Wounds, Traumatic Amputation
357 Contusion and Crushing With Intact Skin Surface
358 Burns, Scalds
359 Animal Bites
360 Insect Bites and Stings
363 Abrasion, Scratch, and Blister
706 Acne
709 Rasacea and Rhinophyma
729 Other Diseases of Musculo-skeletal System and Connective Tissue Including Weakness in Muscle or Joint Nos or Nyd

Category 5

001 Intestinal Disease of Proven Bacterial or Protozoal Origin Adic Food Poisoning
002 Intestinal Disease, Presumed Infectious, of Viral or of Unknown Origin
003 Tuberculosis - All Sites, Including Late Effects
017 Infectious Mononucleosis
061 Diabetes Mellitus
063 Hypothyroidism and Cretinism
065 Hypoglycaemia
066 Avitaminosis and Other Nutritional Deficiencies and Disorders
069 Other Endocrine Nutritional and Metabolic Diseases Adic
070 Iron Defiency Anaemia
099 Cerebral Palsy (Infantile) and Other Cerebral Paralysis Adic
100 Epilepsy - All Types
101 Migraine
103 Other Diseases of Cranial and Peripheral Nerves, Neuritis, Including Polyneuritis,, and Neuralgia Adic
105 Other Diseases of the Nervous System
129 Disease of Heart Valves and Other Cardiac Structures Adic, Rheumatic and Nos Excluding Due to Arteriosclerosis, Hypertension, and Syphilis
130 Hypertension - All Grades Including Hypertensive Heart and Kidney Disease
132 Chronic Ischaemic Heart Disease and Angina Adic
135 Congestive Failure
137 Paroxysmal Tachycardia
139 Heart Block Bradycardia and Other Disorders of Cardiac Rhythm
140 Heart Murmur - Considered Innocent, Functional
141 Stroke (Acute) and Subacute Cerebro-vascular Disease Adic
149 Varicose Veins of Legs With or Without Ulcer
150 Haemorrhoids
151 Other Diseases of Circulatory System Adic
161 Acute Bronchitis and Bronchiolitis
163 Chronic Bronchitis and Emphysema, and Bronchiectasis
164 Asthma
167 Spontaneous Pneumothorax
168 Other Diseases of Respiratory System Adic
169 Diseases of Teeth and Supporting Structures Adic
170 Diseases of Salivary Glands Adic
171 Diseases of Mouth and Tongue Adic
173 Ulcer of Duodenum With or Without Perforation
174 Other Peptic Ulcer - Stomach, Gastro-jejunal, Unspecified

(Category 5 Continued)

175 Gastritis and Duodenitis
176 Disorders of Stomach Function and Other Diseases of Stomach, and Duodenum Including Indigestion Nos
178 Inguinal Hernia With or Without Obstruction
180 Acute Gastroenteritis and Colitis Including Gut Allergies, Excluding Infectious and Ulcerative
181 Crohn's Disease, Ulcerative Colitis, and Other Chronic Enteritis Adic
182 Constipation
183 Colospasm, Mucous Colitis, and Other Functional Disorders of the Intestines Adic
184 Anal Fissure and Fistula, and Perianal Abcess
185 Rectal Bleeding Nos
188 Other Diseases of Digestive System Adic
235 Impetigo
244 Pruritus Ani
272 Ganglion
290 Syncope, Blackout
291 Headache Nos
296 Disturbance of Sensation (Restless Legs, Parasthesiae)
301 Enlarged Lymph Node(s), No Infection
304 Haemoptysis, Dyspnoea, Excess Sputum, Cough
312 Abdominal Pain Nos
491 Chronic Bronchitis and Bronchiectasis
551 Hiatus Hernia, Diaphragmatic Hernia
553 Other Hernias, Including Femoral, Umbilical, Ventral, Etc.
611 Essential Benign Hypertension Adic
789 Other Endocrine, Nutritional, and Metabolic Diseases Adic Including Abnormal Biochemical Tests Nec

Category 6

005 Streptococcus Throat (Proven), Scarlet Fever, and Erysipelas
008 Chickenpox
012 Rubella
013 Other Viral Exanthem Including Pyrexia and Rash Nos, and Smallpox and Cowpox, Excluding Roseola Infantum
016 Herpangina and Borholm Disease, and Other Recognized Coxsackie Diseases Adic
018 Conjunctivitis, Presumed Viral
025 Thrush
026 Other Fungal Infections
035 All Other Infections and Parasitic Diseases Adic Includes Molluscum Contagiosum
044 Lipoma
045 Other Benign Neoplasms Adic
057 Secondary Neoplasms (Malignant)
059 Neoplasms - Not Clear If Malignant Or Benign
106 Conjunctivitis and Opthalmia Adic Excluding Caused By Viruses or Specific Bacteria and Parasites
111 Other Inflammatory Diseases of Eyes Adic, Iritis
112 Refractive Errors
113 Strabismus
117 Other Diseases of the Eye
118 Otitis Externa Including Boil of External Auditory Canal
119 Acute Otitis Media
120 Chronic Otitis Media Including Serous or Secretory Adic
123 Eustachian Block, Catarrh, Salpingitis
125 Wax in Ear
127 Other Diseases of Ear and Mastoid Process
152 Sinusitis (Acute) and Nos
153 Tonsilitis (Acute) and Quinsy (Peritonsillar Absess)
155 Laryngitis and Tracheitis (Acute) Including Croup
156 Chronic Sinusitis and Chronic Pharyngitis, and Nasopharyngitis And Chronic Laryngitis
157 Influenza Including Post-Influenzal Syndrome
158 Other Urti, Colds Rhinitis, Nasopharyngitis, Pharyngitis Excluding Of Proven Streptocccal Origin
159 Hayfever, Allergic Rhinitis
172 Oesophargnitis
303 Epistaxis
362 Foreign Body Entering Body Through Orifice Including Eye
364 Adverse Effects of Medicinal Agents Adic Excluding Contact Dermatitis and Burns
366 Post-Operative Wound Infection, Disruption of Wound, and Other Complications of Surgery Adic

(Category 6 Continued)

367 Immunization Reaction and Other Complications of Medical Care Adic Including IUD and Medical X-Rays
368 Adverse Reactions of Physical Factors Adic Heat, Cold, Pressure, Motion, Etc., Including Frostbite, Excluding Sunburn
369 Other Injuries and Adverse Effects Adic
392 Diagnosis Deferred
393 Allergy
394 Previous Problem is Being Resolved
636 All Other Infections and Parasitic Diseases Adic Including Molluscum Contagiosum
689 Other Diseases of Ear and Mastoid Process Adic Including Otalgia, Ear Pain Nyd

Appendix D
The Item Distributions

#	Source*	Label	1	2	3	# Inserted
1	O	SORENESS	105	352	356	21
2	Y	HEADACHES	63	497	253	5
3	Y	TINGLING	39	367	407	6
4	C	ITCHINESS	49	164	600	8
5	O	LUMP	21	105	687	12
6	C	VARICOSE V	7	104	702	7
7	C	STIFF	36	147	630	8
8	O	RASH	40	108	665	8
9	C	BLOOD URINE	1	30	782	7
10	C	BLOOD BOWEL	4	107	702	6
11	C	COUGH BLOOD	1	25	787	4
12	C	NOSEBLEEDS	8	180	625	4
13	C	GUMS BLEED	18	273	522	5
14	O	OPEN WOUND	12	130	671	10
15	C	BLADDER PRB	28	147	638	5
16	C	BOWEL PRB	29	130	654	6
17	C	PILES	10	141	662	13
18	C	GENITAL PRB	36	103	674	2
19	C	HAVE CHLDRN	100	335	378	29
20	C	PERSPIRE EX	68	411	334	6
21	Y	COLD SWEATS	15	168	630	10
22	C	HOT CLD SPEL	25	249	539	12
23	C	DIZZY	24	344	445	10
24	Y	RESTLESS	87	389	337	4
25	C	FACE TWITCH	9	107	697	9
26	C	ARMS TWITCH	5	124	684	10
27	C	FITS	1	20	792	10
28	C	WEIGHT PRB	35	231	547	5
29	C	INDIGESTION	39	294	480	8
30	Y	ACID STOM	46	137	630	12
31	C	PUFFED OUT	54	425	334	12
32	C	APETITE GOOD	202	165	446	4
33	C	BELCH	64	415	334	16
34	C	STOM PRB	62	358	393	7
35	C	NAUSEATED	22	353	438	13
36	C	FALL ASLEEP	86	367	360	6
37	C	SLEEP BADLY	65	396	352	5
38	C	SLEEP ENOUGH	49	142	622	2
39	C	AWAKE TIRED	145	545	123	1
40	Y	FEEL WEAK	55	164	594	7
41	C	TIRE QUICKLY	66	326	421	7
42	C	WORN OUT	64	469	280	10
43	C	SHORT BREATH	51	317	445	6
44	C	BREATHNG PRB	19	171	623	7
45	H	CAN RELAX	40	162	611	7
46	Y	WORRYNG TYPE	221	376	216	5
47	Y	WORRY SICK	79	180	554	12
48	Y	NERVOUS	133	459	221	5
49	C	TREMBLE	29	126	658	5
50	C	EAR PRB	12	123	678	9

#	Source*	Label	1	2	3	# Inserted
51	C	EYE PRB	21	251	541	6
52	O	NOSE PRB	10	103	700	7
53	O	THROAT PRB	17	126	670	11
54	O	CHEST PRB	11	122	680	12
55	C	HEART PRB	3	32	778	14
56	H	MEET PEOPLE	550	256	7	8
57	Y	AVOID PEOPLE	24	238	551	8
58	H	ENJOY ENTERT	461	342	10	5
59	Y	BE ON GUARD	36	307	470	8
60	Y	BLOOD BOIL	99	540	174	8
61	Y	PEOPLE BOSSY	51	481	281	13
62	Y	SELF CONSCI	125	496	192	15
63	Y	MISUNDERSTOD	65	600	148	26
64	Y	CANT TEL ALL	97	311	405	19
65	H	CAN CONFIDE	608	128	77	20
66	Y	SOLVE PRB	201	325	287	33
67	H	PEOPLE CARE	648	124	41	21
68	H	LIKE WORK	527	195	91	28
69	H	LIKE PEOPLE	576	149	88	31
70	H	RIGHT WORK	440	226	147	33
71	H	GET AHEAD	416	234	163	39
72	H	BETTER OFF	497	184	132	40
73	H	ABLE TO SAVE	377	219	217	35
74	H	SPEND EASE	384	331	98	31
75	H	SECURE	427	274	112	36
76	H	FEEL SECURE	400	267	146	32
77	H	SATISFIED	536	203	74	52
78	H	LIKE FAM LIF	717	88	8	40
79	H	HOBBIES	610	140	63	31
80	H	PEOPLE CARED	679	96	38	42
81	H	HELP FAM	549	215	49	44
82	H	HELP FRIEND	512	258	43	42
83	H	ENJOY SEX	624	165	24	72
84	H	ENJOY CHLDRN	570	215	28	41
85	Y	BROOD	64	609	140	62
86	Y	REGRET	69	565	22	47
87	Y	THINGS WRONG	31	479	303	49
88	Y	NOTHNG WORTH	17	256	540	52
89	Y	CANT START	48	507	258	48
90	Y	DAYDREAM	132	598	83	46
91	Y	DISTRACTED	44	509	260	58
92	Y	THOUGHT BOTH	41	435	337	59
93	Y	CANT DECIDE	66	579	168	64
94	Y	LIKES CHANGE	60	418	335	67
95	Y	FEEL USELESS	38	501	274	65
96	Y	THNK NO GOOD	14	186	613	64
97	H	HAPPY CHLDH	415	284	114	62
98	H	SECURE CHLDH	453	242	118	63
99	H	GOOD PREP	382	290	141	69
100	Y	ONE PHILOS	71	135	607	97
101	Y	OWN DEATH	63	160	590	83
102	Y	AV LOT WORSE	143	388	282	91

* O = "or iginal", C = CMS, Y = Yorklea, H = Heimler

Appendix E

The Eigenvalues for the Principal Components Analysis

# f	e	# f	e	# f	e
1	12.67	12	1.56	23	1.18
2	4.10	13	1.54	24	1.16
3	2.67	14	1.46	25	1.15
4	2.31	15	1.45	26	1.12
5	2.16	16	1.40	27	1.11
6	2.09	17	1.39	28	1.08
7	1.94	18	1.35	29	1.06
8	1.82	19	1.32	30	1.04
9	1.75	20	1.28	31	1.02
10	1.74	21	1.24		
11	1.71	22	1.19		

* only values greater than 1.00 are reported

f = the number of factors, e = the eigenvalue

Appendix F

The Eigenvalues* for the Image Analysis

# f	e	# f	e	# f	e
1	22.05	20	1.84	40	1.29
2	7.13	21	1.81	41	1.28
3	4.60	22	1.76	42	1.26
4	4.05	23	1.71	43	1.25
5	3.67	24	1.69	44	1.21
6	3.58	25	1.67	45	1.19
7	3.32	26	1.62	46	1.19
8	2.86	27	1.58	47	1.17
9	2.83	28	1.55	48	1.16
10	2.67	29	1.54	49	1.13
11	2.57	30	1.48	50	1.12
12	2.48	31	1.47	51	1.11
13	2.36	32	1.44	50	1.09
14	2.29	33	1.43	51	1.07
15	2.17	34	1.42	52	1.05
16	2.17	35	1.38	53	1.04
17	2.07	36	1.37	54	1.02
18	1.95	37	1.34	55	1.01
19	1.90	38	1.31	56	1.00

* only values greater than 1.00 are reported

f = the number of factors, e = the eigenvalue

Appendix G
The Two Factor Solution*

Item	Factor 1	Factor 2	Communality
1	-.03874	.39585	.15
2	.00285	.42595	.18
3	.02467	.51380	.27
4	.05519	.17935	.04
5	-.01694	.11857	.01
6	-.06156	.17271	.03
7	-.09897	.34377	.11
8	.05846	.06838	.01
9	.03066	.16092	.03
10	.04435	.24247	.07
12	-.04556	.13673	.02
13	.01694	.27088	.08
14	.10185	.09777	.03
15	-.03466	.31873	.10
16	.03719	.27422	.02
17	-.03650	.19091	.03
18	.11867	.12989	.04
19	-.06765	.09799	.01
20	.00583	.45798	.21
21	.08924	.47883	.26
22	.01516	.53270	.29
23	.05454	.51161	.28
24	.27828	.32606	.24
25	.14189	.24539	.10
26	.07377	.25776	.08
28	.00927	.23854	.06
29	.00274	.44676	.20
30	.06133	.35997	.15
31	.02501	.48438	.24
32	.08443	.00060	.01
33	.06417	.16241	.03
34	.13106	.47250	.28
35	.05213	.52974	.30
36	.16086	.44186	.26
37	.17168	.44615	.27
38	.18289	.33740	.18
39	.16789	.46949	.30
40	.15887	.52429	.35
41	.11049	.57591	.38
42	.06062	.61639	.41
43	.03634	.61280	.39
44	.01671	.51358	.27
45	.31886	.38668	.32
46	.28938	.35583	.27
47	.36244	.38923	.37
48	.29039	.50654	.43
49	.27822	.34834	.26
50	.07177	.16749	.04
51	-.03707	.22455	.05

Item	Factor 1	Factor 2	Communality
52	.00714	.17530	.03
53	-.00896	.23987	.06
54	-.02598	.35675	.12
55	-.07944	.22719	.05
56	-.30034	.03482	.09
57	.21795	.06167	.06
58	-.20688	.06690	.04
59	.44527	.08992	.23
60	.33072	.09312	.14
61	.32889	.06491	.12
62	.39210	.14935	.21
63	.44904	.12506	.25
64	.38782	.09640	.18
65	-.30580	-.03939	.10
66	.35597	.05095	.14
67	-.38721	.03629	.14
68	-.43468	.07905	.17
69	-.38371	.15696	.14
70	-.39300	.05266	.15
71	-.28200	-.02248	.08
72	-.32732	.09649	.10
73	-.29929	.02976	.09
74	-.43434	.09186	.17
75	-.52539	.03604	.27
76	-.53904	.01817	.29
77	-.33971	-.01249	.11
78	-.35047	.04424	.12
79	-.36227	-.07692	.15
80	-.43342	.00604	.19
81	-.31321	.02119	.09
82	-.18002	.01280	.03
83	-.17632	-.09048	.05
84	-.28685	.04448	.08
85	.51530	.06207	.29
86	.48059	.06564	.25
87	.58987	.05931	.37
88	.55739	.05605	.33
89	.47531	.15955	.30
90	.33342	.05827	.13
91	.37366	.13027	.19
92	.41379	.14215	.23
93	.42069	.10290	.21
94	.37778	.12116	.18
95	.46087	.13466	.27
96	.41438	.12387	.22
97	-.51261	.05249	.25
98	-.46553	-.00514	.22
99	-.58666	.07906	.32
100	-.02590	.02815	.00
101	.12626	.04697	.02
102	.25322	.08614	.08

* principal components, oblique rotation with delta = 0

Appendix G
The Two Factor Solution*

Item	Factor_1	Factor_2	Communality
1	-.03874	.39585	.15
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15	-.03466	.31873	.10
16	.03719	.27422	.02
17	-.03650	.19091	.03
18	.11867	.12989	.04
19	-.06765	.09799	.01
20	.00583	.45798	.21
21	.08924	.47883	.26
22	.01516	.53270	.29
23	.05454	.51161	.28
24	.27828	.32606	.24
25	.14189	.24539	.10
26	.07377	.25776	.08
28	.00927	.23854	.06
29	.00274	.44676	.20
30	.06133	.35997	.15
31	.02501	.48438	.24
32	.08443	.00060	.01
33	.06417	.16241	.03
34	.13106	.47250	.28
35	.05213	.52974	.30
36	.16086	.44186	.26
37	.17168	.44615	.27
38	.18289	.33740	.18
39	.16789	.46949	.30
40	.15887	.52429	.35
41	.11049	.57591	.38
42	.06062	.61639	.41
43	.03634	.61280	.39
44	.01671	.51358	.27
45	.31886	.38668	.32
46	.28938	.35583	.27
47	.36244	.38923	.37
48	.29039	.50654	.43
49	.27822	.34834	.26
50	.07177	.16749	.04
51	-.03707	.22455	.05

Item	Factor 1	Factor 2	Communality
52	.00714	.17530	.03
53	-.00896	.23987	.06
54	-.02598	.35675	.12
55	-.07944	.22719	.05
56	-.30034	.03482	.09
57	.21795	.06167	.06
58	-.20688	.06690	.04
59	.44527	.08992	.23
60	.33072	.09312	.14
61	.32889	.06491	.12
62	.39210	.14935	.21
63	.44904	.12506	.25
64	.38782	.09640	.18
65	-.30580	-.03939	.10
66	.35597	.05095	.14
67	-.38721	.03629	.14
68	-.43468	.07905	.17
69	-.38371	.15696	.14
70	-.39300	.05266	.15
71	-.28200	-.02248	.08
72	-.32732	.09649	.10
73	-.29929	.02976	.09
74	-.43434	.09186	.17
75	-.52539	.03604	.27
76	-.53904	.01817	.29
77	-.33971	-.01249	.11
78	-.35047	.04424	.12
79	-.36227	-.07692	.15
80	-.43342	.00604	.19
81	-.31321	.02119	.09
82	-.18002	.01280	.03
83	-.17632	-.09048	.05
84	-.28685	.04448	.08
85	.51530	.06207	.29
86	.48059	.06564	.25
87	.58987	.05931	.37
88	.55739	.05605	.33
89	.47531	.15955	.30
90	.33342	.05827	.13
91	.37366	.13027	.19
92	.41379	.14215	.23
93	.42069	.10290	.21
94	.37778	.12116	.18
95	.46087	.13466	.27
96	.41438	.12387	.22
97	-.51261	.05249	.25
98	-.46553	-.00514	.22
99	-.58666	.07906	.32
100	-.02590	.02815	.00
101	.12626	.04697	.02
102	.25322	.08614	.08

* principal components, oblique rotation with delta = 0

Appendix I

The Development of the Yorklea Distress Scale

The Yorklea Distress Scale, used as part of the Project T.E.A.M. questionnaire, was derived from items on the Yorklea Mental Health Scale. It is therefore necessary to look at the development of the Yorklea Mental Health Scale in order to evaluate the Distress Scale.

The Yorklea Mental Health Scale

The Yorklea Mental Health Scale was developed by Quirk, Coates, Moyer, and Diamcnd (unpublished (a)) in the summer of 1967 in order to detect untreated cases of mild psychiatric disorder and to evaluate treatment effectiveness. The scale was administered to a random sample of 845 adults as part of the Yorklea Social Environment Survey, 1968. Quirk et al (unpublished (a)) state: "The development of the instrument and the administration in the survey have been extensively described elsewhere"; however, these descriptions have not, in fact, been published (see Coates, Moyer, Kendall, and Howat, 1976).

The authors examined the literature to find measurable concepts which might be related to the general constructs of mental health and mental disorder. Readily available scales

were found covering six concepts: presence of psychiatric symptoms (Langner, 1962); ego-strength (Barron, 1963); self-esteem (Rosenberg, 1963); anomie (Srole, 1956); authoritarianism (Rokeach, 1956); and anxiety (Willoughby, 1932, Cattell, 1957, and Wolpe, 1958). The first version of the Yorklea Mental Health Scale consequently consisted of a total of 62 items: 18 from the 22 item Langner Scale, 16 from the 39 item shortened ego-strength scale, 5 from the 10 item self-esteem scale, 5 from Srole's scale, 8 from Rokeach, 1 from Cattell, 2 from Willoughby, and 7 other anxiety items whose origin is listed only as "the M.M.P.I."

The Rokeach items used in the Yorklea Mental Health Scale were selected on the basis of a study by Trodahl and Powell (1965) which had reported these particular items as having the highest correlations with the total dogmatism score. The Srole items which most resembled these Rokeach items were chosen, although no rationale is given for this selection criteria. The Rokeach and Srole items were subsequently referred to as the "authoritarianism-anomie scale", although there is no explanation for combining these concepts. The selection of the Rosenberg self-esteem items was based on the results of undescribed pretesting: there are no other descriptions of any kind of pretesting of questionnaire items. The ego-strength and anxiety items

were selected "in order to fill out the item contents not already covered", (Quirk et al, unpublished (a)). The method of selecting the symptom items was not reported. Fifty-one of the items on this version of the Yorklea Mental Health Scale had three response alternatives; the five self-esteem items had five response alternatives, and the five anomie items plus one other item had four response alternatives.

Two other versions of the Yorklea Mental Health Scale were used in the Vancouver Psychiatric Home Treatment Research Project (see Goodacre, Coates, Coles, Kendall, and MaCurdy, 1973 and Goodacre, Coles, MaCurdy, Coates, and Kendall, 1975). A 72 item version of the scale was used at intake and for the three month follow-up. It consisted of the 62 items described previously plus the remaining five Rosenberg and the remaining four Langner items, and one additional symptom item whose origin was not reported. A one month follow-up used a 106 item version called the Yorklea Mental Health Questionnaire. This version consisted of 71 of the 72 items used at intake and for the three month follow-up, (one anxiety item was omitted, possibly by accident), plus 35 additional items from the 51 item Barron's Ego-strength Scale. All the items on both these versions were worded in the indefinite present or used a

"during the last year or so" format, and all had three response alternatives.

The Yorklea Distress Scale

The Yorklea Distress Scale appears to have been derived from the 62 item version of the Yorklea Mental Health Scale, although results using the 72 item version are also mentioned in the same paper by Quirk, Coates, Moyer, and Diamond (unpublished (b)). Item responses were bifurcated for tetrachoric correlations; two items with a large proportion of negative responses were not included in the analysis. A principal components factor analysis with "varimax oblique rotations" (sic) was performed on the remaining 60 items using 200 cases. The number of cases used was a programming limitation; the method of selecting the cases was not reported. The analysis resulted in one general unrotated factor, four rotated factors, and three residual factors. Thirty-two items (five symptom, ten ego-strength, eleven anxiety, two self-esteem, and four authoritarianism-anomie items) had loadings of .4 or higher on the general factor; these items became the Yorklea Distress Scale.

Another sample of 200 cases was drawn, (again, the sampling method was not reported), and another principal components factor analysis was performed. This analysis

used only 40 items, those which had loadings of .4 or higher on the four rotated factors in the first analysis. Although the four rotated and the three residual factors of the previous analysis were "identifiable" in this second analysis, there is no mention of a general factor.

Subscales scores based on a factor analysis of the 72 item version of the Yorklea Mental Health Scale (sampled from a totally different population) are also reported, although it is not clear how these results relate to the item selection used for the Yorklea Distress Scale. There are also notes which refer to a 25 item version of the Yorklea Distress Scale, containing one fewer symptom, four fewer ego-strength, one more self-esteem, and one less authoritarianism-anomie items; although no other information about this version of the Yorklea Distress Scale is reported.

In conclusion, information about the Yorklea Distress Scale, as well as about the Yorklea Mental Health Scales, is extremely limited and involves questionable procedures. However, its face validity appears to be high enough to warrant further examination and development.

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