FIRST PSYCHIATRIC ATTENDANCE IN THE CONTEXT OF LIFE EVENTS

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SUMMARY

In this study, the possibility that life events contribute to coming to psychiatric attention was empirically explored. The quantity and quality of life changes preceding first psychiatric attendance and intervening between the onset of complaints and subsequent attendance, was the main subject matter of this investigation.

Fifty people first attending at a psychiatric service and thirty-nine normal matched controls were interviewed, in a standardized manner, about the changes occurring in their lives in the two years immediately preceding their first psychiatric consultation.

The patients showed increased rate and severity of events, predominantly in the fifteen months immediately preceding their attendance. There was a gradual build-up of events over the time culminating just before the attendance itself.

In the period between onset of each patient's complaints and his first psychiatric consultation, the patients still experienced, health changes apart, an excess of events in terms both of rate and severity of change. These changes were confined to the realm of 'marital and intimate' and 'personal and social' activities. The patients' social contacts were reduced. The quality of events in this period was best described as 'negative'.

During that time the patients also reported an excess of events 'independent of their illness', which thus directly contributed to their attendance. The evidence on whether events

accelerate attendance is not conclusive.

Methodological issues arising from life-event research and the implications of life events for therapeutic action are also explored in the discussion.

PART I.

Introducing life-event research

"People become sick (develop somatic and emotional dysfunction) and ask for help when their life situations are in turmoil..."

"This phenomenon has been recognised in psychiatric clinics and a form of therapy (crisis intervention) has been developed specifically to deal with it."[1]

"One has to distinguish between two phenomena: the development of illness states (symptom, disease process) on the one hand, and the act of coming under medical care on the other."[2]

While the focus of inquiry in this project has been on 'the act of coming under medical care', namely, first attendance at a psychiatric service in the general setting of life events, I shall review here evidence for both kinds of propositions contained in the above statements, and discuss separately the methodological issues involved in the life-event research in general.

This appears appropriate, as in the present study an attempt has been made to apply life-event methodology, developed in the course of investigations of susceptibility to disease, to the social phenomena possibly surrounding first psychiatric attendance and illness experience in order to establish, among others, whether and to what extent life events also contribute to the decision to seek treatment.

CHAPTER 1

LIFE EVENTS AND 'BECOMING SICK...'

Life-event research has developed and has been so far mainly concerned with

(i) the association between life events and certain somatic or psychiatric disorders. As such it has contributed to the 'stress and disease' research, alongside with

(ii) studies on the nature of states which accompany disturbing events; these 'reactions' or 'responses' as they are frequently called, have been described in terms of overt behaviour, of subjective feelings and somatic changes; they are extremely complex, and include anticipatory responses, responses at the time, and afterwards.

(iii) Characteristics of subjects rather than 'stress' have also been a subject to extensive inquiry in stress research. When these are considered, then two factors necessarily emerge: it is the previous experience, and, particularly, the lack of it, in terms of training for coping with stress, and genetic inheritance.*

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* NOTE 1: Ad (ii) The 'reactions' or 'responses', as the various states which are usually associated with disturbing events are frequently called, have been described in terms of overt behaviour, of subjective feelings and somatic changes. Different workers have laid differing emphasis on the processes involved. Lazarus,[4] for instance, has been particularly interested in the way in which people

NOTE 1: (continued)

perceive a situation or an object and how this affects their reactions (cognitive theory of emotions). Mechanic[5] and others have been concerned with the way in which people try to anticipate situations, and how skills are acquired in the process of coping with events. Others have described such states as bereavement in terms of symptoms[6] or of phases in a process;[7, 8, 9] or of endocrinological responses: for instance, the finding that emotional disturbances experienced by parents of children seriously ill with leukaemia were paralleled by their output of cortisol.[10] Those who used 'denial' and showed little emotion secreted little or no extra cortisol.

When the characteristics of the subjects rather than the 'stress' are considered (iii), then two factors necessarily emerge: these are the previous experience, and, particularly, the lack of it, in terms of training for coping with stress, and genetic inheritance.

Military studies, especially by Reid[11] and Bond[12] in Air Force personnel, showed that inexperienced crews were more likely to become psychiatric casualties. This is paralleled in the studies of puerperal psychosis where the risk is much higher for women having their first baby. In another study, Bourne and his colleagues,[13, 14] found that experienced troops in combat and under fire in Vietnam show remarkably little rise in their steroid excretion. This applied particularly to the non-commissioned men who had routine tasks to perform and who used intense denial mechanisms about their own vulnerability - a situation remarkably analogous to that of parents of leukaemic children, who were using similar strategies.

On the other hand, there is good evidence to suggest that our genetic inheritance will at least increase our susceptibility to psychosis. Protheroe,[15] for instance, showed that pedigrees of women who developed schizophrenia after childbirth contained the same proportion of schizophrenic relatives as of those women who developed schizophrenia at other times. The effect of later, psychological experiences in increasing or decreasing susceptibility to stress remains debatable. This is not to deny the reality of their effects, but to state that complexities remain to be worked out in a systematic fashion.

The field of stress research is as heterogenous as the definition of the term 'stress' is ambiguous. The concept of stress has been broadened to include not only physical forces and other organisms, but also symbols and threats of danger, and forces which interfere with man's development and the realisation of his maximum potential.

The following mention of theoretical formulations bearing on 'stress', which has been recently commented upon by Cooper and Shepherd[16] and Birley,[3] may help to clarify where life-event research stands in the heterogenous 'stress and disease' field, and what is the nature of its association with certain somatic and psychiatric disorders.

Vickers[17] has pointed out the need to distinguish, as regards stress, between three sets of variables: the environmental situation, the physiological and psychological changes which it engenders in the individual, and the behaviour consequent upon those changes. These factors, he suggested, should be designated respectively 'stress-situation', 'stress-change' and 'stress-behaviour'; a recommendation which, if adopted, might achieve a useful clarification.

This formulation corresponds to a theoretical formulation by Greisinger[18] who distinguished between 'aetiology' and 'pathogeny':

> "But the providence of <u>aetiology</u> in the narrow sense is only to enumerate empirically the known circumstances of causation; it belongs to <u>pathogeny</u> to explain the

> physiological connection between cause and effect, to show the particular mechanical act by means of which insanity is induced through given circumstance..."

Thus, in Greisinger's view, aetiology proper consists largely of empirical, statistical findings between a certain 'stress-situation' and 'stress-behaviour' or certain defined factors and certain disorders. Studies concerned with 'stress-change', or the nature of physiological and psychological mechanisms which result in morbid phenomena, were subsumed by him under the separate heading of 'pathogeny'.

The pathogenic concept of stress, if we use this terminology for a while, has dominated the field of stress research for a number of decades, during which time most clinical and experimental investigations have been preoccupied with the intervening variable of 'stress-change'. As Leigh[19] has commented, the whole history of psychosomatic medicine under the influence first of psycho-analytic doctrine and more recently of psychophysiological theory, has centred around the notion of stress change within the individual.*

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* NOTE 2: However, the fact is, that we know very little about 'pathogeny'. For instance, it would seem reasonable to put states of anxiety and so-called psychotic states on some sort of continuum of 'arousal'. But in practice this is unjustifiable, in that the reactions of most people, even under severe stress, stop far short of states seen in severe psychosis. Even bigger jumps are needed to apply the findings from normal physiological responses to stress to those found in physical disease. At present, Birley[5] considers Selye's findings unexplained and inapplicable to what we know of stress and disease.

The same uncertainty applies according to him to the question of certain personality attributes and psychiatric and somatic disease. In particular, the interesting work of Grace and Graham,[20] on the specific attitudes of patients with urticaria and hypertension has not been replicated by later workers.[21]

In this context, life-event research has been mainly of 'aetiological' character in that it deals with statistical associations between a diversity of life stresses and a wide range of somatic and psychiatric morbidity (i.e. general susceptibility to disease). Alternatively, it has been tried to establish whether the onset of particular disorders is preceded by disturbing situations which can be regarded as having contributed to their causation.

The reality of such effects seems to be established by now, but the complexities of how, for instance, stress modulates the susceptibility to disease, or whether psychological experiences decrease or increase susceptibility to stress, remain to be worked out in a systematic fashion. The 'pathogenic' link is still missing in spite of extensive research* (see Note 2 above and Note 3 below).

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* NOTE 3: Birley[3] suggests that to study the relationship between stress and the onset of physical illness - of 'aetiology' in Greisinger's system - may give us some clues about the connection between emotions and abnormal physiological functions - of 'pathogeny'. This must be done systematically and, at this stage, negative results will be as important as positive ones, and positive results can only be claimed when other variables are taken into account. Meyer and Haggerty[22], for instance, found that routine swabs, i.e. throat swabs, of families in Boston grew more streptococci at times of family crisis. Before concluding that this represents an effect of emotional disturbances on defences against infection, we need to take into account other factors such as more contact with other children through changing patterns of care. There is a similar debate concerning the mortality following bereavement. At present, there is no explanation, but it seems unlikely to be due to a 'shared cause', assortative mating or self-neglect.

The review of life-event research relating to 'becoming sick' is presented here following few further introductory remarks. Basically, it deals with evidence for the association between life-events and certain somatic or psychiatric disorders, described earlier in this Chapter (item (i) page 6).

Jacobs et al.[1] stated:

> "Where the symptoms presented are somatic ones, not obviously related to emotional upset, and are consistent with a biologic syndrome, they are less likely to be immediately observed as potential signs of unresolved life pressures."

Research into psychosocial factors found to occur close in time to the onset of illness has included diverse medical entities: tuberculosis, abdominal hernia, 'accidents', coronary heart disease, and infectious illnesses. Increased psychiatric morbidity, and indeed onset of depression and schizophrenia, was reported to follow recent 'eventful' life. Minor health complaints, as well as, increased illness reporting occurs in conjunction with life changes.

The wide variety of illnesses studied has been matched by the wide variety of psychosocial factors investigated in people's lives. These range from single and very few events (such as bereavement; job loss; recent and poorly resolved separation from home; residential/job mobility; and effects of biological change: childbirth, physical trauma leading to, for instance, 'post-operative psychosis') to periods of increased stress (such as effects of war on combatants and on civilian population; effects of concentration camps; and of community disaster) and, finally,

to a broad measurement of recent changes in subjects' lives.

The evidence presented here is selective, in that it deals only with those potential and universal life-stresses occurring during the life of an 'ordinary' citizen. The military and other studies will be commented on towards the end of this selective review, but only as regards any methodological insight which they have provided.

1.1 LIFE EVENTS AND GENERAL SUSCEPTIBILITY TO DISEASE

Morbidity studies dealing with illness in general, and particularly those studies in which illness and psychosocial factors were observed simultaneously, have reinforced the notion of a 'general susceptibility to illness'.

This notion was first put forward by Hinkle and his colleagues,[23, 24, 25, 26, 27] as a part of studies of the Cornell Human Ecology Program. They explored the morbidity experience of telephone operators (women), skilled workmen, college graduates and two groups of immigrants (Chinese and Hungarian) longitudinally, in their case over a period of up to 20 years, using medical histories. Their findings can be summarised as follows:-

1. The 'sickest' 10% of 336 women experienced 34% of the total disability, whereas the 'healthiest' 10% contributed only 1% of the overall disability, i.e. individuals do not have a uniform risk of becoming ill.
2. The women who had the greatest number of illness episodes also had the greatest number of causes (organ systems)

represented (corr. between 'no. of episodes' and 'no. of aetiological categories involved', r = 0.82).

Those with the greatest number of minor illnesses also had the greatest number of major illnesses (r = 0.64); hence this difference in susceptibility to illness was general rather than specific.

3. Illness also tended to occur during discrete intervals of time, 'clusters', of variable duration, and lasted up to 5 or 10 years. In observing a population of 3,000 subjects over a 20-year period, Hinkle[28] found that 4/5 of this population demonstrated illness clustering as "an episode rate of disabling illness of 1.75 or greater times the mean rate for the individual over the entire observation period (in this case 20 years)." In those persons showing the cluster phenomenon, 1/8 of their years were shown to be 'cluster years' and 1/3 of their illnesses occurred during such cluster years.

4. Illness and reaction to life situation: Hinkle[29] noticed several characteristics of persons experiencing 'illness clusters', while comparing 20 'sickest' and 20 'most well' women out of 336. The 'illness prone' group tended to perceive life as difficult and unsatisfactory, tended to be concerned and 'took things seriously'. Clusters were demonstrated to occur during periods when the environment was perceived as "unsatisfying, threatening, over-demanding and productive of conflict".

> Hinkle and others,[30] argued that although genetic factors might well play a role in determining the overall illness rate over a lifetime and in the timing of some diseases dependent on maturation, it is difficult to conceive of hereditary factors determining the timing of illness clusters.

The foregoing observations, namely 4, are based largely on interview data and the subjects' own perceptions of their experiences. As the individual perception of their life difficulties was of their subjective nature, it cannot be assumed to be independent of the informant's current state of physical and mental illness and it was possibly also subject to the observer's bias. While Hinkle[27] has argued that the investigator cannot afford to ignore the patient's account of what specific events meant to him, it however, seems essential at the present state of knowledge to treat certain classes of environmental change as standard units which can - within limits - be objectively and reliably measured.

These difficulties have been largely surmounted by another group of American workers, Holmes, Rahe and their colleagues,[31, 32] who developed a Schedule of Recent Experience (SRE) and a Social Readjustment Rating Scale (SRRS).[33] Using these instruments, they demonstrated recency effects of life changes on illness reporting, both retrospectively and prospectively.

They compiled a questionnaire, Schedule of Recent Experience (SRE), comprising 41 types of life change, and eventually devised weighting scores, life-change units (LCU), according to the extent

of change and the amount of adjustment required by these events from an individual. The resulting scale, called Social Readjustment Rating Scale (SRRS), ranges from major events such as 'death of spouse' (100 LCU) down to minor occurrences such as 'holiday' (13 LCU). This enables a quantitative estimate to be made of a person's degree of intensity of his recent life changes encountered over specified periods of time (by summing up LCU's over an arbitrarily chosen time set at, for instance, 2 years, 1 year, 6 months, 3 months, 1 month, one week or a day). The questionnaire attempts to examine every area of significant life change regardless of whether the change is considered to be desirable, undesirable, volitional or not under the person's direct control. (This technique is fully discussed in the following Chapter).

The bulk of Rahe's life-event research relates to general illness reporting in military subjects, both retrospectively and prospectively evaluated.

Results from <u>retrospective studies</u> of the life changes and illness reporting for over 2,000 US Navy subjects have revealed that healthy individuals report an average of 75 LCU during a six-month period, while they recalled no immediately preceding or present disease symptomatology.[34] In contrast, Navy subjects who recalled recent illness reported double this 'baseline' LCU total during the six-month interval in which their illnesses occurred (the illness interval). These people also reported significantly elevated LCU totals for the six-month period <u>prior</u> to their illness interval, as well as for the six-month period <u>following</u> their illness interval.

It appeared then, that people recalled a significant elevation of life-change intensity before, during, and after illness episodes. For illness prediction studies, however, one might predict that abrupt rises from subjects' baseline LCU totals (during a six- to twelve-month period) may be an important indication of an increased susceptibility for near-future illness.

The data to follow on prospective studies of near-future illness reporting were developed from investigations carried out aboard six naval ships: three cruisers (2,664 men), two aircraft carriers, and one battleship. At the start of each ship's six- to eight-month cruise, officers and enlisted men on board completed the SRE questionnaire. Neither the men themselves, nor members of medical departments aboard these ships knew the results of the men's questionnaires in order to minimise the possible influence of this knowledge on their future illness reporting. Rahe and others considered the closed system which existed for the handling of health records in this setting to be an advantage to their study. Similarly, the ship being, according to them, 'a natural ecologic unit', in that the men aboard encounter nearly identical environmental conditions - sharing a common source of food and water supply - enables the psychosocial factors of the men on their illness patterns to be more readily elucidated.

At the end of the ships' cruises all subjects' health records were reviewed. The authors' definition of an illness case in these studies was when a subject reported to the sick bay with objective signs and consonant symptoms of an illness. Repeated

sick bay visits for the same complaint were counted as single illness episodes.

Results from the first three ships studied (the three cruisers) indicated that a positive relationship existed between the subjects' six-month pre-cruise LCU totals and their total number of illnesses reported throughout the cruise period.[35] Table I.1 shows the mean illness comparisons for 'quartiles' of the combined cruiser samples. The lowest 'quartile' of subjects, rank-ordered according to their six-month pre-cruise LCU totals, experienced a mean illness rate of seven illnesses per day per 1,000 men throughout the cruise period. Subjects in the upper 'quartile' of six-month pre-cruise LCU totals encountered 10.4 illnesses per day per 1,000 men while at sea. The difference between these two groups, though small, was statistically significant at the 0.001 level.

In addition, a positive and linear relationship was seen between cruiser subjects' absolute magnitude of pre-cruise six-month LCU totals and their number of cruise period illness (Figure I.1). Here, instead of dividing the men into quartiles based on their relative pre-cruise six-month LCU totals, all people with absolute LCU totals between 0 and 99 were placed into one group, all those with LCU totals between 100 and 199 were placed into another, etc. The mean number of illnesses reported for the men in each of these equal LCU divisions were plotted and a linear relationship of modest slope was seen.

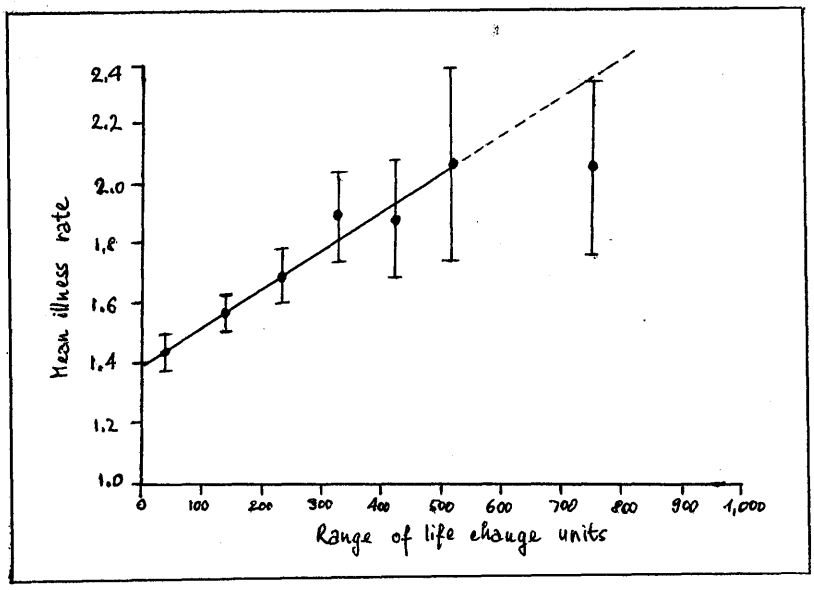
Subsequent life change and illness analyses carried out abord an aircraft carrier and a battleship failed to demonstrate significant differences between the illness rates of the enlisted

TABLE I.1

'Quartiles' of total subjects	Range of pre-cruise LCU scores	Mean cruise period illness rates	'Quartile' comparisons	Significance levels, two-tailed t-test
1	0-85	7.0	1 x 2	NS
			1 x 3	0.01
2	86-190	7.7	1 x 4	0.001
3	191-310	8.4	2 x 3	NS
			2 x 4	0.001
4	300+	10.4	3 x 4	0.01

NOTE: The incidence rate is the number of illness per day per 1000 men.

FIGURE I.1



men in the lowest and highest pre-cruise LCU quartile. A group of officers aboard the carrier, however, did show the same positive correlations as seen for the men aboard the cruisers.

Summarised, these findings show that

1. a person's report of the amount of social change experienced by him may be an important indicator of an increased susceptibility to near-future illness;
2. recency effect is indicated in that the period of significantly elevated stress extends six months prior to falling ill;
3. a positive and linear relationship was seen between the total amount of life change in this period and number of illnesses within the following 6 to 8 months.

The measurement of illness in the foregoing studies may be open to some criticism. These morbidity studies (and other morbidity studies typically) are based upon either (i) the patient's own report of previous illness (as, for instance, in Rahe's et al. retrospective studies), or (ii) health records compiled by some other source and usually reflecting the degree to which a patient has sought medical help.

Mechanic and Newton[36] have expressed some concern about the reliability and validity of both these measures, and have thus posed the principal criticism of most of the studies relating to a 'general susceptibility to illness'.

The patient's own report may be influenced by the nature of the illness, the stresses he is experiencing, and his behavioural

response to illness which embraces his perception of symptoms, attitudes to illness and to dependency on and utilisation of care. This concept of 'illness behaviour', as described by Mechanic and Newton,[36] includes the tendency to adopt the 'sick role' (outlined by Parsons,[37]).

All these variables which may affect morbidity measurements, may give rise to an impression that some persons are prone to 'illness in general' and it may account[38] for the apparent association between psychiatric illness and somatic disease.

This criticism warrants caution in interpretation of general morbidity studies and careful case identification in onset studies. However, it is the general finding that man's constitutional endowment is of major importance in aetiology of his many disease states, and that such genetic and acquired traits operate over his entire life span (see in the findings of Hinkle and others, that some individuals are more prone to illness than others over a period of 20 years).

Psychosocial factors, on the other hand, are generally temporal in their occurrences and their influences upon a person, and they take place over a relatively brief span of his total life time. Hence, psychosocial factors important in the aetiology of a person's disease are those events which have transpired relatively close in time to the onset or exacerbation of the disease (see Rahe's work on the impact of life events upon health and the recency of their effects).

1.2 LIFE EVENTS AND ONSET OF PARTICULAR DISORDERS

Here, I will concentrate on evidence obtained from research on people suffering from particular disorders. Such research was carried out in order to determine whether the onset or exacerbation of their disorder has been preceded by, or associated with a period of increased stress.

Rahe and his colleagues have reported several studies along these lines recently, for instance, on coronary thrombosis.

They applied their life-change methodology to in-patients surviving recent myocardial infarction,[39] to out-patients who suffered an infarction from 1 to 4 years prior to the study,[40] and to cases of sudden cardiac death.[41] In all studies, information on life changes in the previous 3 to 4 years was gathered from the patients or relatives of the deceased.

In the in-patient study[39] (54 males suffering recent infarction), the reported LCU changes over the year prior to the infarction showed no correlation with various indices of the severity of infarction (maximal post-infarction serum glutamine oxyloacetic transaminase = SGOT; number of days spent in hospital recovering; and number of in-hospital cardiovascular complications).

The 54 patients were divided into two groups on the basis of whether or not they had previous signs and/or symptoms of coronary heart disease (CHD) or other major illnesses during the 3-4 years preceding their current infarction. Those with no previous CHD histories showed a significant build-up of LCU over the two years prior to their infarction. The other group showed

a significant increase in their life changes during the second year prior to the current investigation, coincident with the majority of previous episodes of CHD experienced by patients in this group.

The objectives of the out-patient study[40] (30 current out-patients who suffered an infarction between 1 and 4 years prior to the study) were: (i) how do patients report life changes preceding their illness one or more years after their illness experiences; and (ii) how many new life changes are 'created' by their illness and how long do these last?

A build-up of LCU totals was reported $1\frac{1}{2}$ years prior to infarctions, which levelled out gradually over the year following an infarction. Compared with the in-patient study, no appreciable effect upon LCU reporting seemed to be caused by the patients' differing years of infarction. The 'created' life changes seemed to be of approximately equal LCU magnitude as pre-infarction life changes. The significant fall in six-month LCU totals by the middle of the second year following an infarction, appears to support, according to Rahe and Paasikivi,[40] in reverse, the previous studies indicating a significant build-up of life changes surrounding the experience of illness.

In the study of life change and sudden cardiac death,[41] close relatives of 39 men, who died suddenly of arteriosclerotic heart disease within specified three months of 1968 in the Stockholm area, served as informants.

It was found for both those people with and without prior histories of CDH, that there was a significant increase in their LCU

as indicated on the Social Readjustment Rating Scale during the final six months compared to chronologically identical time periods 2 and 3 years prior to their death. These life-change increases were three-fold in magnitude greater than those previously reported for Swedish in-patients surviving myocardial infarction.

Possible sources of bias in gathering life-change data on the deceased from their relatives were discussed by Rahe and Lind.[41] They argued that if there had been a consistent bias in the LCU reporting by widows, this bias would be expected to extend over the whole period inquired about, i.e. 3 years, and not 6 months prior to death only, compared with other infarction patients investigated. No such tendency of an overall higher LCU reporting was observed. Similarly, Theorell[39] demonstrated that life changes reporting over the past three years by male hospital patients did not differ significantly from how their wives saw their husbands' lives in terms of LCU.

Brown, from Bedford College, and Birley, from the Institute of Psychiatry, University of London, have recently (1973) reported a further stage of results of a number of important investigations into occurrence of events and onset of severe psychiatric disorders.[42, 43]

These findings demonstrate an increased rate of certain well-defined events, occurring just prior to onset, in cases of acute schizophrenia, and over a longer period, prior to onset, in cases of depression. These events can be regarded as having contributed to causation of such disturbed states. There is a number of important methodological issues in their investigations, and these

are discussed further in the next Chapter and elsewhere.

Brown et al.[42] interviewed 50 schizophrenic patients of both sexes who suffered an 'onset' during the study period of three months prior to admission, and 114 female depressed patients who suffered one of defined changes in their state a year prior to admission. For all schizophrenic patients and for the first 50 depressives a relative was seen and questioned. 325 and 152 members of general population respectively served as comparisons.

Schizophrenic patients were included if they were showing either a change (i) from 'normality' or from non-schizophrenic symptoms to acute schizophrenic symptoms, or (ii) from 'mild' to 'severe' schizophrenic symptoms. Criteria for inclusion of depressed patients into the study were (i) change from 'normality' to depressive symptoms, or (ii) exacerbations of long-term mild symptoms which might or might not have been partly depressive.

The data collected were in the form of interviews with the patients and their relatives and the general population samples, which were tape-recorded and afterwards rated. The interviews had four sections: (i) clinical information; (ii) the events which had occurred over specified periods of time; (3) characteristics of the event and circumstances surrounding the patient's reaction to it; (iv) long-term difficulties, support from environment, and various miscellaneous measures. The types of event and person covered in the questions were defined in advance before the actual interviews.

There was 81% agreement between schizophrenic patients and their relatives about occurrence of particular events, and nearly

100% agreement about time of onset. In depressive study, these levels of agreement were 79% and 86% respectively.

Events were further classified into 'independent of illness' and 'possibly independent of illness'; (analyses of results were presented for all events, but checked for 'independent' events alone).

Events were further rated on a 4-point scale ('marked', 'moderate', 'little' and 'none') by the severity of its threatening implications.

The results were as follows:

For all events together and excluding the severity ratings for the moment, the difference in the rate of events experienced both by schizophrenics in the one study and depressives in the other, appeared to occur in the three-week period immediately before onset.

In this three-week period, schizophrenic group experienced 88 events per 100 schizophrenics compared to 22 events per 100 members of general population; thus schizophrenics had three times more events. 66% of schizophrenics compared to 22% of general population had at least one event in this three-week period.

In the same period, the group of depressives experienced 66 events per 100 depressives compared to 17 events per 100 members of general population - a difference significant at .001 level. 51% depressives compared to 16% of general population had at least one event in this period. Outside it, the rate of events was very much the same for depressed and general population as a whole, and the difference was not significant.

When data were analysed with respect to the severity of threat implied in the events prior to onset, differences were found between schizophrenic and community groups for events in all (i.e. four) severity categories, and in each case, this difference was restricted to three weeks immediately preceding onset. All 'markedly threatening' events in the 12-week period studied appeared only in the three weeks prior to onset.

However, a quite different picture emerged after the depressives' data were analysed by severity of threat. 'Markedly threatening' events are common in the whole of the year studied for patients but are rare in the community sample. There is a five-fold difference for the year as a whole: 95 and 19 per 100 respectively, $p < .001$. 42% of patients vs. 9% of general population had at least one markedly threatening event in the period before onset, which was on average 38 weeks.

So, when depressives' results are analysed by type of event, it appears that in addition to accumulation of 'markedly threatening' events three weeks before onset, there is a four-fold difference throughout the rest of the year, showing that the effect of many of the events was not felt for some time. The most striking difference between schizophrenics and depressives was, that the events with 'little' or 'no' threat were frequently implicated in schizophrenia. 32% schizophrenics vs. 19% depressives vs. 13% general population had one of such events in the three weeks prior to onset.

The authors conclude that there is a difference based on a type of event which is common in the general population and which

shows marked accumulation in the few weeks before onset in the patient, i.e. schizophrenic, group OR on a type of event which is relatively rare in the general population but which occurs more commonly in the patient, i.e. depressive, group.

In a companion paper[43] the authors further discuss (i) how, in their view, a casual effect between life-events and psychiatric disorder is established; (ii) how to estimate the proportion of patients involved in this effect; and (iii) what kind of casual role events have.

Two extreme positions can be taken regarding the casual role of events:

1. Events can be seen as triggering an illness that would probably have occurred before long for other, namely pre-dispositional, reasons. Here, an event at most brings onset forward in time by a short period and perhaps makes it more abrupt.
2. Events can be seen as having formative effect on onset of an illness, if they substantially advance in time the onset or bring it about altogether.

The authors put forward a general probabilistic model of role of events in causation. Their analysis is based on the assumption that certain individuals are potentially schizophrenic (or depressive, etc.) for genetic, constitutional and other reasons, and that onset can occur because of these or current environmental factors in varying degrees. They therefore see persons as having

different vulnerabilities rather than grouping them into two clear-cut categories as either vulnerable or immune to events. They assume that there is an initial level of susceptibility which continues through a person's life and conceptualise this as 'an initial spontaneous onset rate' for each individual. This initial onset rate is added to by subsequent experiences. The effect of events is to insert independent (provoked) onsets into the ongoing spontaneous process (while it is not excluded that the underlying latent illness process may manifest itself in occasional onsets as unitary, rather than having distinct spontaneous and reactive components).

Brown, Harris and Peto[43] developed a method (based on theory of probability), which they used to estimate whether and in what proportion of patients in their schizophrenic and depressive studies either 'triggering' or 'formative' effects of events was present. The notion of the rate of events at which life events, such as bereavement, occur in the patient groups prior to onset is of central importance here.

Given the assumptions on causation from which they started and which are outlined above, Brown et al. then attempted to estimate the 'brought forward time', that is the estimate of the average time from onset produced by an event to the time when a spontaneous onset would have occurred had no events interferred. It is simply the expected time to the onset a patient would have suffered if no events had occurred:

Brought forward time $\geqslant \frac{1}{r} \cdot \frac{x}{1 - x}$. one time unit

where

x = proportion of onsets that were provoked (explanation below);

r = the <u>true</u> patient life-event rate estimated from the community data;

$\frac{1}{r}$ = average time between events;

(1 - x) = spontaneously brought up onsets;

time unit = length of 'causal period', whatever it is.

'Causal period' = period prior to onset , in which the <u>rate</u> of events is elevated in the psychiatric group compared to general population. The proportion of patients with at least one event in this casual period (h) includes those whose disorder was provoked by an event (x) and patients whose event and onset have been juxtaposed by chance (p) which is equal to percentage of people from general population who had an event during that period as well.

Therefore,

$$h = x + p\ (1 - x), \text{ whence } x = \frac{h - p}{1 - p}$$

Once x, or the proportion of patients involved in the causal effect (i.e. whose onsets were provoked by events) is established, the formula for 'brought forward time' (b.f.t.) can be applied. As this yields information on the length of the time by which an onset was brought forward by events, this information allows to choose between the two rival causal hypotheses, the 'triggering' and 'formative' ones.

Using the rates of events established for the patient and community samples reported in study by Brown, Sklair, Harris and Birley,[42] it was estimated that the elevated rate of events three weeks prior to onset of acute schizophrenia (i.e. the causal period) brought forward the onset by about ten weeks (i.e. this is the brought forward time). This was indicated in about half of the patients studied. Brown et al. conclude that in this case, due to the brief length of the brought forward time, only a triggering effect is suggested.

When the depressive data are analysed, considering all events together regardless of severity, very similar result (b.f.t. of 10 weeks) is found and the same triggering effect suggested.

However, when the brought forward time is estimated for events depending on degree of threat which is implied in them, different results appear. 'Markedly threatening' events are rare in the community but common in the depressed patients throughout the year of study. For the 'markedly severe' events, the brought forward time is two years, suggesting that such events have formative effect. At least 34% of the depressed patients would not have suffered the onset of their condition for at least two years had the events not interfered, if they ever broke down at all.

On the whole the evidence from these retrospective studies supports those of the sequelae of the events themselves, namely that some psychiatric and physical disorders are preceded by disturbing situations which can be regarded as having contributed

to their causation.

Finally, I come to consider briefly some other life-event studies mainly from the viewpoint of methodological insight into the aspect of events that they provided.

It was also confirmed in other investigations that the 'severity' of the stress is an important variable. It is probably no accident that the loss of spouse is rated highest in Rahe's SRRS and it has the best epidemiological evidence to support its damaging effect,* going even beyond a period of increased morbidity and the sick-role tendency. While sick-role tendency may influence morbidity measurements of illness, it can hardly be responsible for the difference in mortality reported, for instance, by Parkes, Benjamin and Fitzgerald.[45] In their 9-year follow-up, 5% of widowers over 55 years of age died during the first six months of bereavement, which is a 40% increase on the expected rate for married men of the same age. Lutkins and Rees[46] also found that 4.8% of bereaved close relatives died within a year of their bereavement compared with 0.68% for non-bereaved control group.

Similarly, military studies show, e.g. Reid,[11] that the greater the physical danger of combat, the higher the psychiatric casualties. Danger to life was a more important factor than

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* NOTE 4: According to Parkes,[44] the number of patients admitted to Maudsley between 1949-1951, whose illness followed loss of a spouse, was six times greater than expected; the presenting illness of those who lost a parent, spouse, sibling or a child, had come on within six months of the death.

cumulative fatigue. Paffenbarger's[47] studies of puerperal psychosis indicate that immediate psychiatric morbidity is related to the degree of difficulty in labour and instrumental intervention.

Unexpectedness of the event is another of its important aspects. It was noted in military literature that sudden and unexpected relief of tension, mostly at the end of the war, triggered off a small epidemic.[48, 49] Rees and Lutkins[46] noted that when death occurred on the road or in the field (i.e. it was accidental and unexpected), the risk of a close relative dying subsequently within the next year was 5 times higher than the risk of dying carried by relatives of people who died at home.

The possibility of 'relieving' or 'counterbalancing' stimuli was also considered. Phillips[50] has suggested from his investigations into influence of positive and negative experiences, that we may have to consider a sort of 'affective balance chart'. Provided that there are some rewarding experiences, unpleasant ones can be tolerated more easily.

CHAPTER 2

METHODOLOGICAL ISSUES AND RESEARCH TECHNIQUES

There are a number of important methodological issues involved in life-event studies, and unless these are resolved, evidence from such research cannot be convincing.

1. Standardised approach to enquiries about peoples' life events is essential.

   Two sound developments in this direction were reported namely by Brown and Birley (1968 and onwards) in their studies[42, 43, 51, 54] of life events and onset of severe psychiatric disorder; and by Rahe and his collaborators (since 1967) in their extensive work on life changes and near-future health changes (primarily somatic), or on general susceptibility to disease.[34, 35, 39, 40, 41]

2. Pitfalls of retrospective assessment need to be overcome, especially when dealing with psychiatric population at the same time.

   Firstly, patients may, in recalling the past, exaggerate the significance of events as a means of trying to come to terms with the illness. Bartlett[52] has called this tendency 'effort after meaning', and if not controlled, it will tend to increase the number of, say, precipitating events if we are concerned with life-event research into onset of a disorder. (For instance, the mothers of mongol children

reported more 'shocks' during pregnancy, presumably because they had been searching for reasons to explain the birth of their defective child).

Secondly, many 'precipitating events' could simply be due to the insidious onset of the illness itself, e.g. change to a new job and subsequent inability to cope with it.

Again, this is a very important methodological consideration, especially when dealing with psychiatric patients.

The two teams of researchers in this field, which are mentioned above, dealt with these methodological issues in a fairly analogous manner, but in their own ways as required by the different purposes of their research. This produced some important differences which are worth discussing.

APPROACH BY BROWN AND BIRLEY:

They have used the method of an interview with psychiatric populations and reported[42] the following safeguards against patients' biases in reporting 'significant events', and against interviewers' biases in scoring these events:

(i) In the interview they went through an extensive list of events which on common sense grounds are likely to be emotionally important for many people, and established whether any of these have occurred irrespective of how the person felt about them. The retrospective time was

arbitrarily chosen. Events involved dangers, significant changes in health, status or way of life, and also the promise of these, or important fulfilments. By and large, only events occurring to the patient or close relatives (parents, siblings, children and spouse) were covered.

In other words, the types of events and persons covered in the questions were defined in advance before the actual interview and were the same for everyone.

(ii) Characteristics of the events and circumstances surrounding the patient's reaction to it, as well as, chronic difficulties and support from environment were enquired about and various rating scales were used to describe each event. They include, for example, preparation for the event (in terms of amount of warning and nature of previous experience), and implications of the event for the person's future (how far it involved change in patterns of interaction or routine and so on); whether the event could have been avoided, and what are its positive and negative aspects (15 scales altogether). These ratings gave each event a more specific or 'personal' meaning than that given by the general descriptive category, the severity rating. (It also introduced more variance).

(iii) The most general of these ratings was 'severity of threatening implications'. This is a 4-point scale (marked, moderate, little, none), and it refers to the threat or difficulty implied by the event once the more immediate effects are over.

Examples quoted by Brown et al.[42] are:

> Unexpectedly having to deliver a neighbour's baby; and the discovery of a daughter's thefts. The latter event presumably has longer term implications for the future.
>
> Again, this whole rating system was developed in advance and applied irrespectively of the person's reported reaction. Incidents which might be expected to be trivial but which were, in fact, highly disturbing for personal reasons were inevitably often excluded from analysis. The method therefore provides, as Brown and his co-workers believe,[54] a minimal estimate of the role of events.

The other problem that has obscured life-event research, particularly with psychiatric populations, is that of how far an event may simply have been due to the insidious development of the disorder itself.

Brown et al.[42] overcame this difficulty in two ways. Firstly they excluded from their analyses 'illness related' events, i.e. those in which there was any suggestion that they were produced by the disorder itself. Secondly, events were further divided in advance into two kinds:

(a) independent of disorder, and

(b) possibly independent of disorder.

On logical grounds certain events are very unlikely to have been brought about by psychiatric disorder and these are classed

as 'independent of disorder' (2/3 of all possible events in their studies). They would usually involve hospital admission, wife's miscarriage, death of a family member. They can be contrasted with the remainder, which Brown et al. call 'possibly independent' events, for which the same claim cannot be made, although there is no evidence whatsoever of any relationship with the disorder. For example, according to Brown et al.[42] a planned change of job or engagement after a long courtship may not be related to the disorder at all, but since it is dependent on the decision of the subject, it would be impossible to be confident that there was no such relationship; and it would be rated 'possibly independent'.

This group of researchers do not claim that their method is foolproof in every case, but they express the belief that when using grouped material it is a powerful argument against this particular form of distortion.

APPROACH BY RAHE AND HIS TEAM:

Rahe et al. adopted a questionnaire technique[56] as a step away from clinical observations and towards standardised measurements of psychosocial factors important in the aetiology of illness patterns, which they applied to thousands of people.

Twenty years ago, at the University of Washington in Seattle, patients in a tuberculosis sanatorium reported a number of recent changes in their lives shortly prior to their first recognition of symptoms. These sometimes dramatic changes in their pre-illness adjustment occurred with an ever increasing frequency up to the

time of illness onset. Also, employees of the TB sanatorium who developed tuberculosis during their employment reported life changes which clustered 12-24 months preceding onset.[55]

Using empirically gathered data from over 5,000 tuberculosis patients since 1949, Hawkins, Holmes and Davies[56] constructed a Schedule of Recent Experience (SRE), a questionnaire for assessment of the presence or absence, as well as temporal occurrence, of a number of representative life changes likely to occur in the normal course of people's lives. The questionnaire has 43 items and covers changes in health, work, family, personal, social and financial status. Since these early studies, the SRE has been used to measure life change incidence rates in people experiencing a variety of other illnesses, such as were described in Chapter 1.

The SRE has always been designed to measure a broad spectrum of recent changes in an individual's life. However, for many years research based on the questionnaire was deficient due to its lack of ability to quantify the relative degrees of life change inherent in the respondents' different life events. In other words, one life change (such as the death of a spouse) was counted the same as another life change (such as change of residence).

Holmes and Rahe[33] used a proportionate scaling method to develop a weighted scoring system for the separate life events according to their relative meaning and significance for the average individual in the following manner:

A selected group of people (394 adult Americans) were instructed to scale proportionately the 43 life change questions

using 'marriage', with an arbitrarily ascribed 'life change unit' (LCU) value of 500, as their module. So, subjects were assigning LCU values for the remaining life-change events in proportion to 500 LCU ascribed to marriage. For example, when a person evaluated the event 'change in residence', he was to ask himself/herself: "Is a change in residence more, less, or perhaps equal to the amount and duration of life change inherent in marriage?" If he decided it was more, he was to indicate how much more by choosing a proportionately larger value than 500. If he decided it was less, then he was to indicate how much less by choosing a number proportionately smaller than 500. This procedure was repeated for each of the remaining life-change events. The results of this scaling method (each LCU value divided by 10 to make them less cumbersome), is presented in Table I.2.

One can imagine that psychological significance of these events would vary with individuals. Also, some of these events are negative or 'stressful' in the conventional sense, and socially undesirable. Others are socially desirable and consonant with present Western culture values. In other words, 'life change', as referred to by Rahe and Holmes,[33] is a general term encompassing both positive and negative features. The emphasis is intended on change from the existing steady state; not on psychological, emotional or social desirability but on 'social readjustment' in terms of intensity and length of time necessary to accommodate to a life event regardless of its desirability.

TABLE I.2

Results of the Life Changes Scaling Experiment[33]

	Life event	Mean value
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail term	63
5	Death of close family member	63
6	Personal injury or illness	53
7	Marriage	50
8	Fired at work	47
9	Marital reconciliation	45
10	Retirement	45
11	Change in health of family member	44
12	Pregnancy	40
13	Sexual difficulties	39
14	Gain of new family member	39
15	Business readjustment	39
16	Change in financial state	38
17	Death of close friend	37
18	Change to different work	36
19	Change in number of arguments with spouse	35
20	Mortgage over $10,000	31
21	Foreclosure of mortgage or loan	30
22	Change in responsibilities at work	29
23	Son or daughter leaving home	29
24	Trouble with in-laws	29
25	Outstanding personal achievement	28
26	Wife begins or stops work	26
27	Begin or end school	26
28	Change in living conditions	25
29	Revision of personal habits	24
30	Trouble with boss	23
31	Change in work hours or conditions	20
32	Change in residence	20
33	Change in schools	20
34	Change in recreation	19
35	Change in church activities	19
36	Change in social activities	18
37	Mortgage or loan less than $10,000	17
38	Change in sleeping habits	16
39	Change in number of family get-togethers	15
40	Change in eating habits	13
41	Vacation	13
42	Christmas	12
43	Minor violations of the law	11

Scaling experiments of the SRE's life change questions have now been carried out in several countries and also replicated in America with a group of 211 adolescents to test further the degree of value consensus concerning the amount of change involved in the various life events.[57]

A younger sample was selected to determine if age influences how individuals perceive the magnitude of change associated with life events. It was assumed that as late adolescents have usually not experienced many of these life changes, their evaluation of them may be different.

However, a high agreement between the adolescent and the original groups (n = 394) was obtained (rank order correlation = +0.97) which supports the hypothesis of a general value agreement on the amount of change involved in life events.

Life events evaluated differently by adolescents than by adults were: revision of personal habits (lower mean LCU values); taking on a mortgage of less than 10,000 dollars, and sexual difficulties (both higher mean LCU values). This is explained by possibly placing too much seriousness on the event and also by the individual amount of experience or familiarity with the events, which may produce over- or under-estimate of the social adjustment required.

The scaling results by people of different nationalities were strikingly similar. In fact, greatest differences in scaling were found between sub-cultures of the American population.[58]

Figures I.2 and I.3 indicate the relative close agreements in mean LCU values for the various life changes found between

Japanese (n = 112) and American (n = 168) samples,[59] and between Swedish (n = 157) and American samples.[60]

Figures I.4 and I.5 demonstrate the greater scaling deviance found between White (n = 394) and Negro (n = 64) Americans, and that found between White and Mexican (n = 78) Americans respectively. Even divergent pairs of samples in this study produced essentially the same LCU ranking for the 43 life events.

Rahe[61] also analysed the available comparable cross-cultural life-event scaling studies performed in America (Caucasian Americans = 168, Negro Americans = 64, Mexican Americans = 78), Japan (n = 112), Denmark (n = 95), Sweden (n = 75), and Hawai (n = 200) in terms of rank orderings, or hierarchies of changes only, for the 43 items of SRE produced by these different samples. He found that the overall agreement between any two of the seven rank orderings was so high that the likelihood it happened by chance alone was less than 1 in 5,000 ($p < 0.0005$). Highest agreement was found between Swedish and American samples ($r = +0.943$), lowest between Hawaiian and Danish samples (Spearman's $r = +0.629$).

The question raised by these comparisons is that, for twentieth-century societies, are there not more cross-cultural similarities than there are differences?

As a metric of social consensus, or as a measure of perceived amount of change associated with the social phenomena, the method of magnitude estimation (proportionate scaling), used by Rahe and Holmes[33] originally and then in all the cross-cultural scaling

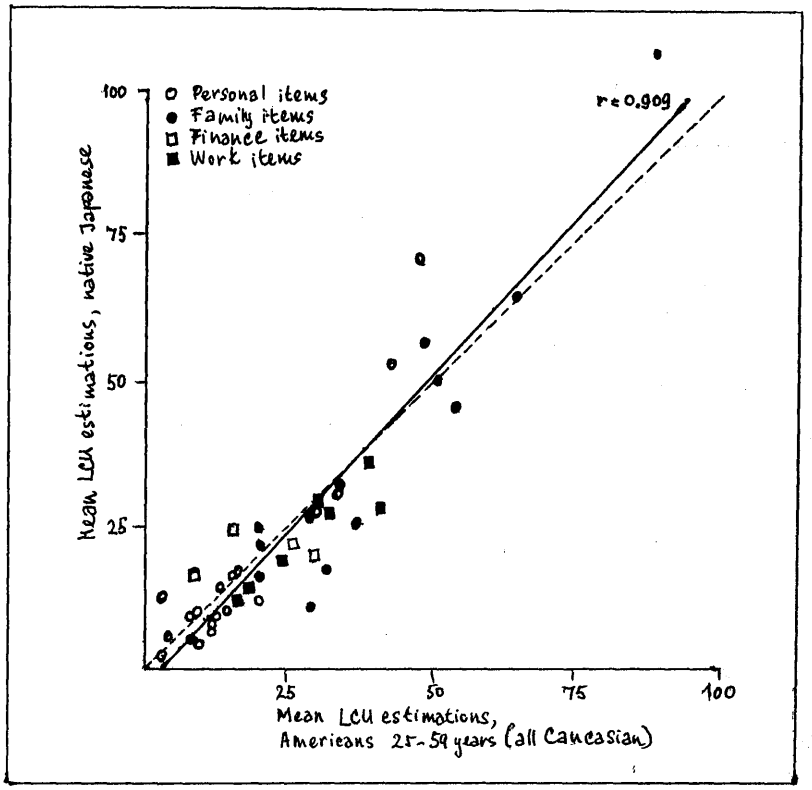

FIGURE I.2

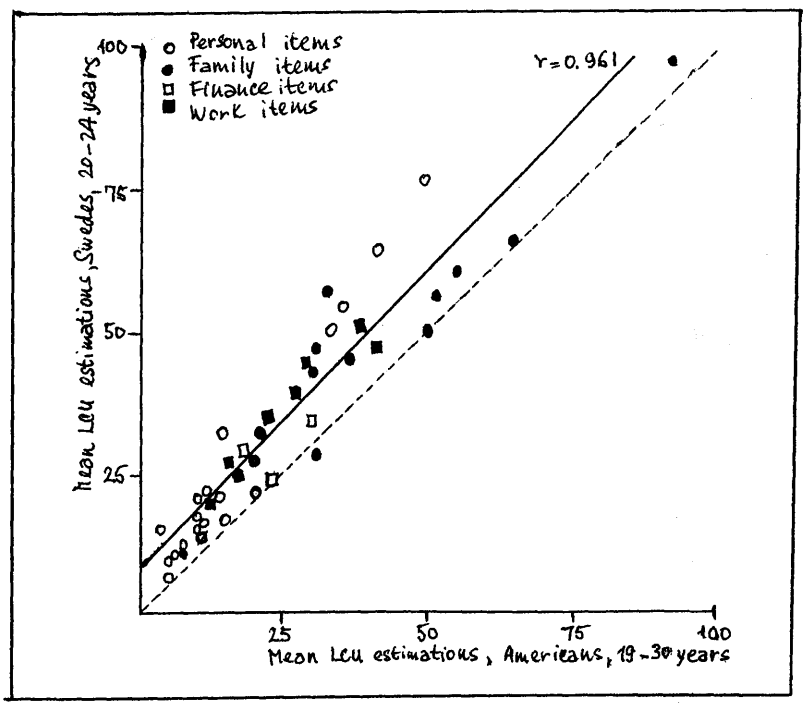

FIGURE I.3

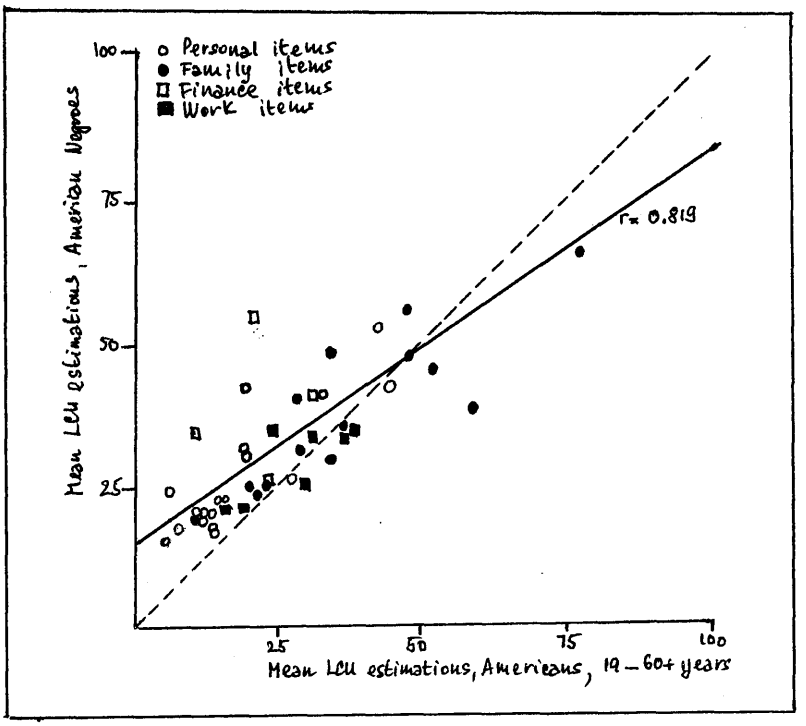

FIGURE I.4

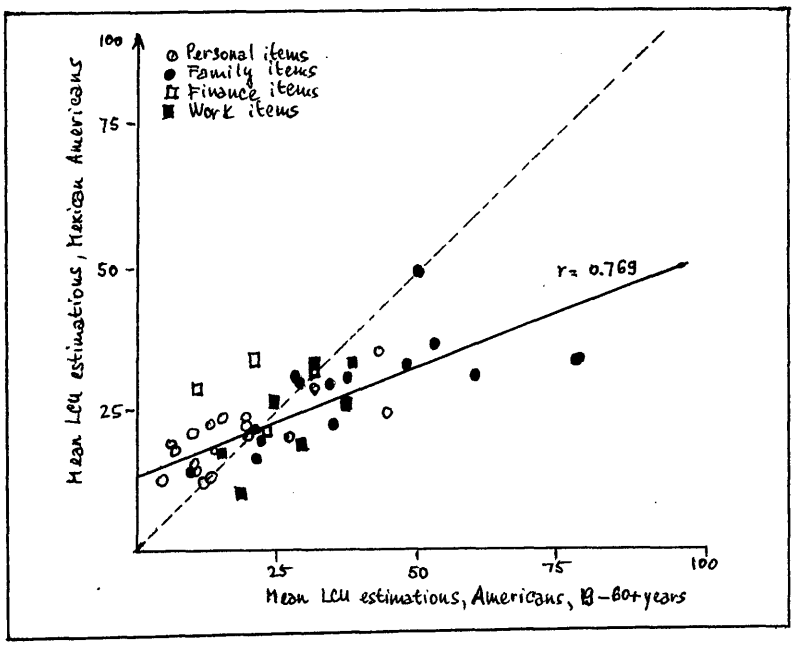

FIGURE I.5

studies subsequently, is a relatively new scaling method in the field of sociology.

Hence, Ruch and Holmes[57] compared using the adolescent American sample (n = 211) this scaling method with the Thurston's method of paired comparisons, which has different theoretical assumptions and has been widely applied in sociological research.

In paired comparisons, each stimulus in paired and compared with every other stimulus, so that each stimulus functions as a standard. Thus, subjects are asked to decide whether marriage or divorce involves the greater amount of life change (indirect method).

With the magnitude estimation method, one stimulus is arbitrarily given a numerical value and subjects rate the other events numerically in proportion to this value (direct method). For example, if the amount of life change associated with marriage is set 500, the subject is asked to compare divorce with marriage and give the divorce a proportional number.

Ruch and Holmes[57] found that these two methods scaled life events so similarly that the relationship between the two scales appears linear (Spearman's r = +0.93). Thus, both methods are useful in scaling social readjustment associated with life events. The magnitude estimation method has two advantages: it involves less statistical computation and can scale a relatively larger number of stimuli than the paired comparison method.

Thus, this direct scaling method developed in psychophysical research can be of considerable usefulness in sociological research.

The stability of the SRE questionnaire as regards recall and the factors possibly affecting the consistency of recall were also examined.[62] The SRE was completed by 54 resident physicians on two occasions, nine months apart. The questionnaire inquired about 40 possible changes over the past 10 years (1956-1965). Three years (1957, 1960, 1963) were arbitrarily chosen for detailed investigation into the consistency of recall, and only the year 1963 was chosen for a detailed examination of the factors influencing recall on the questionnaire.

The passage of time between the two administrations had no effect on the consistency of scores, or events reported over the three years examined in particular. Items containing qualifying words (particularly 'substantial') significantly affected their individual recall but this apparently had no effect on the consistency of overall scores.

However, the most potent factor affecting consistency of recall was the saliency of the life-event items, reflected by their mean values (LCU). This relationship between saliency of an event and consistency of its recall was highly significant.

The authors take the recall consistency in 86% of 40 items of SRE to indicate that these particular life events are important in the lives of respondents and that it confirms and substantiates the rating of these life events by the 394 subjects reported by Holmes and Rahe[33] in their original paper.

There are some important conclusions emerging from the work of the British and American teams. Their comparison and combined implications, arising from their experience, for life-event research are briefly summarised here:

These two techniques are clearly alternative approaches in that they focus on the total sum of events occurring to each individual in a defined (arbitrarily) period of time.

Rahe's Social Readjustment Rating Scale (SRRS) does not take into account in rating the implications of an event the person's general social situation and circumstances surrounding that particular event, which might be relevant in making a commonsense judgment about its impact. This is assessed on the various auxiliary rating scales used by Brown, Birley and others.

However, it seems to be that the 'severity of threatening implications' of events (a 4-point scale in Brown's et al. work), is the relevant discriminating dimension of impact of events, at least in Brown's et al. studies. The other rating scales used do not appear to produce significant differences in their results (Brown, personal communication). Brown suggested that this was because the other rating scales were more or less implicitly included in their most general rating, 'severity of threat'. In other words, the degree of disturbance in psychological homeostasis appears again as a central concept in life-event research, and as such is contained in the Social Readjustment Rating Scale.

The SRE questionnaire has been criticised for some of its items being trivial (e.g. Christmas), or only relevant to a small

number of people (e.g. business readjustment) or not sufficiently discriminatory (e.g. change of financial status may mean either deterioration or improvement). It has also been criticised by some workers in the field of psychiatric epidemiology[63] for not being at all consistent or comprehensive in items, or events that can befall people, included.

Undoubtedly, Schedule of Recent Experience (SRE) given as a questionnaire to psychiatric population is less flexible than the interview technique that Brown et al. used with such population, and thus it has restricted scope. However, its alleged lack of consistency or comprehensibility when used with psychiatric populations, may reflect something important about the nature of their life experience, rather than defects in the questionnaire itself, which was, after all, intended for use with non-psychiatric populations. Certainly, no new items should be included in SRE unless they are empirically elucidated.

The references made by Brown et al. in their papers[42, 43] about the methodology they have been using are very convincing (for instance, they tape-recorded interviews). However, their technique cannot be used by anyone not specifically trained by them, and, in fact, it has not been published in its entirety.

Recently Brown et al. made a number of important recommendations[42] in connection with their research experience and findings on life events and onset of schizophrenia and depression. These recommendations, aimed at reducing bias and error in life-event studies of the onset type, are fairly important for any type

of life-event research with psychiatric populations:

(i) Failure to distinguish events as 'illness related', 'independent' and 'possibly independent of disorder', is, if anything likely to increase the chance of a relationship between life events and the disorder, or any other variable for that matter.

(ii) Incidence of events over short periods of time, as well as categorising of events by implication of threat must be used, so that any differences due to the type of event and due to a lot of minor events occurring over a short period of time are not missed. Lack of observation of these features in analysis of material is likely to reduce or mask real differences in the effects of events.

(iii) If the comparison group involves persons suffering from the condition being studied, or is a group being treated for physical illnesses, this will again reduce the real differences between psychiatric patients and comparisons, as it is now established that the onset of many non-psychiatric conditions may also be provoked by life events (see Chapter 1). Ideally, therefore, the comparison group should be a random sample drawn from the same population as the patient series, and including only healthy individuals.

CHAPTER 3

'... AND COMING UNDER MEDICAL CARE'

> "Contact between a patient and the specialist mental health services represents a relatively late stage in the social process which begins with the earliest recognition by the individual patient, or by his relatives, that something is wrong. The process continues when the abnormality is reckoned by the patient, or by his family, to have medical significance and when a decision is made to seek advice, usually from the General Practitioner. Further stages are encountered in the appraisal of the case by the G.P. and in his decision whether to handle matters himself or whether to refer the patient for a psychiatric opinion. Other agencies, for example, mental welfare officers of the local health authority or social workers may be involved at this stage in the evaluation and in the process of decision making.
>
> "A person's readiness to seek or to accept psychiatric treatment will depend, in part, upon his own attitudes to mental illness and to psychiatric institutions, and upon those of his relatives. Such attitudes may also influence the willingness of people to declare symptoms in the course of surveys of psychiatric disorders in samples of general population. Declaration, or illness reporting, will also be affected by prevailing concepts of mental disorders in society and by the resulting interpretation and evaluation of anomalies of behaviour and/or of experience." [64]

Let us now examine theories upon and evidence for various influences that

1. motivate people to seek treatment;
2. stimulate others to see that some form of intervention is initiated;
3. guide General Practitioners in their decision to refer a patient to a psychiatric agency;

4. determine the association between social attitudes and the prevalence of symptoms.

3.1 ILLNESS BEHAVIOUR AND MEDICAL ATTENDANCE

In recent years there has been an increased interest in research on the various influences that motivate people to seek treatment or that stimulate others to see that some form of intervention is initiated.[65] Two concepts frequently used to describe such forces are the notions of illness behaviour and of societal reaction.

The notion of illness behaviour was elaborated by Mechanic et al., mainly in the 1960's. Illness behaviour refers to the various cultural, personal and situational forces that lead to the varied ways in which individuals perceive, evaluate, and act in reference to bodily reactions. Illness behaviour thus encompasses such areas as pain recognition and expression, attitudes to illness and to dependency and utilisation of care, i.e. the receptivity to the use of medical and psychiatric services.

It also supposedly depends on tendency to seek release from normal obligations and responsibilities, or tendency to adopt a 'sick role'[37] which, as Mechanic and Volkart[2] state may itself be a function of the several factors enlisted above (including stress, past experience, current pressures, the medical resources, and class and cultural differences).

However, the notion of illness behaviour becomes less useful and less likely the more inclusive it is. In particular, it should

be more relevant to some illnesses than to others, and should, for example, have little bearing on reporting of catastrophic illness.

Mechanic and Newton[36] and Mechanic and Volkart[2] in their investigations of 600 college students found that 'routine illness' (according to them, illnesses with low danger, greater predictability, frequency and familiarity) were brought to the medical attention more by the 'high inclination' than the 'low inclination' group (inclination refers here to the tendency to adopt sick role as measured by a simple questionnaire). This relationship was less marked with more dangerous, less frequent and familiar disorders. Mechanic and Volkart[66] further report that "... the probability that persons will be frequent visitors to a medical facility is largely a function of their inclination to adopt the sick role ...". Yet their observed association between these two variables was only of low order. (According to Engel,[67] the phi coefficient computed from Mechanic's chi square data is only 0.18).

Mechanic[68] has recently stressed again that,

> "as we move from more serious incapacitating conditions to more common forms of psychological disorder, these selective forces bringing persons into treatment are better predictors of case-finding than pathology itself."

According to him, for conditions such as schizophrenia and other more profound conditions, selective forces only exert a modest influence on case-finding in Western countries, whereas in cases of neurotic and personality disorders, it is apparent that social variables have an important effect on which cases come into treatment, and that cases

that come into treatment are biased samples of all such cases in the population. At this point, Mechanic does not quote any evidence, but there is no doubt that many people suffering from defined psychiatric disorders do live undetected in the community. In their London studies of depression, Brown and his colleagues[42, 43] came across a number of untreated cases of depression in the community, whose clinical state corresponded to criteria laid down by them for inclusion of attending patients into their depressives sample. These untreated cases were discovered only during collection of life-event information for control purposes from randomly chosen samples of the general population.

Also, we must face the possibility that response tendencies and pathology are like two sides of the same coin, and that they cannot be effectively differentiated. In the experience of pain, for example, the subjective definition of the phenomenon is a powerful factor and inseparable from the physical sensation.[69] Similarly, it may be that the manner in which certain psychological feeling states are perceived and defined affects their course and consequences, and thus the cultural pattern itself can be viewed as dysfunctional and pathological. At this point, it is perhaps useful to return to the findings by Hinkle, that the observed illness reporting held true for <u>major</u> as well as <u>minor</u> illnesses in the <u>same</u> individuals, to remind ourselves of the role of genetic and perhaps even personality differences in these broad cultural fields.

Robinson[70] examined the relationship between personality characteristics, namely neuroticism, and blood pressure in a group

of neurotic out-patients attending a psychiatric clinic, a group of hypertensives attending a medical clinic and a random sample of general population which turned out to contain also individuals with high blood pressure. The clinic neurotics had the highest scores on neuroticism, next were the hypertensives. In the random sample, where no association between blood pressure level and neuroticism was found, the individuals with high blood pressure did not differ significantly from the rest of the random sample on this personality dimension.

One possible explanation for these findings is that the patients who find themselves attending medical clinics for hypertension have been self-selected in terms of personality traits of neuroticism. Such individuals may attend their doctor relatively frequently with a variety of complaints and thus be at greater risk of having their hypertension detected.

3.2 SOCIETAL REACTION PERSPECTIVE OF PSYCHIATRIC ATTENDANCE

In contrast to the concept of illness behaviour the concept of societal reaction refers to the differential responses others make to a person's behaviour, and this concept constitutes a part of the social psychology of labelling.

It is commonly recognised in social psychology that the behaviour of an individual is formed, apart from other aspects, by social expectations of others and by the manner in which social definitions help to organise opportunities for social interaction.

Such labelling processes can vastly expand a person's opportunities and potentialities, but they also can restrict and retard them.[68]

This societal reaction perspective has been one of the most pervasive and influential sociological approaches to deviance in the sixties.*

A fairly explicit statement of how the societal reaction perspective may be used to explain how a person becomes mentally ill has been provided by Scheff.[73] He states that there is always a residue of the most diverse kinds of violations of implicit rules of behaviour for which the culture provides no explicit label; he calls these residual rule-breaking and indicates that it is the violations of these diverse kinds of rules that lead to labelling someone mentally ill. He also explicitly states that the societal reaction is the single most important factor in the stabilisation of mental illness.

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* NOTE 5: One of the most fundamental distinctions made by societal reaction theorists is between primary deviance, which may cause someone to be labelled as deviant, and secondary deviance, which is the behaviour produced by being placed in a deviant role. Regarding primary and secondary deviance, Lemert[72] says: "Primary deviation is assumed to arise in a wide variety of social, cultural, and psychological contexts, and at best has only marginal implication for the psychic structure of the individual; it does not lead to symbolic reorganisation at the level of self-regarding attitudes and social roles. Secondary deviation is deviant behaviour, or social roles based upon it, which becomes a means of defence, attack or adaptation to the overt and covert problems created by the societal reactions to primary deviation."

The societal reaction theorists do not appear to attach significance to an act of primary deviance except insofar as others react towards the commission of the act. According to this approach, usually the most crucial step in development of a stable pattern of deviant behaviour is the experience of being caught and publicly labelled deviant.

In this context, mental illness is an ascribed status, entry into which is primarily dependent upon conditions external to the individual. In essence, deviant is someone who is victimised, and not someone who suffers from an intra-personal disorder. Scheff's formulation is that,

1. virtually everyone at some time commits acts that correspond to the public stereotype of mental illness;
2. if, by some chance these acts become public knowledge, the individual may, depending upon various (unspecified) contingencies, be referred to the appropriate officials; and
3. once this happens the person will be routinely processed as mentally ill and placed in a mental institution.

This is an original formulation which very neatly gets around a potentially troublesome aspect of the societal reaction perspective, namely, why does the person commit an act of primary deviance? In most cases it would be very difficult to argue that the person publicly presents psychiatric symptoms for personal gain or because he belongs to a subculture with values in conflict with the dominant group. Instead, Scheff argues that psychiatric symptoms are a common phenomenon, that their presentation is unintended, and only rarely and fortuitously do they cause someone to be labelled mentally ill. The question one has to confront is whether or not this formulation is consistent with available evidence.

However, since our interest here is in how people come under medical care, and in this instance, how others contribute to this,

we focus only on the first and second points of this formulation. Scheff's ideas received little systematic evaluation by its author. Gove,[71] however, examined their empirical validity against already published studies of public image of mental illness, against the ways in which American hospitals operate in admitting voluntary patients, and against committal procedures.

A number of investigations have been made of public image of mental illness. According to Nunally,[74] in the public conception mental illness appears to involve unpredictable and potentially dangerous behaviour; the public lacking accurate knowledge about mental disorder exaggerates and distorts the amount and type of disturbance.

Carstairs and Wing[75] also obtained some information about attitudes of the public to mental illness through a survey conducted through the B.B.C. A request to write as fully as possible what the participants understood by the expression, 'a person who is mentally ill', elicited descriptions of the traditional 'madman' who could not think logically and was unpredictable, deluded and withdrawn. Depressive, neurotic and personality disorders were much less frequently mentioned.

These investigations clearly indicate that the general public has a negative, highly stereotyped image of mental illness, and suggest that the public views mental illness as a master status which overrides other characteristics of the individual. The question, however, is whether people are treated as mentally ill because they inadvertently

perform an act that activates the stereotype of mental illness. The evidence does not suggest that this is the case.

Yarrow et al.,[76] for instance, investigated how wives came to define their husbands as mentally ill. The wives used strong defences to avoid seeing their husbands' behaviour as deviant. Only when the husband's behaviour became impossible to deal with, would the wife take an action to have her husband hospitalised. Even at this time the husbands were not always viewed as mentally ill. Even after the hospitalisation, one-fifth of the wives did not regard their husbands as mentally ill and another 20% did so only sporadically. Scheff[73] himself notes that many hospitalised patients deny that they are mentally ill, and a group of ex-mental patients studied by Gove and Lubach[77] generally acknowledged that they had needed and benefited from hospitalisation but denied that they had been mentally ill.

The identification of mentally ill seems to depend again on the perceived amount of danger of behaviour predominantly. When people are presented with descriptions of individuals with various types of mental disorder, the disturbed behaviour is not regarded as an indication of mental illness except when the person is presented as dangerous.[78] Phillips,[79] using the same case materials, has shown that rejection of the mentally ill is not related to their behaviour, with the exception of the paranoid schizophrenic who appears dangerous, but to their being labelled as mentally ill by being in treatment.

In sum total, the evidence strongly suggests that people typically are hospitalised because they have an active psychiatric disorder which is difficult for themselves and/or others to handle. It appears that the public stereotype of mental illness does not lead to individuals being inappropriately labelled mentally ill through an inadvertent act of residual rule-breaking. Instead, the evidence suggests that the gross exaggeration of the degree and type of disorder in stereotype fosters the denial of mental illness, since the disturbed behaviour does not usually correspond to the stereotype.

Mechanic lists the various factors affecting whether individuals themselves seek care or whether the community define them as requiring intervention of some kind in the following ten categories which are discussed in his Medical Sociology: A Selective View:[80]

1. The visibility, recognisability, or perceptual salience of deviant signs and symptoms.
2. The estimate made of the present and future danger likely to follow such signs and symptoms.
3. The extent to which symptoms disrupt family, work, and other social activities.
4. The frequency of the appearance of deviant signs and symptoms and their persistence.
5. The tolerance threshold of those who are exposed to and evaluate the deviant signs and symptoms.
6. Available information, knowledge, and cultural assumptions and understandings of the evaluator.

7. Basic needs that lead to autistic psychological processes.
8. Needs competing or interfering with illness responses.
9. Competing possible interpretations that can be ascribed to the symptoms once they are recognised.
10. Availability of treatment, physical proximity, and psychological and monetary cost of taking action (including not only physical distance and costs of time, money and effort, but also such costs as stigma, social distance, feeling of humiliation, and the like).

According to Mechanic, the influences that affect factors such as visibility, tolerance, and the degree of annoyance and disruption caused by particular patterns of symptoms are not necessarily correlated with the degree of pathology as viewed from a medical or psychiatric perspective. Such factors may vary widely in different cultural contexts, among different social strata, and under varying community conditions. Yet, according to him it is these factors, characterising illness behaviour and the societal reaction, that may determine the public recognition of illness and the provision of psychiatric and social assistance.

3.3 PSYCHIATRIC REFERRAL FROM GENERAL PRACTICE

The empirical evidence on certain aspects of the elaborate social process whereby psychiatric cases are defined in the community, recognised by the community members and by medical and social agencies,

has come from the work of the MRC Social Psychiatry Unit (South Wales detachment). They conducted a number of structured surveys of the attitudes and behaviour of particular categories of persons generally considered to have special duties, responsibilities or functions in relation to psychiatric cases.[64]

For instance, a close comparison was made of the factors influencing referral of patients to psychiatric services from six general practices, including eight practitioners, situated in the same mining valley.[81, 82] Information about cases referred during the period 1951-1959 was gathered from hospital and clinic records. Despite the homogenity of the population of the six practices (in their distributions by age, sex, occupation, number in household, place of birth and education), the rate of referral of patients directly to psychiatric services showed a substantial variation among practices. For instance, for females, the highest rate (36.8, i.e. average annual rate of direct referrals per 10,000 population at risk) was almost twice the total average (19.4) and more than three times the lowest (10.8). The doctors did not, however, differ in the criterion of clinical severity which they applied in deciding to refer a patient, or in the relative proportions of diagnostic categories referred.

The authors state that the clue to the factors which may influence referral came from interviews conducted with the G.P's themselves. The commonest factor was the failure to respond to treatment provided by the practitioner. However, a medley of 'non-clinical' factors was also mentioned, each of which appeared

to weigh in varying degree with individual doctors. Examples quoted were:

1. pressure from relatives for something else to be done;
2. request by patient to see a specialist;
3. serious impairment of patient's working capacity;
4. lack of emotional support for the patient from members of the family;
5. doctor's opinion that the patient may find it more acceptable to be told he has a nervous trouble by a specialist, rather than by his own doctor.

It was not possible to make a quantitative estimate of the influence of each of these factors separately upon referral practice, but it may be considered to account perhaps, in part, for the variation in the direct referral rates. It also implies that, since the G.P. is the principal agent by whom patients are passed to the mental health services, he must exercise a powerful and biasing influence on mental hospital and clinic morbidity statistics.

3.4 SOCIAL ATTITUDES AND THE PREVALENCE OF SYMPTOMS

Rawnsley,[64] in agreement with the previously mentioned workers in this field, maintains that the detection of the common psychiatric ailments, for example neuroses and personality disorders, depends upon reports of behavioural anomalies or of changes in inner experience. This will, in turn, be governed by standard of 'normal' behaviour and

experience of patients themselves, or subscribed to by their relatives or by other members of their social world. Quite apart from the awareness of the existence of abnormality, attitudes of diffidence arising from the possibility of stigmatisation may lead to concealment of such disorder even during special inquiry. Beliefs concerning depression or morbid anxiety may cause a denial of such phenomena. Potent in this regard may be the notion that these manifestations are not of medical importance but rather indicate a moral defect or a weak character. The neurotic may be held personally responsible for his symptoms which are seen, in the last analysis, to be susceptible to voluntary control in a way which does not apply to manifestly 'organic' symptoms.

Aware of these possibilities, the MRC Social Psychiatry Unit undertook an investigation of associations between certain social attitudes and the prevalence of symptoms in an area of South Wales.

All inhabitants in that area, about 14,000 were first of all assigned to one or other of the following six social sections:

A - professional people and members of their households;

B - farmers and their families;

C - managers and 'white-collar' people of local origin and connections, and their households;

D - as C, but without local connections or kinship ties;

E - manual occupations with local connections and origins together with their families;

F - the remainder of the population, consisting mainly of manual workers and their families who had no local connections.

The assessment of symptoms and of associated attitudes was carried out in a random sample of this population. The members of this sample were approached individually and as many as possible were assessed in their homes using a standard interview procedure. The attitudes measured were (1) level of sympathy manifested towards certain symptoms; and (2) extent to which the same symptoms are regarded as proper objects of medical care. Symptoms were assessed using a modification of Cornell Medical Index Health Questionnaire and specially designed scales for a limited number of symptoms.[83] Other measures of morbidity were also employed, including re-interview of a sub-sample by a psychiatrist who was ignorant of the performance on the first interview; special observation by G.P's for a period of three months; records of attendance at psychiatric hospitals or clinics in recent years.

The interrelations between these measures of morbidity were interesting:

1. The judgment of a psychiatrist about the presence of current psychiatric disorder and that of the G.P. formed independently, regarding the occurence of such disorder during the past 12 months were highly significantly associated.
2. On the basis of a clinical interview the psychiatrist categorised respondents as predominantly psychiatric cases, predominantly physical pathology cases, or as healthy individuals. For both sexes, respondents in the psychiatric category had high mean symptom frequencies on modified Cornell questionnaire by

comparison with healthy respondents. Physically sick people had intermediate frequencies but closer to the healthy than to the psychiatric means.

3. In both the 'physical' and 'psychiatric' groups, both physical and psychological mean symptom frequencies were raised at the same time.

In summary, positive associations were found between three independent measures of morbidity (psychiatrist, G.P's, Cornell index), when the analysis was at the level of individual respondents.

However, a lack of congruence between these measures was found when variation in morbidity between social sections was examined, using data from Cornell questionnaire and G.P's only. Females reported more symptoms than males in each social section on Cornell Index and in addition to that, this was differentially evaluated by the G.P's, according to the social section from which the female patients came. The females of section E, for example, scored highest on the Cornell questionnaire, but had the lowest proportion of psychiatric cases according to the general practitioners' assessments.

This lack of congruence could not be accounted for by variation between social sections in the frequency of contact with the G.P's for certain 'physical' and 'psychological' symptoms. It might depend upon differential perception of psychiatric disorders by G.P's among members of the various social sections.

This lack of correspondence between morbidity estimates at various levels of declaration (i.e. involving different independent

observers) in population sub-group which are socially dissimilar was not confined only to this study. For instance, in the survey of psychiatric disorder in a new town[84] the prevalence of nervous conditions as assessed by the home interview showed a variation by social class. The prevalence according to G.P's estimates also varied by social class but in a way which was not congruent with the home interview situation.

It may be argued that the most flexible, sensitive and 'valid' technique for estimating psychiatric disorder is at present the clinical interview conducted by an experienced psychiatrist, with all its known biases, i.e. when the current psychiatric classification is used as the reference.

In relating symptoms to attitudes measured in the South Wales survey of the rural population it was found that the presence of a specific symptom was positively associated with a relatively high degree of sympathy towards others who have the same symptom. The variation between social sections in expressed sympathy for specific symptoms was not significant.

From this survey, it was not possible to draw firm conclusions as to the functional relationship between sympathetic attitudes and symptoms. The positive association may, according to Rawnsley,[64] reflect the influence of a common factor related possibly to traits of character. Personal suffering may engender sympathetic attitudes to like troubles in others. Alternatively, the presence of a sympathetic outlook in respect of a particular symptom may generate a climate which favours the emergence and expression of the symptom.

It was suggested[85] that epidemic hysteria and endemic headache of the Tristan da Cunha people, following evacuation of the entire population of this island to England in 1961 after a volcanic eruption, might constitute an example of this process.

To summarise briefly this chapter:

Whether or not a person comes to medical/psychiatric attention depends, in the first place, on the type and severity of disorder which she or he exhibits.

Secondly, attendance (as well as disorder) may be related to the personality characteristics of the prospective patient, especially when self-referred.

G.P's, the most common mediators of attendance at specialist health services, appear to act as filters, in some cases random, in other cases biased. Apart from a host of idiosyncratic reasons for referring patients, more importantly it is their stereotyped social attitudes which affect the recognition of a psychiatric disorder requiring treatment.

PART II.

Study of first psychiatric attendance in the context of life events

CHAPTER 4

AIMS OF INQUIRY

While the role of life events in at least enhancing the morbid risk of individuals is by now well established and documented, the possibility that life changes play a role in coming under medical care (here, psychiatric care) has not been so far empirically explored amongst the other factors thought to relate to psychiatric attendance.

Yet Brown et al.[42] discovered by chance, while collecting control data for their study of depression, a number of untreated depressives in the community. Thus, a certain proportion of people, who are ill by definition, never asked for help for one reason or another. It is not clear what this reason was; one can speculate that what differentiated the treated from the untreated cases was the occurence of life stresses which possibly happened after onset of their depression.

My investigation is concerned with the first attendance ever at a psychiatric service in the general context of life events preceding it, with the specific aim to analyse closely life changes which occur in the period between onset of complaints and a subsequent attendance at a psychiatrist. It is not my thesis that this attendance is wholly unrelated to psychopathology. Rather, one of my intentions is to show that there are, apart from pathology, certain types of life events involved which may contribute to, and perhaps even accelerate the attendance.

This investigation also represents an attempt to apply the life-event technique, SRE and SRRS, developed to cover 'normal' life changes and found useful in predicting near-future susceptibility to illness in healthy people, to psychiatric population.

The link between life-event studies relating to onset of disorders, in particular of psychological nature, and this study is thus mainly a methodological one. In both cases similar methods of data collection can be used and, in fact, analogous methodological problems need to be dealt with, e.g. dependence and independence of events of the disorder.

To obtain information on life-event experience of people making their first psychiatric contact, I intend to use the Schedule of Recent Experience (SRE) and the Social Readjustment Rating Scale (SRRS). From this information I expect to be able to substantiate the hypotheses stated below (A), and to discuss related methodological matters (B).

I also intend to examine the implications that life events may have on the clinical management of the patients and to look, using follow-up information, into the ways in which patients were channelled in and out of psychiatric attendance (C). The methodological and clinical topics (B and C) are of exploratory and hence subsidiary interest in this project.

A. HYPOTHESES (I - IV):

I. I want to establish that in general, the life-event variable does differentiate prospective psychiatric patients from normal, healthy people for some time prior to the patients' first psychiatric

attendance. (Patients' events in this period should, presumably, consist of those preceding onset of complaints and those intervening between onset and attendance. At this stage the latter events are not yet separately evaluated).

It is predicted that, at some point in our 'study period' (two years immediately preceding the first attendance),

(a) life events become more frequent among patients than in the control sample over a comparable period of time;

(b) this elevated total rate of events will be paralleled by increased total severity of events among patients compared with controls over the same period of time.

(c) It will be possible thus to determine retrospectively the beginning and length of this time in which the total rate and severity of events start differing in the two populations. No specific prediction is made about the length of this time which, however, is not expected to exceed the study period.

(d) It will be also possible to decide whether there is a mere elevation of the total rate and severity of events in the patient group or, in addition, a build-up of life changes as attendance approaches.

II. The events occurring in the period between onset of patients' complaints and their first psychiatric attendance are central to this study. This period, which is specific to each patient, is hence referred to as a 'specific study period'.

I intend to establish that the life-event variable will persist to differentiate between the first attenders and their normal controls

also during this time, even though all 'health' changes will be excluded from comparisons.

I shall also explore a possibility that this predicted difference can be accounted for by an increased incidence of some individual events. I shall attempt to determine whether events, grouped according to areas of change will significantly differentiate the patients from their controls.

Thus, it is predicted that,

(a) event rate: overall rate of events (but excluding changes in 'health') will be higher in the patient group than in the control group;

(b) event severity: overall severity of events (but again excluding 'health' items) will be higher in the patient group than in the control group;

(c) areas of change: rate and/or severity of events in the five traditional areas of change in the SRE - health, employment, intimate and family, personal and social, financial - will not differ in the patient and control groups;

(d) individual events: incidence of individual events will not differ between the patient and control groups.

III. It is my aim to show that the life-change concept, with no further evaluative dimensions (qualifications) attached, provides the best fitting description of the patients' life experience during the specific study period.

Thus, the following is expected:

(a) Entries and exits from social field. (These are the events which involve changes in the social circle of the individual. 'Entries' refer to an introduction of a new person(s) into the individual's immediate social environment; 'exits' relate to events most probably involving departure of someone from it).

Patients and controls will not differ in the number and severity of 'exits' and of 'entries' into their social field which they will experience in the specific study period, i.e. in the time between the patients' onset of complaints and subsequent attendance.

(b) Positive and negative events. (Some events can be grouped into 'positive' or 'negative' categories in agreement with the direction of change they involve).

First psychiatric attenders will not differ from their control population on the number and severity of 'positive' and 'negative' events which will occur in the specific study period.

IV. Finally, I want to show that events occurring during the specific study period contribute directly to the first psychiatric attendance.

I also intend to explore a possibility that a higher incidence of events after onset of complaints is associated with an earlier attendance at a psychiatric service.

Thus, the following is predicted:

(a) Events occurring independently of illness. (Among all the events only this type can be considered as the catalyst in the process of coming under psychiatric care).
Patients will experience more events occurring independently of their complaints than the controls considering comparable events and time (specific study period). Also, severity of these events will be higher for the patients than for the controls.

(b) There will be no association between the overall incidence of events ('health' changes excluded), occurring after onset of complaints (in the specific study period), and the length of time from this onset to first psychiatric attendance.

B. METHODOLOGY:

Methodological issues relating to this study are of two distinct kinds.

Firstly it is the issue of most appropriate design for testing hypotheses concerned with the role of events in attendance (A. IV above).

The best way to test this particular possibility would be to compare a group of people who come forward for psychiatric treatment, on the life-event dimension, with a group of people who remain untreated in the community (and matched for nature of complaints as well). In the untreated group the health complaints would be controlled. Thus, these individuals would constitute the most appropriate control for testing the hypothesis that life changes which occur independently of or in conjunction with altered mental state, contribute to whether

the individuals concerned complain and how speedily they come forward for treatment.

However, as untreated cases cannot be identified unless a community screening for this purpose is undertaken, it is necessary to find alternative ways of control: (i) by comparing the patient group with a matched group of normal people; and by (ii) using 'within patient group' comparisons, as it was done in this study (see Chapter 5.1 and Chapter 7).

Secondly, it is the issue of suitability of the Schedule of Recent Experience and of the Social Readjustment Rating Scale as instruments for gathering and assessing information on life events from a psychiatric population.

Comprehensivity and specificity of the SRE's content need to be discussed as well as the validity of measures it yields (incidence and severity of events), and thus affects results.

Here, I also intend to suggest alternative ways for the life-event data evaluation which will concern more the quality than the quantity of life-event experience.

C. CLINICAL ASPECTS:

Under this heading I shall explore the ways in which the new patients were channelled in and out of psychiatric attendance, using primarily follow-up data and independent psychiatric information.

Thus, I shall follow:

(a) patients' decision and persuasion to seek treatment;

(b) referral sources;

(c) patients' diagnoses;

(d) treatment offered to them by psychiatric service;

(e) patients' treatment preferences;

(f) termination of treatment;

(g) patients' clinical state at last interview;

(h) outcome of psychiatric treatment by diagnostic category.

I shall also consider here the implications of the life-event information obtained in this study on the management of patients. In particular, I shall concentrate on whether the treatment offered is readily available and relevant to the patients' needs.

CHAPTER 5

METHOD

5.1 DESCRIPTION OF SAMPLE

People making first psychiatric contact. These are here referred to as 'patients', and comprised a random sample of 50 people first referred to a 'new clinic' or even first admitted to psychiatric wards without a prior, prolonged out-patient psychiatric treatment. Individuals were included irrespective of whether they did or did not suffer a recent (i.e. over the past two years) deterioration of their mental or physical state, and were or were not later described by psychiatrists as suffering from any formal psychiatric disorder. Apart from symptomatology, they were further unselected in terms of sex, socio-economic class (SEC), residence and referral source. (Women seeking termination of pregnancy were not included).

The only criteria for inclusion into the sample were: (1) making use of the psychiatric service for the first time; (2) age between 18 and 65; and (3) willingness to co-operate in the life event project.

There were 18 men (15 out-patients and 3 in-patients) and 32 women (18 out-patients and 14 in-patients) in the patient sample (a ratio roughly corresponding to the sex ratio of referrals to the 'new clinic' and also to the ratio of 1 male : 2 female wards in that particular psychiatric establishment). Their mean age was 34 years

with a range of 19 to 62 years. The breakdown of the sample into socio-economic classes (Appendix II) shows the majority of patients (and controls) falling into SEC III (Registrar General's Socio-economic Index).

The controls. The controls were a random sample of 39 people drawn from the hospital staff, people attending an out-patient fracture clinic or an OT department for rehabilitation, and from members of the general population who accompanied them. Out of these 39 controls, 24 were general population members and 15 were fracture/rehabilitation out-patients. There were 17 men and 22 women, with mean age of 36 years and age range of 18 to 60 years.

The criteria for inclusion into the sample were, (1) absence of major history of physical illness and no history of mental disorder over the past two years; (2) age between 18 and 65; and, of course, (3) their consent to take part in the survey.

Matching. Patients and controls were subjected to matching on age (within $\pm$ 3 years of each other), sex and SEC. In this way, 28 pairs were selected from the total of 89 individuals studied. It could have been possible to obtain more matched pairs had a less rigorous matching on age, for instance in decades, been used. However, as rate and type of events, dependent variables in this project, were previously shown to be age-related, reasonably close age-matching was chosen in order to avoid possible undesirable variance in the life-event data, especially as the control group already contained a proportion of people receiving medical treatment. List

of subjects is in Appendix I.

5.2 DATA COLLECTED

Four types of information were collected:

(a) Basic demographic data from all subjects, both the patients and controls (name, sex, age, occupation, socio-economic class, civil status, number of people in the household in which the respondent lived, and his/her relationship to them).

(b) Information on the length of present complaints and on treatment preferences from psychiatric patients only (nature of complaint, when first began feeling unwell, when and through whom first sought advice, changed in the complaint over time, whether patient's social environment contributed to his/her decision to seek treatment, any preferences for OP/IP treatment, and if so, why).

From hospital-attenders in the control group, information on circumstances of accidents leading to fractures was collected.

(c) Life-event data from all subjects using the Schedule of Recent Experience (1971 edition). As discussed previously, this instrument yields information on rate, severity and temporal occurrence of a number of changes in people's lives (health, work, family and home, social and personal, financial). The original form was amended for some Americanisms and for

use with both sexes.

(d) Follow-up data on attendance in terms of psychiatric assessment and management of the psychiatric patients only, extracted from medical records (discharge diagnosis, since when unwell, referral source, time waiting for an appointment, disposal in terms of IP/OP treatment, termination of treatment, assessment of clinical state when last seen).

Information regarding the experience of life events and the demographic and other, except follow-up, data was obtained at interview. This took usually between 30 and 90 minutes. All individuals in the study were seen in the hospital by one interviewer. The interview was semi-structured with plentiful probing to clarify the information. Particular attention was paid to obtaining as accurate time as possible of the occurrence of reported events; the respondents were encouraged to remember the time by relating events to seasonal and other well-established happenings, such as Christmas, Easter, local holidays, etc.

Examples of forms used for gathering the demographic and life-event data are presented in Appendix III.

Time period covered. The period covered with the patients was two years retrospectively and 6-7 months prospectively, the initial contact of the patient with psychiatry (usually the first interview) being the focal point. Life events were recorded up to two years prior to the individual's first contact with a psychiatric agency.

This arbitrary period was so chosen as to cover even those individuals who were already attending their G.P. with a complaint for some time before coming to the attention of a psychiatrist, so that no data were missed on the predicted increase of life-event reporting between onset of complaints and commencement of psychiatric treatment in the whole patient group.

The follow-up data were collected 6-7 months after the first attendance. The follow-up did not apply to the controls though their life events were recorded also up to two years immediately before the interview with them.

CHAPTER 6

ANALYSIS OF DATA AND RESULTS

1. Patients, in contrast to controls, reported 21 event items in addition to those specified in the Schedule of Recent Experience (SRE). These additional events were, of course, noted down during the interviews as well. We decided to include them in the analysis of data and, in order to do so, we needed to obtain their LCU's, or mean severity values.

Hence, a list of these events was presented, together with the SRE list of events and of their mean LCU values (SRRS), to 15 people (all associated with a psychology department). They were asked to ascribe a value between 1 and 100 to each of these additional events using SRRS as a reference. The ascribed figure should have represented the judge's estimate of the relative degree of readjustment required following the event (Appendix IV).

Mean values of these estimates were worked out and used in this study as indices of severity of the additionally reported events, alongside of the LUC's relating to event items in the SRE. The list of additional events is shown in Table II.1; a full list of events employed is presented in Appendix V.

2. All interview protocols were scored for rate and severity of all events reported over the 24-month period.

TABLE II.1

	Life event	Mean value
1	Immigration/emigration	53
2	Major marital disruption	48
3	Starts living with a disturbed family member	45
4	Head of household is made redundant	42
5	Making a major decision about future	40
6	Breaking up with a steady boy/girl friend	37
7	Problems with own children	34
8	Separation from spouse due to work	33
9	Spending over £5,000	33
10	Problems with a steady boy/girl friend	30
11	Adult children's problems with parents	30
12	Starts going out with a steady boy/girl friend	27
13	Starts/stops work by own choice	27
14	Starts a new job in same line of work	26
15	Trouble with colleagues or supervisor	25
16	Spending between £2,000 and £5,000	25
17	Sibling leaving home	21
18	Involved in car accident, but not injured	19
19	Involved in physical fight	19
20	Seeing a dead body	18
21	Spending between £60 and £2,000	17

3. The total rate, and severity of events over 24 months were correlated with the size of household (i.e. the number of people in the household) in which the patients (N = 50) and controls (N = 39) lived. Results are shown in Table II.2. Test used: Pearson product-moment correlation.

TABLE II.2

	Size of household			
	Patients		Controls	
Event:	Rate	Severity	Rate	Severity
r	0.1144	0.2194	-0.2085	-0.0632
sig.	n.s.	n.s.	n.s.	n.s.

Conclusion: The total number and severity of events which patients and controls experienced over 24 months is not, in this study, related to the number of people in the household in which they lived. Thus, further life-event comparisons here need not be corrected for this factor, shown significant in some other studies.

4. The first life-event comparisons made, using 28 matched pairs of subjects only, concerned the total rate and severity of events reported in the whole study period (hypotheses Ia and Ib). Retrospective time intervals used in comparisons, in order to obtain the spread of events within the 24 months (hypotheses Ic and Id), were:

(i) eight 3-month consecutive periods;

(ii) first year prior to contact;

(iii) second year prior to contact.

Results are shown in Tables II.3, 4 and Figures II.1, 2, 3, 4, 5.

Test used: t-test for related means.

TABLE II.3

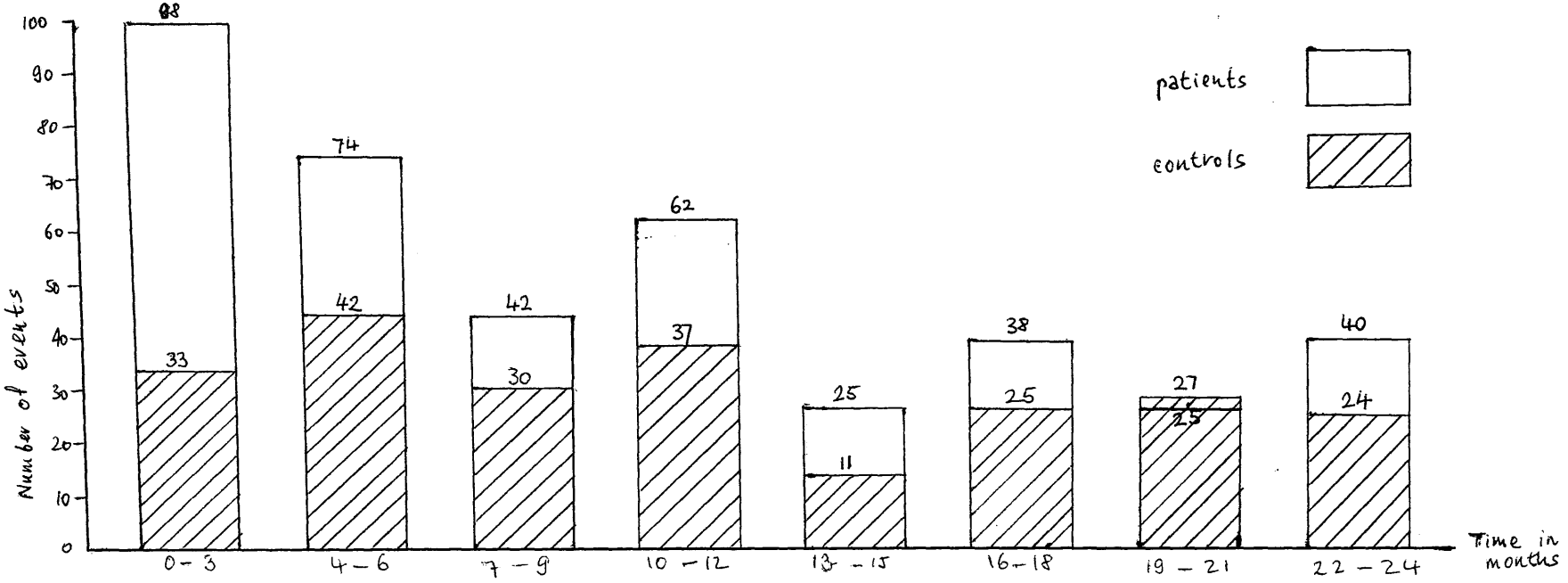
Incidence of events including health changes in the first and second year immediately prior to first psychiatric contact

	first year	second year
Patients' $\bar{X}$	9.85	4.92
Controls' $\bar{X}$	5.07	3.07
Value of 't'	7.383	2.353
Significance level	0.001/0.0005	0.05/0.025

Conclusion: People, who become psychiatric patients, experience more events in each of the two years preceding their first appointment with a psychiatrist.

FIGURE II.1

Incidence of events, including 'health' changes, in eight 3-month periods prior to first psychiatric contact



Patients' $\bar{X}$	3.50	2.64	1.50	2.21	0.89	1.35	0.89	1.42
Controls' $\bar{X}$	1.17	1.50	1.07	1.32	0.39	0.89	0.96	0.85
Value of 't'	7.373	2.874	2.871	2.639	2.132	-0.398	0.303	2.298
Significance	0.0005	0.005	0.005	0.025	0.025	n.s.	n.s.	0.025

Conclusion: People, who become psychiatric patients, show increased experience of life changes primarily in the 25 months immediately prior to seeing a psychiatrist. Over the period, there is a gradual build-up of events with an absolute peak in the 3 months immediately prior to the first psychiatric attendance.

FIGURE II.2

A cumulative curve showing the build-up effect of events (including 'health' changes) over the eight 3-month blocks prior to the first psychiatric attendance

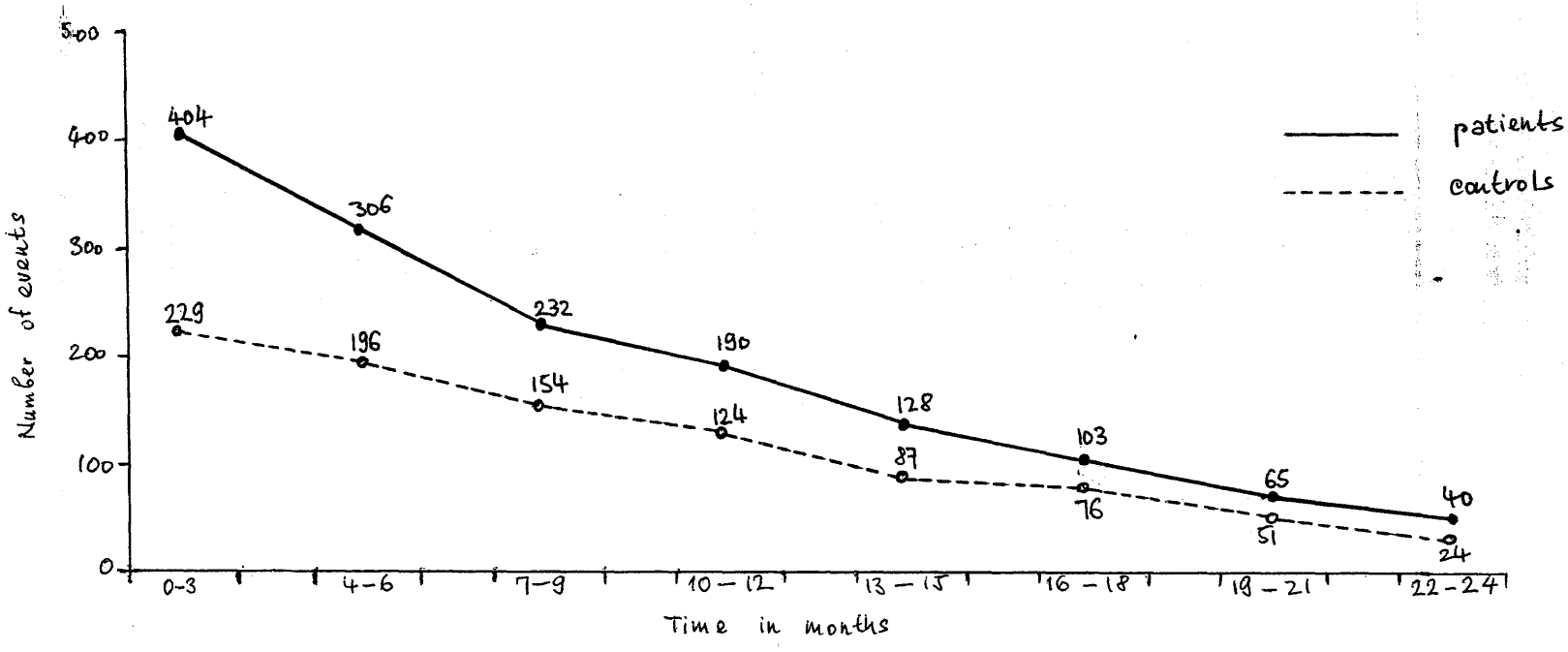


FIGURE II.3

Total number of events which individual patients and controls reported over 24 months

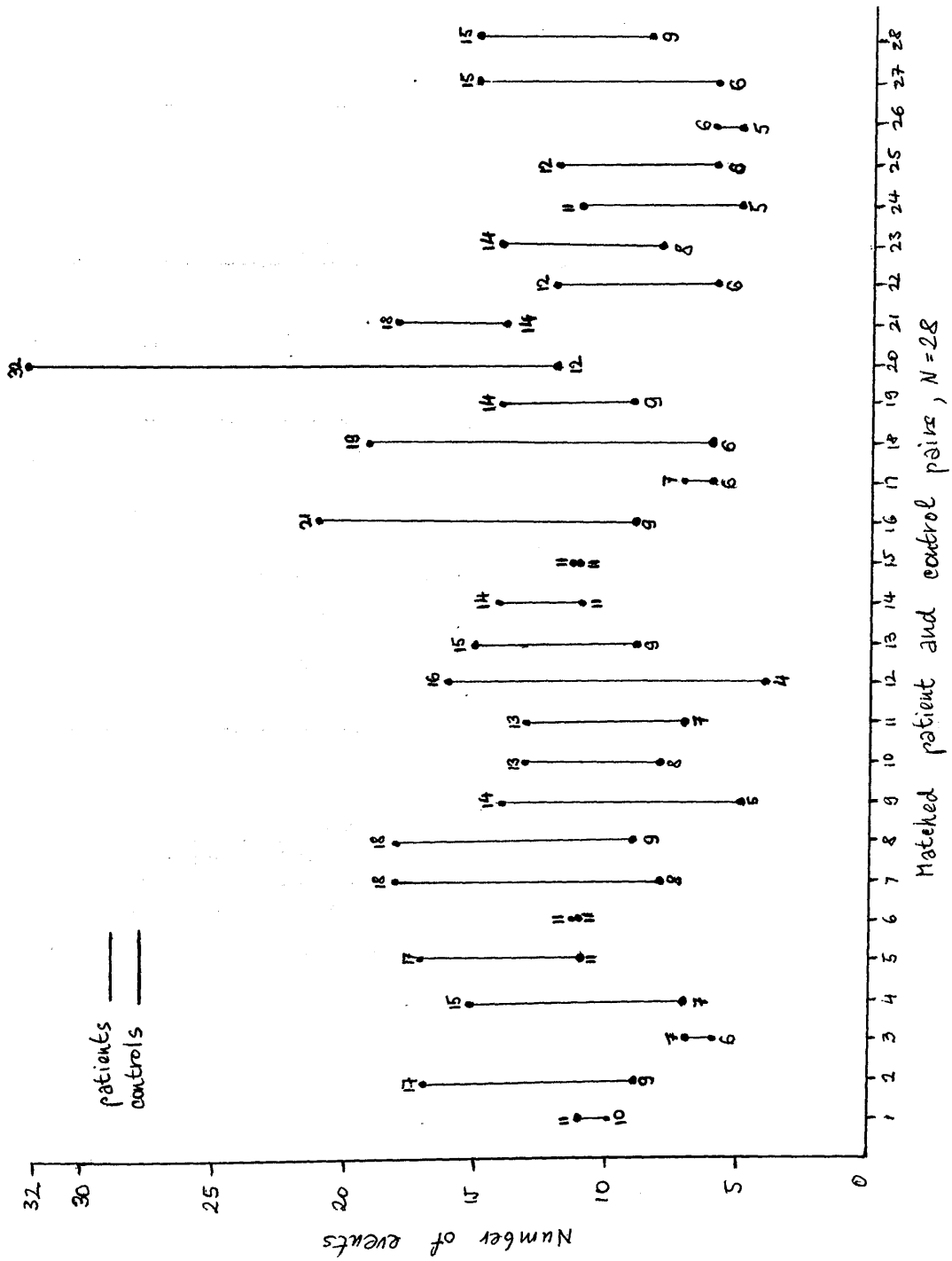


TABLE II.4

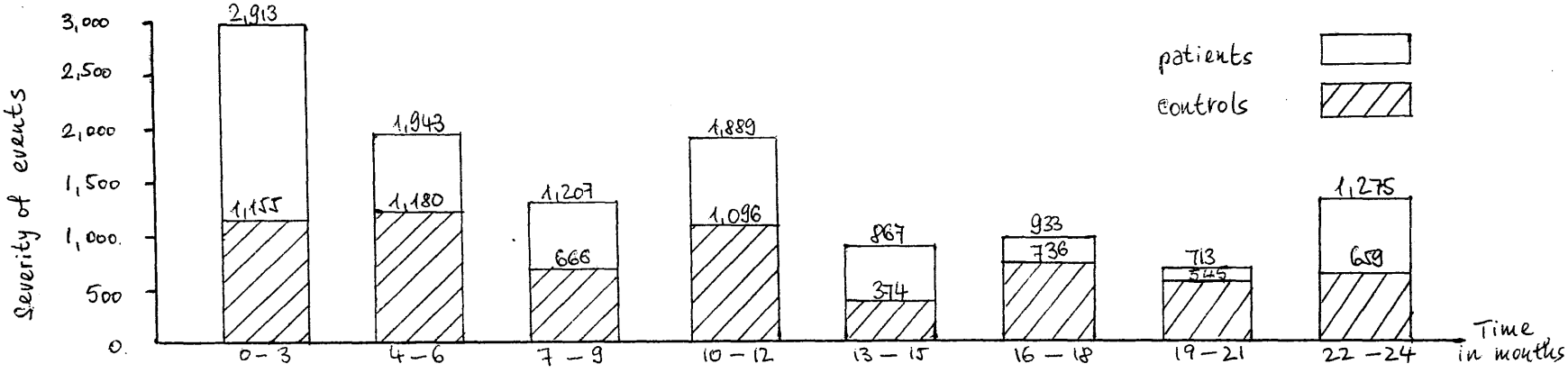
Severity of events including 'health changes' in the first and second year immediately prior to the first psychiatric contact

	first year	second year
Patients' $\bar{X}$	284.0	135.2
Controls' $\bar{X}$	146.3	86.3
Value of 't'	5.941	3.157
Significance level (one-tailed)	0.0005	0.0005

Conclusion: People, who become psychiatric patients, experience a highly significant degree of severity of life changes in the first and second year preceding their first psychiatric contact.

FIGURE II.4

Severity of events including 'health' changes in eight 3-month periods prior to first psychiatric contact



Patients' $\bar{X}$	104	69	43	67	30	33	25	45
Controls' $\bar{X}$	41	42	23	39	13	26	19	23
Value of 't'	5.374	1.945	2.967	2.397	2.373	0.977	1.690	3.184
Significance	0.0005	n.s.	0.005	0.025	0.025	n.s.	n.s.	0.005

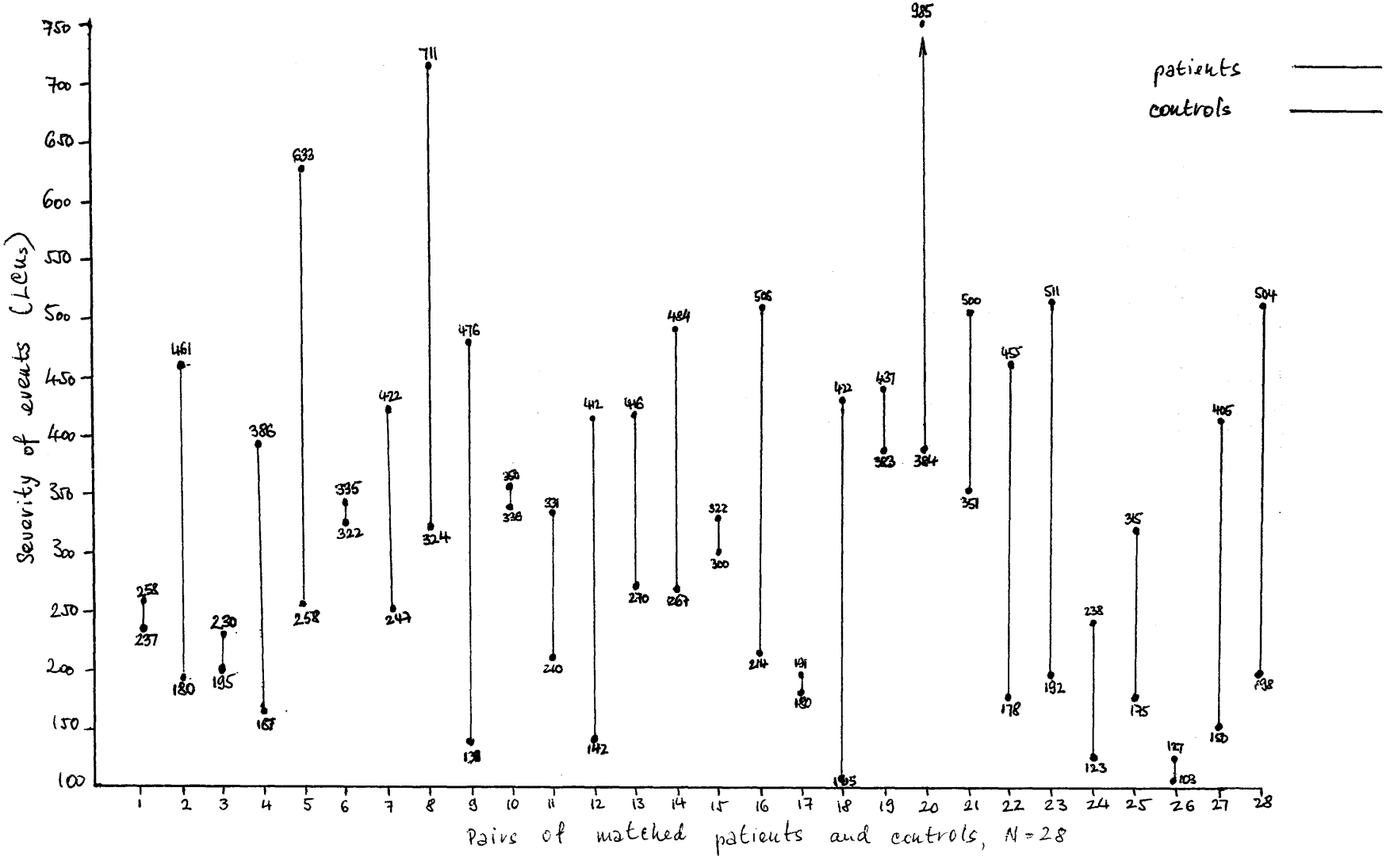
Conclusion: These results correspond to results obtained for incidence of events but for two exceptions: non-significant result in period 4-6 months and a higher significance level in period 22-24 months, compared with the significance levels obtained for event rate. This suggests that,

(i) in the period 4-6 months prior to first attendance, patients experience a significant number of minor events; and

(ii) in the period 22-24 months, conversely, patients experience a significant number of rather severe events.

FIGURE II.5

Total severity of events which individual patients and controls experienced over 24 months



5. Next, events occurring in the matched groups in the period between reported onset of complaints and first psychiatric attendance were compared with respect to their total rate and cumulative severity (but excluding 'health changes'), areas of change,* and reported frequencies of individual event items (hypotheses IIa, b, c, d).

For each patient and his control, an individual period was considered; this averaged 43 weeks and ranged from 2 to 104 weeks. List of the lapse of time between onset and attendance for each patient is presented in Appendix IX. Results are shown in Tables II.5, 6, 7. Tests used: Wilcoxon matched-pairs signed-ranks test and X^2 test.

TABLE II.5

Comparison of the rate and severity of events intervening between onset of complaints and attendance in the matched groups

	Incidence	Severity
T	35.5	45.5
z	-3.68	-3.57
p (one-tailed)	0.000 16	0.000 23

Conclusion: In the period between their reported onset of complaints and subsequent attendance, the patients experience, health changes aside, significantly more events and greater degree of severity than healthy controls do over a comparable period of time.

* NOTE 6: All events (in contrast to other groupings in section 6, of this chapter) were categorised into five groups (see Table II.6), according to the type of social activity or experience which they involved. This formal, and not necessarily psychologically meaningful, division of changes follows approximately that of Rahe's SRE questionnaire. It established a link with the previous research using the SRE. Further comments can be found in Chapter 7.

TABLE II.6

Rate and severity of events intervening between onset and attendance, grouped by areas of change

Category		Value of T/z	p*	Events included in category
Health	Rate	5.5	0.005	Personal illness or injury
	Severity	60	0.005	Pregnancy Change in sleeping habits Change in eating habits
Work	Rate	47.5	n.s.	Fired at work
	Severity	56.5	n.s.	Retirement Trouble with boss Trouble with colleagues Change in responsibilities Change in working hours and conditions Starts/stops work by own choice New job in same type of work Begins new type of work Begins/ends school Change in schools
Intimate and Family	Rate	26	0.005	Death of spouse
	Severity	53.5	0.01	Divorce Marital separation Major marital disruption Seperation due to work Sexual life Marriage Marital reconciliation Change in arguments with spouse Breaking up with steady boy/girl-friend Problems with steady boy/girl-friend Starts going with steady boy/girl-friend Death of family member Change in health of family member Living with disturbed family member Gain of new family member Children leaving home Siblings leaving home Change in family visiting Difficulties with own child Adult children's problems with parents Wife begins/stops working

TABLE II.6 continued

Category		Value of T/z	p*	Events included in category
Personal and Social	Rate	20.5	0.005	Prison sentence Minor violations of the law Immigration/emigration Change in residence Change in living conditions Revision of personal habits Major decision about future Car accident with no injuries sustained Involvement in physical fight Death of a close friend Seeing a dead body Outstanding personal achievement Change in recreation Change in church activities Change in social activities Holidays
	Severity	22		
		z = -3.92	0.000 05	
Financial	Rate	72.5	n.s.	Business readjustment Change in financial state Foreclosure of mortgage/loan Mortgage over £5,000 Mortgage/loan less than £5,000 Spending over £5,000 Spending between £2,000 and £5,000 Spending between £60 and £2,000
	Severity	98.5	n.s.	

* p = one-tailed probability

Conclusion: Patients experience more events and greater severity of changes concerned with the 'health', 'intimate and family' and 'personal and social' aspects of their lives before they attend.

Events relating to 'work' and 'finances' do not differentiate them from controls. The rate of 'work' changes just fails to reach significance (T equal to, or less than, 40 is significant at 0.025 level). The category of 'finances' especially shows to be of least relevance and, as it stands, could be discarded without significant loss of information.

TABLE II.7

Frequency of individual events reported between onset of complaints and attendance compared in the matched groups

	Life event	P*	C*	X^2	p*
1	Death of spouse	0	0	-	n.s.
2	Divorce	0	0	-	n.s.
3	Marital separation	4	1	0.878	n.s.
4	Prison sentence	1	1	-	n.s.
5	Death of close family member	4	5	0.00016	n.s.
6	Personal illness/injury	13	11	0.072	n.s.
7	Immigration/emigration	0	0	-	n.s.
8	Marriage	1	1	-	n.s.
9	Major marital disruption	5	0	3.51	n.s.
10	Fired at work	6	1	2.60	n.s.
11	Marital reconciliation	1	0	0.0013	n.s.
12	Retirement	0	0	-	n.s.
13	Living with disturbed family member	0	0	-	n.s.
14	Change in health of family member	7	1	3.64	n.s.
15	Head of household redundant	1	2	0.0004	n.s.
16	Pregnancy	0	0	-	n.s.
17	Major decision about future	5	3	0.145	n.s.
18	Sexual life changes	2	0	0.518	n.s.
19	Gain of new family member	4	3	0.0002	n.s.
20	Business readjustment	0	0	-	n.s.
21	Change in financial state	9	10	0.0001	n.s.
22	Death of a close friend	2	3	0.00028	n.s.
23	Breaking up with steady boy/girl-friend	3	3	-	n.s.
24	Change to a new type of work	6	3	0.529	n.s.
25	Change in number of arguments with spouse	1	0	0.0013	n.s.
26	Trouble with own children	2	0	0.518	n.s.
27	Separation from spouse due to work	0	0	-	n.s.
28	Spending over £5,000	0	1	0.0013	n.s.
29	Mortgage over £5,000	0	0	-	n.s.
30	Taking on mortgage/loan	0	0	-	n.s.
31	Problems with steady boy/girl-friend	0	0	-	n.s.
32	Adult children's problems with parents	3	0	1.40	n.s.
33	Change in responsibilities at work	3	2	0.00028	n.s.
34	Children leaving home	2	1	0.0004	n.s.
35	Trouble with in-laws	3	0	1.40	n.s.
36	Outstanding personal achievement	0	0	-	n.s.
37	Starts/stops work by own choice	3	1	0.269	n.s.
38	Starts going out with steady boy/girl-friend	0	0	-	n.s.

TABLE II.7 continued

	Life event	P*	C*	X^2	p*
39	Wife begins/stops work	3	1	0.269	n.s.
40	Begins/ends school/university	0	3	1.40	n.s.
41	New job in same type of work	1	2	0.0004	n.s.
42	Change in living conditions	1	1	-	n.s.
43	Trouble with colleagues	4	0	2.42	n.s.
44	Spending between £2,000 and £5,000	1	0	0.0013	n.s.
45	Revision of personal habits	18	2	17.50	.001
46	Trouble with boss	3	0	1.40	n.s.
47	Sibling leaving home	2	0	0.518	n.s.
48	Change in working hours and conditions	9	3	2.65	n.s.
49	Change in residence	4	5	0.00017	n.s.
50	Change in schools	0	0	-	n.s.
51	Change in recreation	1	0	0.0013	n.s.
52	Change in church activities	5	1	1.68	n.s.
53	Car accident with no injuries	5	0	3.51	n.s.
54	Involvement in physical fight	0	0	-	n.s.
55	Seeing a dead body	1	0	0.0013	n.s.
56	Change in social activities	16	4	9.41	.01
57	Spending between £60 and £2,000	6	9	0.364	n.s.
58	Mortgage/loan less than £5,000	1	2	0.0004	n.s.
59	Change in sleeping habits	14	0	16.09	.001
60	Change in family visiting	3	0	1.40	n.s.
61	Change in eating habits	16	1	13.32	.001
62	Holidays	13	14	0.00009	n.s.
63	Christmas	26	25	0.00028	n.s.
64	Minor violations of the law	6	3	0.529	n.s.

P* = number of patients reporting event at least once
C* = number of controls reporting event at least once
p* = two-tailed probability

Conclusion: Frequency of individual events is not, with few exceptions, increased in the matched patient population. Only four events were significant at 5% level or better: (a) 'Revision of personal habits'; (b) 'Change in social activities/life'; (c) 'Change in sleeping habits'; and (d) 'Change in eating habits'. Item (d) and especially item (c) could be signs of being 'worried' or of internally based pathology, rather than life events in the strict sense.

(Please note in Table II.6 that these two items were included among the 'health' changes and as such they were excluded from comparisons of rates and severity of events intervening between the onset of complaints and subsequent attendance. Still, the patients experienced significantly more events and greater degree of severity of their life changes; see Table II.5).

Events 9, 14 and 53 ('Major marital disruption', 'Change in health of close family member', and 'Car accident with no injuries sutained'), were also reported more often by the patients but they occurred too infrequently in their population to achieve statistical significance.

The findings of this section so far indicate that the overall increased rate and severity of events experienced by the patients before their attendance, aside from 'health' changes, cannot be simply accounted for by overall or, at least in most cases, increased frequency of individual events in their population.

This suggests that comparisons along various types of events, rather than individual items, could indicate an explanation. Already, patients were shown to differ from normals in some categories of events happening to - or engineered by - them between onset of their complaints and attendance, namely events associated with their health, intimate and family life, and personal and social existence.

6. To explore further the implications of these results, and to verify predictions III.a, b and IV.a, the list of events was examined, and events were grouped into categories in three alternative but partly overlapping ways. In each grouping, two mutually exclusive categories were defined. Events which could not be clearly incorporated into one or the other category were omitted, so that the groups were not exhaustive.

In each category, the rate of events and their severity were again compared for the matched subjects only. Results are shown In Tables II.8 - 12. Test used: Wilcoxon matched-pairs signed-ranks test.

(a) Entries and exits from social field. This refers to those events which involve changes in the social circle of the person. Entries are here those events which involve the introduction of a new person/persons into the immediate social field of the individual; exit relates to events most probably involving departure of someone from his social environment. Table II.8 shows the findings for these two types of events, together with list of events in each category.

(b) Positive and negative events. The life-event inventory includes events regardless of direction of change, even though it contains an evaluative element in its severity mean values. Thus, it leaves the possibility of grouping relevant events into positive and negative ones in agreement with their prevailing connotations.

26 individual events were thus selected from the SRE and their rate and severity compared in the matched populations. Table II.9 sets out the findings.

When the rate of positive vs. negative events is compared in the matched patient and matched control groups separately, the patients report 9 positives vs. 73 negatives, whereas controls claim 12 positive vs. 22 negative events. Results of statistical comparisons are presented in Table II.10.

TABLE II.8

Entries and exits from social field

Category		T	p*	Events included
Entries				
	Rate	3	n.s.	Engagement Marriage Gain of new family member Marital reconciliation Starts going out with boy/ girl-friend Improved social life
	Severity	10	n.s.	
Exits				
	Rate	28.5	0.025	Death of spouse Divorce Marital separation Death of a close family member Family member leaves home Death of a close friend Breaking up with steady boy/ girl-friend Decreased social life
	Severity	88	n.s.	

p* = one-tailed

Conclusion: Patients and their controls do not differ in the number and severity of entries. They reported 11 entries compared with 8 of those in the control group.

However, the patients have significantly more exits than the controls (ratio of 31:15), whilst these are not significantly more severe. Even though the patients reported more 'marital separation' and 'family member leaving home', 'decreased social life' was the item most commonly reported - an event of only minor severity.

TABLE II.9

Positive and negative events

Category	T	p*	Events included
Positive events			
Rate	30	n.s.	Engagement Marriage Marital reconciliation Promotion Improved financial state Outstanding personal achievements
Severity	30.5	n.s.	
Negative events			
Rate	2	0.005	Death of spouse Divorce, Separation Death of family member Prison sentence Major marital disruption Fired at work Change in health of family member Head of household redundant Sexual difficulties Worsened finances Death of close friend Demotion Trouble with own children Children's problems with parents Trouble with in-laws Trouble with colleagues Trouble with boss Car accident with no injury sustained Minor violations of the law
Severity	20	0.005	

p* = one-tailed

Conclusion (to Table II.9): Patients and their controls do not differ in the number and severity of positive events that they experienced between onset of complaints and subsequent attendance (9 patient vs. 12 control positives). However, the patients do experience highly significantly more severe negative events and these are also more frequent in the patient group before their attendance. Out of the individual events, the most frequently reported ones were 'Separation' and 'Major marital disruption', 'Change in health of family member', 'Fired at work', 'Worsened financial state', 'Car accident with no injury sustained' and 'Minor violations of the law'. The control group reported, interestingly, slightly more 'Deaths of family member'. The ratio of event reporting was 73:22 for patients and controls respectively.

TABLE II.10

Positive events against negative events

	Patients	Controls
T	9	28.5
p*	< 0.005	n.s.

p* = one-tailed

Conclusion: Whereas in the control group the rates of occurrence of positive and negative events do not significantly differ, in the patient group the rate of negative events significantly exceeds the number of positive events, and thus it is not offset by them. ('Health' changes are, of course, excluded from the comparisons).

(c) Events independent of illness. If we assume that behaviour and decisions of people, who come to a psychiatrist, are different from their 'normal' self (even if it is not known what their 'normal' selves are) and we wish to assess whether life events contribute to their attendance, then the need arises to separate, and to exclude from comparisons, events brought about by the patients themselves, as part of their disorder, from those which occur independently of their mental state. One way of approaching this in a standard and already discussed manner, is to split the events in advance (and on logical grounds where possible) into 'independent illness' and 'other' depending on to what extent the patient might have been personally involved in decisions about events concerned, e.g. change of a job, divorce, illness in the family, etc.

Twelve events were thus assumed to be 'independent of illness', and their rate and severity compared in the matched population of patients and controls.

The result presented in Table II.11, is encouraging, because it represents only the most conservative estimate of events which directly contribute to attendance.

A more realistic estimate of the role of events would be achieved if, in addition to 'independent events', a group of 'possibly independent events' were partialled out from the remaining 'other' events and then included in comparisons. Events are labelled as 'possibly independent of illness' only because the patients are more directly involved in their making, without any real reason

TABLE II.11

Events independent of illness

	Rate	Severity	Events included
T	66.5	78.5	Death of spouse
p*	0.025	n.s.	Death of close family member
			Change in health of family member
			Gain of new family member
			Separation from spouse due to work
			Children leaving home
			Siblings leaving home
			Wife begins/ends job
			Head of household redundant
			Death of close friend
			Immigration/emigration
			Change in work hours and conditions

p* = one-tailed

Conclusion: Patients experience more 'independent of illness' events in the period between onset of their complaints and psychiatric attendance, than controls do in comparable period of time. 'Change in health of family member' and 'Change in working hours and conditions' are prominently reported by the patients; the ratio of events is 37:20 for patients and controls respectively.

However, this increased rate of events is not paralled by significant increase in severity (T should be equal to, or less than 73 for 0.025 significance level). This is partly due to higher rate of 'Death of family member' in the control group.

to believe that they were brought on by the patient's disturbed state.

When this is done, the following picture emerges (Table II.12).

TABLE II.12

Independent and possibly independent events

	Rate	Severity	Events included (independent not listed)
T	59.5	97.5	Fired at work Change in responsibilities at work New job in same type of work Begins new type of work Starts/stops work by own choice Retirement Change of residence Major decision about future Marriage Starts going out/breaks up with steady boy/girl-friend Car accident with no injuries Begins/ends school Change in schools
p*	n.s.*	0.0228	

p* = one-tailed
n.s.* T = 59 is significant at 0.025 level

Thus, comparisons involving positive and negative directions of change and events independent and possibly independent of illness reveal significant differences between the experience of stress in patients and controls. The evidence for the catalytic role of events in psychiatric attendance itself is somewhat equivocal: according to

the most conservative estimate, patients experience a significant number of events independent of illness, which are not outstandingly severe.

7. The next step was to examine what, if any, association existed between the total rate of events in the specific study period (but excluding 'health' items) and the length of time between reported onset of complaints and attendance. All 50 patients studied were taken into consideration. Results are shown in Table II.13. Test: Pearson's product-moment correlation.

TABLE II.13

Correlation between rate of events after onset and lapse of time, in months, between onset and attendance
$r = + 0.721$
$p < 0.01$

Conclusion: The correlation between incidence of events after onset and the lapse of time between onset and attendance is significantly positive. Thus, the earlier the patients in our sample attended after onset of their complaints, the fewer events they experienced in the intervening period. Hence it is not indicated that the more events patients experienced, the earlier they came forward for treatment.

8. The follow-up data and information elicited from the patients (Tables II.14 and 18) provided the following assessment of the ways in which the patients were channelled in and out of psychiatric

attendance. The results are presented here in tables and accompanied by brief comments. They are fully commented on and discussed in Chapter 7.

TABLE II.14

Patient's decision and persuasion to seek treatment

Persuasion	Matched	Unmatched	All patients
Patient's own feeling of not coping	43%	55%	48%
People in his household suggested treatment	28.5%	32%	30%
Intermediary outside patient's household (legal, medical clinic) was involved	28.5%	13%	22%
Total %	100	100	100
All referrals	28	22	50

Patient's attendance was in 52% of all cases initiated by someone other than himself. 48% attended because of 'not coping' - either with their mental state or in their roles. Thus, social element in attendance is marked.

TABLE II.15

Referral sources

Referral	Matched	Unmatched	All patients
G.P.	64%	77%	70%
General hospital	18%	5%	12%
Legal	11%	-	6%
Direct self-referral	7%	18%	12%
Total %	100	100	100
All referrals	28	22	50

Majority of patients (70%) were referred by their G.P's. 12% recognised their difficulties as psychological. This figure, however, does not include those who asked their G.P's directly to be referred to a psychiatrist.

TABLE II.16

Diagnostic groups

Diagnoses	Matched	Unmatched	All patients
Psychotic (funct.)	25%	19%	23%
Organic	4%	5%	4%
Neurotic	57%	48%	53%
No psychiatric pathology	14%	28%	20%
Total %	100	100	100
All referrals	28	22	50

'Neurotics' formed just over a half of the 'new clinic' population, 'psychotics' made up just under a quarter of these new cases. 20% of people referred showed no signs of a formal psychiatric disorder.

TABLE II.17

Disposal following first psychiatric consultation

Disposal	Matched	Unmatched	All patients
IP admission arranged	46%	32%	40%
Continuing OP attendance arranged	43%	41%	42%
Referred to other medical agency	4%	-	2%
Referred back to G.P.	7%	27%	16%
Total %	100	100	100
All referrals	28	22	50

82% of first attenders were offered further contact with the psychiatric service - 40% were admitted into the hospital and 42% were treated as out-patients.

TABLE II.18

Patient's treatment preference

Preference	Matched	Unmatched	All patients
OP, as arranged	44%	56%	49%
Accepts OP, but prefers IP	4%	-	2%
IP, as arranged	40%	31%	37%
Accepts IP, but prefers OP	12%	13%	12%
Total %	100	100	100
No. of referrals	25	16	41
No. refused treatment offered	1	1	2
No. offered no treatment	2	5	7
All referrals	28	22	50

Nearly all patients accepted treatment, if offered, as well as, the arrangement for it (IP or OP). Only a minority (14%) would have preferred IP treatment to OP attendance or vice versa.

TABLE II.19

Mode of termination of psychiatric treatment

Termination	Matched	Unmatched	All patients
Patient discharged by psychiatrist following treatment	54%	38%	48%
Patient refused treatment or failed to attend	27%	31%	28%
Patient still in treatment at follow-up*	19%	31%	24%
Total %	100	100	100
No. of referrals treated	26	16	42
No. discharged to G.P. without treatment	2	6	8
All referrals	28	22	50

* 6-7 months' follow-up

After six months since their first attendance, one half of the treated patients was discharged by their psychiatrists; a quarter was still in treatment, and the rest withdrew from contact with the hospital.

TABLE II.20

Patient's clinical state at last interview

Psychiatric assessment	Matched	Unmatched	All patients
Recovered	35%	19%	29%
Relieved	38%	44%	40%
Not improved	23%	37%	29%
Clin. state not recorded	4%	-	2%
Total %	100	100	100
No. of patients treated	26	16	42
No. of patients offered no treatment	2	6	8
All referrals	28	22	50

69% of patients benefited from the treatment administered; they either recovered or were relieved . Clinical state of a third of the patients with attempted treatment did not improve.

TABLE II.21

Outcome of psychiatric treatment by diagnostic category

Psychiatric assessment	Psychoses	Neuroses	Organic	All
Recovered	46%	24%	-	29%
Relieved	36%	38%	100%	40%
Not improved	18%	34%	-	29%
Outcome not recorded	-	4%	-	2%
Total %	100	100	100	100
All referrals	11	29	2	42

People with 'psychotic' disorders responded best to treatment - 46% did 'recover' and 36% were considered 'relieved' of some of the symptoms - not considering the two 'organic' cases in our patient sample. About a third of 'neurotic' patients was not considered as improved at all.

CHAPTER 7

DISCUSSION AND CONCLUSIONS

To my knowledge there have been no previous empirical studies of psychiatric attendance in the context of life events published even though it is recognised that 'crises' bring some people on the psychiatrist's doorstep.

Thus, no comparison of design, methods and results with any similar study is possible, and the discussion will be confined here to commentary on the presented results with respect to methodological considerations (7.1), the role of events in attendance (7.2), clinical application, namely possibilities of therapeutic action (7.3), and prospects for future research (7.4).

7.1 RESULTS AND THE METHODS OF DATA COLLECTION AND EVALUATION

7.1.1 INTERVIEW TECHNIQUE AND REMEMBERING OF EVENTS

Firstly, the results show that the patients report an excess of events in the whole 24-month study period but for 16-21 months prior to their first psychiatric contact (Figure II.1). This Figure also shows that, generally speaking, the means of event incidence for the controls are greater than 1 in the first year prior to attendance and smaller than 1 in the second year retrospectively.

In the patient group, the means in the first year prior to attendance fall above 1.5, whereas in the second year they are

generally below 1.5. So, to express in words what can be much quicker grasped visually from the histogram, apart from the patients' generally elevated event reporting, both the controls and the patients report on the whole more events in the year immediately preceding attendance than in the next immediate 12 months.

This raises three questions: do the differences in event incidence between controls and patients in our sample reflect differences in interview technique and reporting? Is there a memory factor involved? Was the 'study period' (i.e. 24 months) long enough?

The first possibility is the most important one. Clearly, the SRE, given either as a questionnaire or in interview form, is a stimulus measure. The responses that any individual makes to it and to the events are determined by other factors which require to be measured separately (see 7.1.3).

The patients were interviewed in a more probing way than the controls did, even though this was necessitated only by the patients' greater hesitancy and less coherence in answering the questions. The setting of their existing complaints and of concurrent or prospective psychiatric treatment, was liable to focus their attention on potentially significant events, and, perhaps, to increase receptiveness to the interview. Another possibility is that the patients are a group of people who have anyway increased receptiveness to occurring events. This would eliminate the simple 'memory argument' and explain the finding that the patients' event incidence means are maintained at a

higher level than that of controls since long before they attend.

This finding, however, may also reflect a feature inherent in the design of the study rather than properties of the population under consideration. It may be that the arbitrarily chosen 24-month retrospective cut across a period of increased incidence of events which may have preceded the onset of patients' complaints itself. If this were the case, then by going even further back in time than 24 months we should be able to find out when the event incidence started to differ between the patient and control populations. This is an issue important in event studies relating to onset rather than attendance. With regard to our objectives in this investigation, a 24-month retrospective was adequate.

The possibility that memory factors are involved hints at the reliability issue of the SRE. Bell[86] has pointed out that recall of 'hard facts' is far better than attitudinal material,[53] and that inaccuracies tend to consist of omissions rather than fabrications or confabulations.[87, 88]

This is consistent with the particular reliability study of SRE by Casey, Masuda and Holmes[62] who found that only those items of SRE containing qualifying words (particularly 'substantial') significantly affected their individual recall. This had, however, no effect on the consistency of overall scores. Also the most potent factor affecting consistency of recall was the saliency of the life-event items reflected by their mean values (LCU).

In spite of this, the size of 'attitudinal' or emotional element that can be present in the reporting of 'hard facts' should

not be underestimated. That is why clear definitions of life events are needed and specific questions must be asked to clarify information. It was my experience, similar to others interviewing people about their life events, that the respondents had to be reminded of what was wanted of them, the questions had to be asked again or in a modified form in order to obtain a clear picture of what went on. Often fairly specific questions had to be given, preferably with the sort of thing I had in mind. People had to be reminded of the scope of their family and close relations that was covered in the study.

7.1.2 SCHEDULE OF RECENT EXPERIENCE APPLIED TO PSYCHIATRIC POPULATION

For the reasons mentioned above, and largely because the SRE itself did not prove to be both specific and comprehensive enough, its use as a questionnaire with psychiatric population cannot be recommended. Its application as a basis for semi-structured interview is superior to the questionnaire use even though it still requires a number of modifications:

1. Items on SRE and SRRS, which relates to it, do not always correspond. That is, not all the weighted items on the SRRS (i.e. LCU's) are represented by a question in the SRE questionnaire. Example: 'Change in living conditions'. Is this meant to relate to the question, "Have you made major improvements on your home?", or "Has a relative moved in with you recently?", or anything else?

Some items on the SRE are trivial (e.g. Christmas), others are only relevant to a small number of people (e.g. major business readjustment - merger, reorganisation, bankruptcy, etc.). Still others are ambiguous (e.g. major change in financial state - a lot worse off or a lot better off than usual, without specifying what 'a lot' means).

2. The list of events in the SRE could be supplemented by other items obtained from a systematic inquiry into the kinds of events, not necessarily always stressful ones, that happen to people. The original items were said to have been 'empirically derived from clinical experience'.[33] Yet, in this numerically limited study a group of 18 additional events had to be included (Table II.1). On inspection these events do not appear to be 'abnormal' or potentially confined to a 'psychiatric' population only. However, it is true, that a number of them are of interpersonal nature (major marital disruption, problems with own children, problems with a steady boy/girl-friend, adult children's problems with parents, trouble with colleagues or persons they supervise), and as such are liable to attitudinal or emotional biases and thus to reporting differences. It is also true that two-thirds of these additional events were reported by the patients only.

Cochrane and Robertson[63] published recently their work aimed to remedy the deficiencies that, in their view, reduced the usefulness of the SRE. They administered the SRE as a questionnaire to

125 psychiatric patients and supplemented this by interviews to obtain information on as many events as possible. This resulted in a new inventory of 55 events, 18 of which are supposed to have been taken over from the original SRE.

Then, as "no published weights derived from groups on which the instrument was most used were available", and as "weights were not available from patients or from other groups most likely to have extensive experience of the amount of stress the events cause", the authors had these 55 items rated by three groups of people - 80 patients, 60 psychiatrists and psychologists, and 80 students. Their final weights, representing a completely new system, reflect overall means taken from the three groups combined.

Closer inspection of their list of events reveals that one half of items is either directly taken over from the SRE or, perhaps, better formulated. From the rest, one-third corresponds to the kinds of additional events recorded in our study (e.g. head of household is unemployed, starting a new job in same line of work, involvement in a fight, starting to live with a disturbed family member, increased tension between parents and children, problems surrounding boy/girl-friend affairs, etc.).

Certainly, this new range of events compiled by Cochrane and Robertson is a considerable improvement on the original SRE, especially, when used with psychiatric population. The use of SRE and SRRS in studies of antecedents of illness may be to some extent more indicative of the lack of a suitable alternative measure of recent life stresses, than of any inherent quality of the SRE.

On the other hand, this wide use has also been successful. It means that SRE, as a questionnaire, has had enough discriminative power in the populations in which it was used (cf, studies by Rahe et al. mentioned in Chapter 1). The psychiatric population either has more and greater variety of events happening to them or it only appears to be so, because the information was usually collected in an interview rather than via a questionnaire. Cochrane and Robertson do not comment on what proportion of their new list of 55 events appeared only after questioning the patients personally.

As regards the new weighting systems developed by Cochrane and Robertson for their new Life Event Inventory, one cannot altogether approve of using patients' ratings for derivation of the weights attached to individual events only because they are "likely to have extensive experience of the amount of stress events cause". It is very doubtful whether the validity of severity measures is thus increased and it is contrary to efforts of all workers in the field to reduce possible biases.

This points to the issue of validity of the severity measures used in this study, and in general, and to the ways and perspectives from which life-event data can be best and most profitably evaluated.

7.1.3 DO MEASURES TAKEN FROM THE DATA SHOW THAT THE LIFE-EVENT MODEL IS SUFFICIENT TO EXPLAIN ATTENDANCE?

In this study, measures taken from the life-event data were:

rate and severity of events both over the whole 24-month study period and over the specific study period (i.e. time between onset of complaints and subsequent attendance for each patient individually);

occurrence of individual events and of various categories of events - areas of change and activity, social entries and exits, positive and negative events, events independent and possibly independent of complaints.

I shall discuss these measures here in turn, but for the independent and possibly independent events. These will be discussed in the next sub-chapter (7.2).

The rate, or incidence, of events is the first and most obvious measure. It need not be discussed, once it is clarified what constitutes an event in the first place (see 7.1.2). The rate of events is thus the 'purest', or least biased, measure that can be taken from the life-event data, bearing the interview difficulties in mind. This measure is invariably used in all life-event studies.

In this study, using the measure of rate of events, it was possible to show that people, who become psychiatric patients, experience an excess of events in the two years preceding their first attendance. The mean event rate in the first year preceding attendance is double (9.85) the mean rate in the second year (4.92) (Table II.3). Breaking the 24-month period further into eight consecutive 3-month blocks shows that the increase in life-change reporting is confined mainly to the 15 months immediately preceding attendance and that there is a gradual build-up of events with an

absolute peak in the 3 months immediately preceding first attendance (Figure II.1).

Thus, the results show that the life-event dimension does differentiate between patients and normal population at least 15 months restrospectively. This is not surprising, considering that (1) these event-rate figures of the patients include both events preceding onset of their complaints and those intervening between (after) onset and attendance; that (2) 'health changes', such as past physical illnesses, injuries, and changes in eating and sleeping habits - common concomitants of psychological disorders - are not excluded as yet from the analysis; and that (3) theoretically, both events 'independent of complaints' and those 'related to the complaints' are not as yet differentiated.

However, when only events occurring in the specific study period (i.e. between onset and attendance) are considered and when all 'health' changes are excluded, the patients still experience a highly significant excess of events ($p = 0.000\ 16$, Table II.5).

When this result is checked against occurrence of individual events, it appears that the frequency of individual events is not, with few exceptions, increased in the patient population (Table II.7). Only four events were significant at 5% level or better: (1) 'Revision of personal habits'; (2) 'Change in social activities/life'; (3) 'Change in sleeping habits'; and (4) 'Change in eating habits'.*

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* NOTE 7: Moreover, items (3) and (4) were not included in comparisons of events occurring in the specific study period.

Thus, the findings indicate that the overall increased rate of events experienced by the patients prior to their attendance, is not simply paralleled by an overall increase, or at least in most cases, of individual events. This suggests that grouping events into various categories could reveal the sources of this variance and provide insight into the quality of life experience the patients have had between onset of their complaint and attendance.

It also raises the question of whether the life-change model itself, without any qualifications attached to it, provides sufficient framework for describing events preceding psychiatric attendance. Results of this study, derived from the comparisons of categories of events, show that it is not so.

Before I consider this in more detail, I want first to turn to the second major measure used in this study, the severity of events.

Our data were analysed almost throughout both for rate and severity of events, in order to specify any differences that were due to a type of event (major vs. minor) rather than due to an increase in events occurrence. In most cases, the increase in the rate of events was paralleled by increased severity. This approach proved beneficial in that - within the limits of external severity criteria (LCU units/weights) used - it was possible to show that, for instance, in the period 4-6 months prior to their first attendance, patients experience a significant number of only minor events; whereas 22-24 months prior to attendance, they

experience a significant number of rather severe events (Figure II.4).

Also, in the period between onset and attendance, patients experience an excess of 'exits from social field', but these are not, by our external criteria, considered severe (Table II.8).

Similar results appear to apply to 'events independent of illness' (Table II.11), thus showing that first psychiatric attendance is preceded by an increased occurrence of minor events which contribute to it.

All the severity results need to be interpreted with caution. While the particular external criteria of severity we used indicate a general pattern of increased event rate paralleled by increased severity, one has to ponder meaning and validity of the severity weights.

Firstly, there seems to exist commonly shared awareness among people that certain events, or changes, are more severe in their implications than others. Work comparing rank ordering of the SRE items[61] shows an exceptional agreement, though lack of consensus on the exact LCU's or weights. The LCU weighting system was used in this study.

Secondly, the recently published[63] new weighting system of life events, derived from the patients', psychologists', psychiatrists' and students' ratings (cca 200 people), shows that both the rank order and individual weights attached to items do differ from the previous system. It is, in fact, a new inventory of events.

Thirdly, no external severity criteria can reflect whether

the individuals concerned experienced changes as same, more or less intensive themselves.

In view of this, is it desirable and plausible to look for generalised measure of severity change? The answer may be:

1. To look not for any generalised measures of change in any population (i.e. normal or abnormal), but for the degree of 'change', or event 'stress' subjectively experienced which would be set against the individual's rate of events.

   This makes more sense because personal experience with changes is important and the degree and direction of affect associated with the events is a property of the individual's response rather than the stimulus, i.e. the event itself, which the SRE primarily measures. The Affect Balance Scale[50] represents such a response measure and might well be used in conjunction with SRE to provide a more clear picture of the degree of change/stress subjectively experienced.

2. Alternatively, a weighting system, such as Rahe's (i.e. derived from ratings of <u>normal</u> population), could be used in conjunction with the Affect Balance Scale to provide a more complex picture of the interrelation between rate of events, their assumed conventional severity and the degree of subjectively experienced change.

3. Where relevant, events should be combined into groups with a common denominator or a dimension along which they may vary, such as the degree to which they are under the subject's control,

whether they are negative or positive, etc. This can provide a more insightful, even if perhaps equally arbitrary, evaluation of the data than the severity measure itself. In some studies, for instance Paykel et al. on depression,[89] this approach of categories was used instead of the severity measures and the results justified it.

This brings me back to the results of analysis of events in categories in this study and to the question whether the life-change model itself can describe the patient's experience prior to attendance.

Five event categorisations were used in this investigation:

(i) according to the type of activity;
(ii) according to changes in the extent of social field;
(iii) in terms of direction of change, i.e. positive or negative;
(iv) in terms of events' independence of complaints; and
(v) of only possible independence of complaints.

Firstly, all events occurring between onset of complaints and attendance (i.e. including 'health'), were divided - in the tradition of SRE - into groups with 'health', 'work', 'intimate and family', 'personal and social', and 'financial' denominations, according to the type of social activity/experience which they involved (Table II.6).

The findings suggest that certain kinds of events are more likely than others to precede attendance. 'Health' changes, referring mainly to the past physical illnesses and injuries, changes in

eating habits (including appetite), and sleep, were obviously more frequent and severe among patients in this period.

More importantly, 'intimate and family' and 'personal and social' events both were more frequent and severe among the patients. The greatest difference in severity of changes was in the 'personal and social' category, even though it included a high proportion of such items as 'revision of personal habits' (i.e. drinking and smoking mainly), and 'change in social life/activities', which are events rated as being only of minor severity.

Events relating to 'work' and 'finances' do not differentiate between patients and controls. The incidence of 'work changes' just fails to reach significance. Financial matters do not seem to be particularly relevant to the description of patients' experience before they attend, at least not in the way in which they are expressed in the SRE. In fact, most events in the 'financial' category illustrate the point that it needs to be established clearly in the first place what constitutes an 'event'.

Thus the results show that, when <u>all</u> possible events are taken into consideration and divided up into thematic groups, regardless of the direction of change or their relation to the patients' complaints, the patients are exposed before their attendance to changes involving their close interpersonal relationships and to those bearing on their personal and social experience.

Events relating to their employment and financial circumstances do not markedly differ from those of the control group. At the same time, it is not possible to decide what proportion of these

changes 'just happened' and what proportion was, in fact, engineered directly or indirectly by the nature of the patients' complaints.

The other four modes of categorisation used were designed to complement information obtained from splitting all events.

These other modes of division of events into categories cut across the areas of activity as specified on page 124. The categories are not exhaustive, two of them are descriptive (of the patients' experience of events), and the last two bear on the role of events in attendance.

The first of these groupings was established according to changes in terms of expansion as opposed to diminution of the patients' social field. In the period between onset of complaints and attendance, the number of entries in both the patient and control groups was generally smaller than that for exits, and it was roughly equally distributed (11:8), also in terms of severity of these events.

The patients did, however, experience an excess of social exits (double the controls - 31:15), though these were, by our external criteria of severity, only minor (Table II.8).

In a study of event precipitants of depression, Paykel et al.[89] found that depressed people differed only in the frequency of exits, and not entries, into social field. The authors concluded that exits from the social field are more likely to lead to clinical depression requiring treatment and they linked this concept with another psychiatric concept, that of loss - actual, impending or symbolic.

It is interesting to note from the results of our study that the same trend continues after onset of complaints in the group of patients diagnostically as heterogenous as was our (Table II.16).

The second grouping of events that was used and also proved successful was in terms of the direction of change (positive, negative) involved in the events. Certain events in our society are commonly perceived as either positive or negative. This is an end product both of cultural factors and of other elements such as common experience of the psychological consequences of the events.

Negative events were on the whole reported much more frequently in both groups of subjects than positive events (see page 98), partly because the list contains many more negative changes.

The rate and severity of negative events strikingly differentiated the patients from the controls. Patients reported over three times as many negative events in the period between onset and attendance than the controls did; this was matched also by increased severity of events. For the positive events the pattern was, in fact, reversed, with patients having less positive changes than their controls did. This difference was not, however, significant (Table II.9).

Also, the findings suggest (see page 98), that in this period the patients' 'negatives' eight times outnumbered their 'positives', whereas the controls experienced just under a double of negative events compared with the positive ones.

Before I turn to the discussion on the last two categories of events employed in analysing the data, it may be useful to consider what the implications of these results are so far.

Two views of events have been taken in this study:

1. The traditional one in terms of the magnitude of change in life pattern or readjustment necessitated by each event irrespective of its meaning or direction.
2. An alternative one based on the view that events have a variety of implications apart from severity in terms of which they can be grouped, and which describe with varying success the experience of patients between onset and attendance.

Both approaches proved useful, however, the significant results of analyses of event categories indicate that the life-change model itself is not adequate to specify life events preceding attendance.

The implication of these results is that it is not only the quantity, but also the <u>quality</u> of events which characterise the patients' experience before they first attend a psychiatrist. It is not possible to conclude that this is a major contributor to the attendance itself, due to the limitations imposed by the design of our study.

7.2 THE ROLE OF EVENTS IN ATTENDANCE

The third and fourth modes of categorisation are concerned with the degree of control, or rather the absence of it, that the patients have had over events.

Among all the event groupings employed in this study, only these last two, 'events independent of illness' and 'events possibly independent of illness', can be considered to contribute directly to the patients' attendance.

Events independent of illness occur more frequently among patients (Table II.11). Thus the patients, in addition to events which may or may not have been brought on by their complaints, are exposed to more changes before they attend than the controls do over a comparable period of time. These changes are not outstandingly severe when compared with the changes in the control group; glance at the original data shows that this may be due to the higher rate of 'death of family member', a rather severe event, reported by the controls.

When the list of 'independent' events is extended to include also 'events possibly independent of illness', the severity of events appears as a discriminating variable between the two populations (Table II.12), while the incidence of events just misses significance. Owing to the insignificant severity result in the case of events independent of illness and taking into consideration that the rate of events has probably more weight as a measure than severity does, it has to be concluded that while life events contribute to the

first psychiatric attendance, they are only of minor severity (that is within the framework of the severity measures used).

While it was possible to establish that events play a role in attendance, it is not altogether clear from our results what their function is. A possibility was explored that a higher incidence of events after onset of patients' complaints was associated with an earlier attendance at a psychiatric service. However, the results indicate (Table II.13) the reverse, that is, a higher event incidence was, in our patient sample, associated with a greater lapse of time between onset of complaints and attendance.

This raises two possibilities. Firstly, this result may hint at individual differences in tolerance to events or changes. In other words, the timing of attendance is not associated with simple event incidence, but with an 'event threshold', i.e. that some people can tolerate a greater disruption in their lives than others before they consider themselves in need of help.

While this is a plausible suggestion, it may not be a justified conclusion to draw from the results. Firstly, the other factors assumed to be important in attendance, mainly the G.P. 'filter' or 'screening', were not controlled. Secondly, and more importantly, the high positive correlation between rate of events, in the period between onset and attendance, and the lapse of time between onset and attendance, may be spurious. It may be spurious because the same variable of time is common to both of them, i.e. variables correlated.

Events per unit time would correct this, but even then it would be better to use this measure in appropriate 'between-group' rather than 'within-group' comparisons.

This recalls the already mentioned issue of an appropriate control group and, on reflection, of the limitations imposed by the design of this study on the kind of valid comparisons and conclusions that can be made from it about the function of events in the attendance itself.

The particular question of the role of events in first psychiatric attendance would be best answered by someone in the position to compare, on the life-event dimension, treated cases with the untreated ones who remain in the community, both groups being matched for nature of complaints as well.

In the untreated group, health complaints would be controlled. These individuals would thus constitute the most appropriate comparative sample for testing the hypotheses, for instance, whether treated patients become treated because they have more 'independent of illness' events, and/or also have more 'illness related events', with the implication that the more social disorganisation their pathology produces, the more likely they are to complain, and the more speedily they seek (or are channelled towards) treatment.

The validity of such comparisons would substantially rest on the degree of successful matching of treated and untreated subjects on their psychopathology. This would presumably need to go beyond diagnostic labels - a pretty tricky task, considering that the psychiatric assessment of, for instance, severity of a case may be

confounded with social variables themselves, e.g. in alcoholism.

Life events in relation to diagnosis is something which has not been taken up systematically in this study.

On commonsense grounds and on the basis of clinical experience, one would expect that some psychiatric disorders, such as acute psychotic illness, are less subject to the influence of life events as regards attendance than others, for instance, the already mentioned alcoholism. In organic cases events are theoretically of no relevance even though it is known that the extent to which, for instance, dementia becomes evident depends a lot on the changes in the particular individual's environment.

Discharge diagnoses were used in this study only as one of independent descriptions of the patient population and they were intended to serve no other purpose. This was so because the relatively low number of patients (compared with the number of possible diagnoses) necessitated choice of quite broad, and hence within themselves heterogenous, diagnostic categories. The group of psychotics includes, for instance, cases of puerperal psychosis, early schizophrenia, and 'endogenous' depression - which was so diagnosed largely due to absence of any 'stresses'. The point that social factors are inseparable from certain diagnoses is important here. Setting our life-event data against them would most probably mean going round in circles.

This is not to argue against usefulness of such comparisons. But that would require, in my view, an agreed approach to diagnosing, more specific categories, and a greater number of patients to be accommodated in them.

7.3 LIFE EVENTS AND POSSIBILITIES OF THERAPEUTIC INTERVENTION

The follow-up data and information obtained by the patients provided a basis for simple assessment (breakdown in percentages), of the ways in which the patients were channelled in and out of psychiatric service.

The purpose of this exercise was, firstly, to describe the patient population in this study independently (i.e. of the interviewer), within the existing psychiatric framework. The other intention was to see whether setting some of this information against the general tone of life-event findings in this study could have some practical implications, namely as regards the management of patients and course of treatment.

Introducing these issues into our discussion means stepping outside the mainstream of our study. Also, it is more speculative as the available information does not really give a proper picture both of mental health needs and of treatment resources.

The follow-up showed that:

1. The patients' attendance was in 52% of <u>all</u> cases (matched and unmatched cases taken together), initiated by someone in his/her household or by an intermediary outside it. 48% of patients decided to attend by themselves because of 'not coping' - either with their mental state or in their roles. Thus the social element in attendance is marked. (Table II.14)
2. Majority of patients (70%) were referred by G.P's who thus constituted the major and presumably biasing influence on the

characteristics of our sample. The proportion of people who recognised their difficulties as psychological is, on paper, low (12% of direct self-referrals). However, this does not include those patients who asked their G.P. explicitly to be sent to a specialist/psychiatrist (Table II.15).

3. 'Neurotics' formed just over a half of the 'new clinic' population. 'Psychotics' made up just under a quarter of these cases, and people with 'no psychiatric pathology' formed 20% of the whole sample. (Table II.16).

4. 40% of first attenders were hospitalised, about a third of them as an emergency. 42% of all cases in the sample were offered continuing out-patient treatment and the rest was referred back to their G.P's or to other medical departments. (Table II.17).

The patients usually agreed with whatever treatment that was suggested to them (OP/IP). As regards their personal preferences, however, a higher proportion of in-patients would have preferred out-patient treatment (12%), than the number of out-patients who would have welcomed to be admitted in the hospital instead (2%).

Reasons stated for OP preference were usually: (a) fear of becoming isolated from family in the hospital; (b) apprehension of being with other 'mental' patients. The only patient who would have preferred in-patient treatment, thought that he would be thus treated more 'efficiently', as he put it. (Table II.18).

5. Six months after their first attendance, 48% of all treated patients were discharged by their psychiatrists. 24% of this group were still being treated, while nearly a third of the first attenders (28%) to whom treatment was offered, either refused the treatment or failed to attend. (Table II.19).

6. 29% of all patients with attempted treatment were described as 'recovered' by their psychiatrists at the time of the follow-up. 40% were considered to be 'relieved' and 29% as 'not improved'. This last category, however, covers almost exclusively those patients who refused the treatment (28%) in the absence of any further information about their mental state. So, in psychiatrists' overt opinion, all their attending patients benefited from the therapy provided in one way or another. (Table II.20).

7. When the outcome of treatment was set against the diagnostic categories, then 'psychoses' had the best 'recovery' rate (46%); it was nearly twice as much as for the 'neurotics' (24%). 'Organic' patients were 100% 'relieved' but the actual number of organic cases was very small (only two people). The 'neurotics' were nearly as equally 'relieved' (38%) as 'not improved' (34%). The 'not improved' percentages here again cover those patients who failed to attend or refused to be treated, in the absence of any information to the contrary. (Table II.21).

The following points from the follow-up data are relevant in the context of the life-event findings in this study to the issue of therapeutic action:

(i) 20% of people referred to the 'new clinic' were found to have 'no formal psychiatric disorder', and they were consequently offered no treatment.

(ii) Of those offered treatment, one third either refused it, or, in majority, failed to attend. (One third of these non-attenders were considered to be 'psychotic' and two thirds 'neurotic').

(iii) All patients treated by psychiatrists were described by them as either 'recovered' or 'relieved'. Patients were discharged in both these states, but a proportion of those 'relieved' was still in treatment six months after their first attendance.

(iv) 'Psychoses' responded best to treatment, 'neuroses' were more 'relieved' than 'recovered'.

The 20% of first attenders, who were not found to be psychiatrically disturbed by the specialists, were still considered by someone, usually their G.P's, if not by themselves in need of specialists' attention. This may be a sign of an increasing demand on the psychiatric services for the relief of distress generally. While we cannot be certain, the possibility has to be considered that it was a group of people who could not be described by the current systems of classification, and rarely helped by drugs or any other therapy available at the particular hospital. Also, it can reflect the

G.P.'s own initiative and lack of experience in referring 'suitable' cases.

Why people who seem to need and are offered specialist treatment refuse it directly or fail to attend, is another question impossible to answer from our data. It is difficult to know why their motivation to 'get better' dropped so dramatically after their first visit to the clinic. While their complaints were not presumably resolved after one appointment, it may be that they did not find the treatment offered to them relevant to their problems.

The reported success of psychiatric treatment with the patients is a rather surprising finding, and one that needs to be regarded with specticism. It was the therapists themselves who evaluated the results of their treatment and no agreed criteria for this assessment were used.

However, even if it were the case, i.e. that all treated patients did improve, it cannot be regarded as a general index of adequacy of psychiatric provisions. Rather, it seems to be the measure of success with which cases are selected to fit the known effective treatments.

From our follow-up data, it appears that the treatment was most effective with psychotic patients. Many psychotic disturbances, mainly of schizophrenic character, are those which currently lend themselves most, compared with other behaviour abnormalities, to the disease model and can be well controlled by drugs.

But as Sydney Brandon, talking about psychiatry, said:[90]

> "... if we concern ourselves exclusively with disease rather than with health we may find ourselves isolated and functioning as technicians whose services are called upon only when other caregivers in the community meet an untreatable or unmanageable behaviour disturbance."

Morrice[91] remarked somewhat differently:

> "... the dichotomy into social and psychiatric is false and puts an unwarranted interpretation upon the facts. The two

> categories are often so closely interdependent that to separate them is to do injury to the total concept of psychiatric illness. The only justification for such a division is its usefulness in treatment."

The emphasis on either 'psychiatric' or 'social' discriminates between the traditional, disease oriented, and the community oriented psychiatric thought.

The awareness that only a minority of those with signs and symptoms of psychiatric disorder come to the attention of a psychiatrist or enter a psychiatric hospital,[92] and that in at least 50% of those referred social factors are thought to be primary,[91] led some psychiatrists to review their assumptions about what they do and where they do it.

Their intention is not to re-formulate mental disorders as merely social disorders, but to give more and prompt attention to the patients' social (as well as psychological) conditions in a way that has been more acceptable in the past to the social workers than to psychiatrists.

One of the stated aims of this approach is to avoid hospitalisation unless it is the best short-term solution, and to treat people effectively in the setting of their current social networks. The other frequently stated aim of community psychiatry is prevention of the development of psychological disorders due to unresolved problems of living. This means that the present professional resources have to be marshalled in a different fashion from that traditionally practised: the skilled staff should educate, delegate responsibilities and provide opportunities for consultation rather than direct specialist services to the community.[90]

The 'social therapy' rests substantially on the principles of crisis intervention. It was the work of Caplan et al. at Harvard[93, 94, 95] that has focused attention not only on the need for intervention in social crisis but also on the advantages consequent upon early action.

Caplan defines crisis as "an upset in the steady state" - so far similar to the Rahe concept of life change. However, more specifically, crisis occurs when

> "... a person faces an obstacle to important life goals that is for a time insurmountable through the utilisation of customary methods of problem-solving."

A period of disorganisation occurs, characterised by tension, and the individual is 'in a state of flux' while he is seeking out possible solutions to the problem. Caplan maintains that 'resolution', or a definite attempt at adaptation to the situation in order to regain stability, must occur within a finite period of time - 4 to 6 weeks. This adjustment may be complete, incomplete, 'neurotic' or maladaptive in the long term.

Unless the crisis is somehow resolved, there is a danger of major disorder of psychological functioning (even of psychotic episodes!?). On the other hand, prompt, short-term intervention at the right time, may, according to Caplan, prevent maladaptive adjustment and avoid the necessity for prolonged care. Ideally, it is at the time of flux, when the individual is claimed to be more suggestible and thus more susceptible to radical change than at other times.

The relationship between unsuccessful crisis resolution and

development of severe mental dysfunction remains unproven, even if individual cases could be found and interpreted in this way.

The implications of these observations and ideas for clinical practice and management of patients are worth considering.

Firstly, if the social crisis resolution does really occur within 4-6 weeks of its appearance, as Caplan and others claim, this leaves only a short period of time for the most effective kind of therapy, i.e. during the state of flux.

In that case, the traditional out-patient consultation service rarely offers an opportunity for immediate help geared in timing and duration to the individual's needs. It may be that walk-in clinics, direct referrals from non-medical sources and other means of reducing waiting list delay will have to be considered.

Also, if that is the case, then in many instances the out-patient treatment is being offered to patients after they had already adjusted themselves, perhaps maladaptively, to the new circumstances created by the crisis. This is the second best alternative according to Caplan, provided that the second principle (stated below) is adhered to. This can, however, also explain why some patients do not take up the treatment opportunity - they may not consider it any more relevant. The apparent success of the telephone Samaritans may be explicable in terms of crisis theory, for their largely unsophisticated intervention is offered at the crisis point.

The second principle in crisis intervention is that it is concerned essentially with the present situation and its problems. Some, for instance Brandon,[90] recommend to avoid over-sedation and

tranquilisation of the patient which would cushion him against facing his present problems directly.

Thus, the therapy is intended to be brief, and to consist of practical suggestions and support. It does not aspire to effect major and enduring changes in personality or behaviour or family interactions. If these occur, they are welcome by-products. This is the kind of treatment, according to Morrice,[91] that many patients wish for themselves. It makes sense to most of them and they can give full co-operation.

People working in the mental health field are called upon nowadays to deal with the problems and management of geriatrics, chronic schizophrenics, and handicapped individuals in the community. The reality of the other concern of community psychiatry, that is, dealing with social crises and attempts at preventing psychological dysfunctions arising from the problems of living, is reflected by the findings in this study. These findings demonstrated the excessive demand on adaptation to changing social circumstances, especially of negative character, which surround the psychiatric attendance.

7.4 PROSPECTS FOR FUTURE RESEARCH

The evidence presented in this study has, in my view, established that further investigations of psychiatric attendance along the life-event dimension is worthwhile.

Future research should aim to specify the manner in which

events influence attendance. In planning an effective approach to this subject, the following points, already taken up in the discussion should be considered:

1. Appropriate control group - it would be best to compare treated cases with those untreated in the community as regards their life events both before and following their onset of complaints.
2. Comprehensive life-event inventory - an improved version of SRE with more specific questions and complemented by ready examples of events enquired about would enable greater efficiency in data collection.
3. Evaluation of the data - the measure of event incidence and grouping of events into categories, with special focus on 'negative' and 'independent of illness' events, should be used. If severity measures were employed, they should be complemented by some measure of subjectively experienced intensity of the events.
4. The characteristics, if any, which make some individuals respond to life events with illness or disorder and others to resist them should be explored. Thus, information on personality, as the more enduring quality of both the patients and those who retain their adjustment, should be obtained, and set against the life-event data.
5. Where possible, life events and some objectively definable characteristics of the ill state, for instance, symptom

clusters (in preference to diagnoses which partly depend on social, life-event, or stress criteria), should be examined in relation to attendance.

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LIST OF APPENDICES

XII. Computation of values of T

i. for rate and severity of 'entries';
ii. for rate and severity of 'exits';
iii. for rate and severity of 'positive events';
iv. for rate and severity of 'negative events';
v. for rate of 'positive' vs. 'negative' events;
vi. for rate and severity of 'events independent of illness';
vii. for rate and severity of 'events independent and possibly independent of illness'.

XIII. Computation of correlation between total rate of events after onset and lapse of time between onsent and attendance.

APPENDIX I.

SEX, AGE, S.E.C. AND STATUS OF ALL SUBJECTS

Patients*					Controls*				
No.	Sex	Age	S.E.C.	Status	No.	Sex	Age	S.E.C.	Status
1	M	21	6	OP	1	M	22	6	Fract.
2	F	43	3	OP	2	F	41	3	Gen. p.
3	F	29	3	OP	3	F	28	3	Gen. p.
4	F	19	3	IP	4	F	18	3	Gen. p.
5	F	26	2	IP	5	F	26	2	Gen. p.
6	F	25	3	OP	6	F	25	3	Gen. p.
7	M	32	3	OP	7	M	30	3	Fract.
8	M	36	5	OP	8	M	35	5	Fract.
9	F	45	1	OP	9	F	44	1	Gen. p.
10	M	31	5	OP	10	M	33	5	Fract.
11	F	28	2	OP	11	F	31	2	Gen. p.
12	M	27	1	OP	12	M	27	6	Fract.
13	M	42	3	OP	13	M	43	3	Fract.
14	F	20	3	IP	14	F	21	3	Gen. p.
15	F	54	3	OP	15	F	55	3	Gen. p.
16	F	22	6	IP	16	F	21	6	Gen. p.
17	M	37	3	IP	17	M	40	3	Fract.
18	F	41	2	IP	18	F	40	2	Gen. p.
19	M	33	5	OP	19	M	36	5	Fract.
20	M	20	3	IP	20	M	20	3	Fract.
21	M	24	3	OP	21	M	25	3	Fract.
22	M	53	3	OP	22	M	56	3	Gen. p.
23	F	50	3	OP	23	F	47	3	Gen. p.
24	F	36	3	IP	24	F	38	3	Gen. p.
25	F	62	2	IP	25	F	60	2	Gen. p.
26	F	43	2	IP	26	F	43	2	Gen. p.
27	F	21	2	OP	27	F	23	2	Gen. p.
28	F	44	3	IP	28	F	41	3	Gen. p.
29	F	48	3	OP	29	F	42	2	Gen. p.
30	M	20	4	OP	30	M	38	3	Rehab.
31	M	35	3	OP	31	F	34	2	Gen. p.
32	M	52	3	OP	32	M	43	4	Rehab.
33	F	22	4	IP	33	F	23	2	Gen. p.
34	F	43	4	IP	34	F	61	3	Rehab.
35	F	32	3	OP	35	M	59	3	Fract.
36	F	19	4	OP	36	M	45	3	Fract.
37	F	49	2	OP	37	F	23	2	Gen. p.
38	M	39	2	IP	38	M	46	5	Rehab.
39	M	23	3	OP	39	M	23	2	Gen. p.
40	F	52	3	OP					
41	F	20	6	OP					
42	F	30	3	OP					
43	F	21	3	OP					
44	M	46	2	OP					
45	F	36	3	IP					
46	F	27	3	IP					
47	F	20	6	IP					
48	M	47	2	OP					
49	F	35	5	OP					
50	F	19	6	OP					

* Patients and controls Nos. 1-28 are matched on sex, age within ± 3 years of each other, and on S.E.C.

APPENDIX II.

COMPARISON OF S.E.C. DISTRIBUTION IN THE PATIENT AND CONTROL SAMPLES

(Kolmogorov-Smirnov Two-sample test)

	f		c_f		c_p		d_c
S.E.C.	P*	C*	P	C	P	C	
1	2	1	50	39	1.000	1.000	.000
2	10	11	48	38	0.960	0.974	.014
3	25	19	38	27	0.760	0.692	.068
4	4	1	13	8	0.260	0.205	0.55
5	4	4	9	7	0.180	0.179	.001
6	5	3	5	3	0.100	0.076	.024

D = .068

P = patients

C = controls

To be significant at .05 level, D must reach critical value equal to

$$1.36\sqrt{\frac{N_1 + N_2}{N_1 N_2}}$$

Here, N_1 (Patients) = 50

N_2 (Controls) = 39

and hence the critical value of D is 0.288. Therefore, our D = 0.068 is not significant, and the S.E.C. distributions within the patient and control samples are not significantly different.

APPENDIX III.i

INTERVIEW RECORD FORM FOR DEMOGRAPHIC DATA AND INFORMATION RELATING TO PATIENT'S ATTENDANCE

Date: Dr. Unit number:

Name:

Sex:

Occupation/Husband's occupation:

S.E.C. 1 2 3 4 5 6

Civil status: single - married - separated - divorced - widowed

With whom do you live? (List all persons by relationship to the patient).

1 ..... 6 .....

2 ..... 7 ....

3 ..... 8 .....

4 ..... 9 .....

5 ..... 10 .....

What is the problem you came to see a psychiatrist today about?

Somatic complaints:

Psychiatric complaints:

Other:

When did you first begin feeling unwell?
(List in number of weeks preceding this week).

When did you first seek help?

Whom did you go to see about this?

GP → general hospital → psychiatric clinic

GP → psychiatric clinic

Legal request → psychiatric clinic

SW, Samaritans, etc. → psychiatric clinic

Has your complaint changed since then?

What made you decide to seek help?

Own feeling of inability to cope any more.

People with whom the patient lived suggested this to him.

Other agencies decided that he/she needs help (e.g. SW, employer, court of justice, doctor in general hospital).

In this hospital, were you offered any treatment?

If so, is it OP or IP treatment?

Would you prefer to have OP/IP treatment?

If so, why would you prefer the other?

Did you turn down the treatment?

If so, what made you refuse admission to the hospital? (what made you refuse out-patient treatment?)

Did you ask to be admitted to the hospital?

Why did you ask to be admitted to the hospital?

APPENDIX III.ii.

Interview record forms for gathering life-event data see enclosed in the band inside back cover.

APPENDIX IV.

THE RATINGS AND MEAN VALUES OF 21 ADDITIONAL EVENTS OBTAINED FROM 15 JUDGES

Events*	Judges															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	$\bar{X}$
1	60	20	40	70	50	60	65	75	40	60	30	40	90	40	63	53
2	50	60	35	39	53	44	40	35	40	44	40	65	75	52	65	48
3	20	70	45	45	50	38	38	40	29	50	40	60	50	48	43	45
4	20	30	15	40	45	38	46	53	43	42	45	60	85	43	46	42
5	50	25	50	50	45	19	30	15	40	40	40	35	80	52	44	40
6	40	25	20	35	65	35	39	45	28	32	45	60	20	39	35	37
7	40	35	20	30	38	29	29	29	22	29	35	44	51	41	39	34
8	20	35	25	42	29	29	35	40	25	35	35	65	31	25	45	33
9	30	45	120	50	60	20	28	25	31	30	30	31	20	17	25	33
10	20	40	30	30	40	29	29	35	18	16	30	44	22	28	40	30
11	20	30	10	25	60	15	25	29	28	25	30	50	30	41	38	30
12	20	25	40	40	50	19	24	25	10	28	20	25	13	30	38	27
13	10	15	30	30	25	36	26	50	25	26	28	39	18	24	26	27
14	40	15	30	25	29	31	26	29	24	24	20	24	30	28	21	26
15	20	15	15	25	40	29	20	30	26	24	20	44	20	25	26	25
16	20	30	100	45	40	20	24	25	17	25	25	20	15	16	14	25
17	10	15	20	35	30	25	19	29	15	17	18	15	19	23	22	21
18	15	20	15	40	23	20	20	20	20	13	20	10	20	15	26	19
19	60	30	20	20	23	15	13	20	18	10	20	20	15	13	20	19
20	50	20	15	25	12	14	10	25	17	12	20	10	10	21	30	18
21	10	15	70	30	30	16	16	20	15	16	15	17	10	13	10	17

fig. - extreme values (excluded from calculations of $\bar{X}$)

* 21 additional events are listed here in the same numerical order as in Table II.1.

APPENDIX V.

COMPLETE LIST OF LIFE EVENTS USED IN THIS STUDY

	Life event	Mean value
1	Death of spouse	100
2	Divorce	73
3	Marital separation	65
4	Jail sentence	63
5	Death of close family member	63
6	Personal illness or injury	53
7	Immigration/emigration*	53
8	Marriage	50
9	Major marital disruption*	48
10	Fired at work	47
11	Marital reconciliation	45
12	Retirement	45
13	Living with a disturbed family member*	45
14	Change in health of a family member	44
15	Head of household is made reduntant*	42
16	Pregnancy	40
17	Major decisions about future*	40
18	Sexual difficulties	39
19	Gain of new family member	39
20	Business readjustment	39
21	Change in financial state	38
22	Death of close friend	37
23	Breaking up with a steady girl/boy friend*	37
24	Change to a new line of work	36
25	Change in number of arguments with spouse	35
26	Trouble/behaviour problems with own children*	34
27	Separation from spouse due to work*	33
28	Spending over £5,000*	33
29	Mortgage over £5,000	31
30	Foreclosure of mortgage or loan	30

APPENDIX VI.

Computation of correlations between subject's total event rate and number of people in household; and total event severity and number of people in household.

Patients				Controls			
	Event		No. in		Event		No. in
No.	Rate	Sever.	hshld.	No.	Rate	Sever.	hshld.
1	10	237	3	1	11	258	4
2	17	461	1	2	9	180	3
3	6	195	4	3	7	230	5
4	15	386	5	4	7	164	5
5	17	633	4	5	11	258	3
6	11	322	4	6	11	335	3
7	18	422	5	7	8	247	4
8	18	711	12	8	9	324	1
9	14	476	5	9	5	139	3
10	13	336	4	10	8	344	7
11	13	331	1	11	7	210	4
12	16	412	4	12	4	142	2
13	15	416	5	13	9	270	6
14	14	484	2	14	11	267	4
15	11	322	3	15	11	302	3
16	21	506	5	16	9	214	4
17	7	191	5	17	6	180	1
18	19	422	5	18	6	105	5
19	14	437	7	19	9	383	8
20	32	985	3	20	12	384	2
21	18	500	4	21	14	351	2
22	12	455	5	22	6	178	3
23	14	511	5	23	8	192	4
24	11	238	3	24	5	128	6
25	12	315	1	25	6	175	4
26	6	127	7	26	5	103	7
27	15	405	4	27	6	150	4
28	15	504	1	28	9	198	4
29	8	242	3	29	10	294	7
30	11	339	7	30	9	250	5
31	18	530	4	31	11	279	1
32	12	399	3	32	8	227	7
33	18	570	3	33	11	265	2
34	11	315	4	34	10	292	1
35	9	210	4	35	6	180	2
36	12	344	2	36	11	386	5
37	8	248	2	37	18	476	3
38	12	316	1	38	8	256	4
39	15	525	4	39	12	325	4
40	7	155	2				
41	11	233	3				
42	16	573	4				
43	15	488	4				
44	14	337	4				
45	16	365	3				
46	14	397	4				
47	10	298	3				
48	10	273	3				
49	13	414	4				
50	8	179	3				

$$r_{xy}^2 = \frac{\left[N\Sigma XY - (\Sigma X)(\Sigma Y)\right]^2}{\left[N\Sigma X^2 - (\Sigma X)^2\right]\left[N\Sigma Y^2 - (\Sigma Y)^2\right]}$$

Y = no. in household

X_1 = rate of events

X_2 = severity of events

PATIENTS

	X_1	X_2
ΣX	672	19 490
ΣY	191	191
$(\Sigma X)^2$	451 584	379 860 100
$(\Sigma Y)^2$	36 481	36 481
ΣXY	2 614	77 558
$(\Sigma XY)^2$	6 832 996	6 015 243 364
ΣX^2	10 014	8 766 534
ΣY^2	901	901
r_{xy}	0.1144	0.2194
sign.	n.s.	n.s.

CONTROLS

	X_1	X_2
ΣX	343	9 641
ΣY	152	152
$(\Sigma X)^2$	117 649	92 948 881
$(\Sigma Y)^2$	23 104	23 104
ΣXY	1 296	37 194
$(\Sigma XY)^2$	1 679 616	1 383 393 636
ΣX^2	3 317	2 733 749
ΣY^2	720	720
r_{xy}	- 0.2085	- 0.0632
sign.	n.s.	n.s.

APPENDIX VII.

Computation of values of t for the rate of events

i. in the first year prior to attendance

Pair no.	Patient (x)	Control (y)
1	10	6
2	13	6
3	1	7
4	9	1
5	12	9
6	8	6
7	13	6
8	11	6
9	8	1
10	6	7
11	10	3
12	15	4
13	8	5
14	11	9
15	9	2
16	17	7
17	3	5
18	12	4
19	9	8
20	21	6
21	14	9
22	7	3
23	9	7
24	6	3
25	11	4
26	3	2
27	9	4
28	11	2
Sum	276	142
Mean	9.85	5.07

$$t = \frac{(\Sigma x^2 - \Sigma y^2)\sqrt{N-2}}{2\sqrt{\Sigma x^2 \Sigma y^2 - (\Sigma xy)^2}}$$

Σx^2	3 198
Σy^2	874
$\Sigma x^2 \Sigma y^2$	2 795 052
$\Sigma x^2 - \Sigma y^2$	2 324
Σxy	1 467
$(\Sigma xy)^2$	2 152 089
$\sqrt{N-2}$	5.09
t	7.383
$p <$	0.001

APPENDIX VII. continued

Computation of values of t for the rate of events

ii. in the second year prior to attendance

Pair no.	Patient (x)	Control (y)
1	0	5
2	4	3
3	5	0
4	6	6
5	5	2
6	3	5
7	5	2
8	7	3
9	6	4
10	7	1
11	3	4
12	1	0
13	7	3
14	3	2
15	2	9
16	4	2
17	4	1
18	7	2
19	5	1
20	11	6
21	4	5
22	5	3
23	5	1
24	5	2
25	1	2
26	3	3
27	6	2
28	4	7
Sum	138	86
Mean	4.92	3.07

$$t = \frac{(\Sigma x^2 - \Sigma y^2)\sqrt{N-2}}{2\sqrt{\Sigma x^2 \Sigma y^2 - (\Sigma xy)^2}}$$

Σx^2	722
Σy^2	390
$\Sigma x^2 \Sigma y^2$	281 580
$\Sigma x^2 - \Sigma y^2$	332
Σxy	390
$(\Sigma xy)^2$	152 100
$\sqrt{N-2}$	5.09
t	2.353
$p <$	0.05

APPENDIX VII. continued

Computation of values of t for the rate of events

iii. in eight consecutive 3-month periods prior to attendance

Patient no.	Months 0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
	Number of events							
1	2	7	0	1	0	0	0	0
2	5	4	1	3	1	2	0	1
3	0	1	0	0	1	2	2	0
4	2	4	1	2	3	2	1	0
5	3	5	3	1	1	1	2	1
6	5	2	1	0	0	2	1	0
7	1	8	1	3	0	3	1	1
8	5	2	0	4	2	1	0	4
9	7	0	1	0	2	1	0	3
10	4	0	2	0	0	0	6	1
11	1	6	2	1	1	1	0	1
12	3	5	4	3	0	1	0	0
13	2	3	0	3	4	2	0	1
14	8	2	0	1	1	1	0	1
15	2	3	1	3	0	1	0	1
16	6	4	5	2	0	3	0	1
17	0	2	0	1	0	1	2	1
18	5	1	5	1	3	1	1	2
19	4	1	4	0	0	0	1	4
20	10	4	1	6	2	1	4	4
21	6	3	5	0	0	4	0	0
22	3	0	0	4	1	2	0	2
23	2	0	0	7	0	3	0	2
24	3	3	0	0	0	1	0	4
25	0	2	0	9	1	0	0	0
26	2	0	0	1	0	0	1	2
27	3	0	2	4	2	0	2	2
28	4	2	3	2	0	2	1	1
Sum	98	74	42	62	25	38	25	40
Mean	3.50	2.64	1.50	2.21	0.89	1.35	0.89	1.42

APPENDIX VII. iii. continued

Control no.	Months 0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
	Number of events							
1	1	1	1	3	0	2	1	2
2	3	1	1	1	0	0	1	2
3	0	1	1	5	0	0	0	0
4	0	0	1	0	0	0	6	0
5	3	3	2	1	0	1	1	0
6	1	3	1	1	2	0	2	1
7	1	0	0	5	0	0	0	2
8	4	0	2	0	0	0	1	2
9	0	1	0	0	1	1	1	1
10	1	1	2	3	0	0	1	0
11	1	2	0	0	4	0	0	0
12	0	4	0	0	0	0	0	0
13	2	1	2	0	0	3	0	0
14	1	7	0	1	0	1	1	0
15	0	0	1	1	0	7	1	1
16	1	1	3	2	0	0	1	1
17	0	1	3	1	0	0	1	0
18	0	0	1	3	0	0	1	1
19	3	2	0	3	0	1	0	0
20	1	4	1	0	1	5	0	0
21	3	3	1	2	0	1	0	4
22	1	0	1	1	0	1	2	0
23	1	0	3	3	0	0	1	0
24	3	0	0	0	0	0	1	1
25	0	2	1	1	0	0	1	1
26	0	1	1	0	0	1	0	2
27	2	2	0	0	0	0	0	2
28	0	1	1	0	2	1	3	1
Sum	33	42	30	37	11	25	27	24
Mean	1.17	1.50	1.07	1.32	0.39	0.89	0.96	0.85

APPENDIX VII. iii. continued

$$t = \frac{(\Sigma x^2 - \Sigma y^2)\sqrt{N-2}}{2\sqrt{\Sigma x^2 \Sigma y^2 - (\Sigma xy)^2}}$$

	Months prior to attendance 0-3	4-6	7-9	10-12
Σx^2	502	326	144	278
Σy^2	79	134	56	111
$\Sigma x^2 \Sigma y^2$	39 658	43 684	8 064	30 858
Σxy	135	121	43	68
$(\Sigma xy)^2$	18 225	14 641	1 849	4 624
$\sqrt{N-2}$	5.09	5.09	5.09	5.09
$t_{df=26}$	7.373	2.874	2.871	2.639
$p \leqslant$	0.0005	0.005	0.005	0.025

	Months prior to attendance 13-15	16-18	19-21	22-24
Σx^2	57	82	75	104
Σy^2	26	95	67	48
$\Sigma x^2 \Sigma y^2$	1 482	7 790	5 025	4 992
Σxy	8	29	22	32
$(\Sigma xy)^2$	64	841	484	1 024
$\sqrt{N-2}$	5.09	5.09	5.09	5.09
$t_{df=26}$	2.132	-0.389	0.303	2.298
$p \leqslant$	0.025	n.s.	n.s.	0.025

APPENDIX VIII.

Computation of values of t for the severity of events

i. in the first year prior to attendance

Pair no.	Patient (x)	Control (y)
1	237	176
2	320	116
3	13	230
4	216	13
5	419	227
6	241	188
7	338	214
8	413	212
9	241	17
10	151	291
11	257	105
12	399	142
13	250	116
14	415	234
15	267	39
16	379	183
17	83	167
18	262	74
19	243	320
20	669	207
21	388	246
22	298	49
23	322	179
24	134	97
25	297	99
26	83	30
27	235	84
28	382	42
Sum	7 952	4 097
Mean	284	146.32

$$t = \frac{(\Sigma x^2 - \Sigma y^2)\sqrt{N-2}}{2\sqrt{\Sigma x^2 \Sigma y^2 - (\Sigma xy)^2}}$$

Σx^2	2 719 014
Σy^2	796 997
$\Sigma x^2 \Sigma y^2$	2 167 046 000 958
$\Sigma x^2 - \Sigma y^2$	1 922 017
Σxy	1 220 355
$(\Sigma xy)^2$	1 489 266 326 025
$\sqrt{N-2}$	5.09
t	5.941
$p <$	0.001

APPENDIX VIII. continued

Computation of values of t for the severity of events

iii. in eight consecutive 3-month periods

prior to attendance

Patient no.	Months 0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
	Severity of events							
1	49	175	0	13	0	0	0	0
2	115	96	19	90	47	55	0	39
3	0	13	0	0	63	80	39	0
4	31	95	40	50	99	45	26	0
5	145	155	92	27	53	27	92	42
6	103	101	37	0	0	37	44	0
7	20	193	53	72	0	47	11	26
8	163	83	0	167	111	63	0	124
9	206	0	35	0	67	63	0	105
10	100	0	51	0	0	0	169	16
11	29	124	84	20	37	13	0	24
12	56	81	112	150	0	13	0	0
13	58	90	0	102	111	39	0	16
14	295	76	0	44	20	13	0	36
15	66	91	24	86	0	13	0	42
16	157	114	75	33	0	74	0	53
17	0	66	0	17	0	13	77	18
18	119	13	117	13	82	13	13	52
19	74	36	133	0	0	0	44	150
20	382	97	25	165	49	20	130	117
21	183	71	134	0	0	112	0	0
22	119	0	0	179	20	36	0	101
23	99	0	0	223	0	88	0	101
24	79	55	0	0	0	13	0	91
25	0	66	0	231	18	0	0	0
26	70	0	0	13	0	0	13	31
27	66	0	42	127	90	0	42	38
28	129	52	134	67	0	56	13	53
Sum	2 913;	1 943;	1 207;	1 889;	867;	933;	713;	1 275
Mean	104	69	43	67	30	33	25	45

APPENDIX VIII. iii. continued

Control no.	Months 0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
	Severity of events							
1	53	20	13	90	0	34	13	35
2	71	17	13	15	0	0	13	51
3	0	13	40	177	0	0	0	0
4	0	0	13	0	0	0	151	0
5	100	64	50	13	0	18	13	0
6	27	129	13	19	97	0	30	20
7	53	0	0	161	0	0	0	33
8	190	0	22	0	0	0	37	75
9	0	17	0	0	53	38	13	18
10	53	53	91	94	0	0	53	0
11	39	66	0	0	105	0	0	0
12	0	142	0	0	0	0	0	0
13	46	18	52	0	25	129	0	0
14	19	177	0	38	0	20	13	0
15	0	0	13	26	0	187	13	63
16	26	26	65	66	0	0	13	18
17	0	19	111	37	0	0	13	0
18	0	0	13	61	0	0	13	18
19	136	63	0	121	0	63	0	0
20	53	141	13	0	40	137	0	0
21	107	68	13	58	0	13	0	92
22	19	0	13	17	0	63	66	0
23	17	0	72	90	0	0	13	0
24	97	0	0	0	0	0	13	18
25	0	66	20	13	0	0	13	63
26	0	17	13	0	0	17	0	56
27	49	35	0	0	0	0	0	66
28	0	29	13	0	54	17	52	33
Sum	1 155;	1 180;	666;	1 096;	374;	736;	545;	659
Mean	41	42	23	39	13	26	19	23

APPENDIX VIII. iii. continued

$$t = \frac{(\Sigma x^2 - \Sigma y^2)\sqrt{N-2}}{2\sqrt{\Sigma x^2 \Sigma y^2 - (\Sigma xy)^2}}$$

	Months prior to attendance 0-3	4-6
Σx^2	506 147	214 845
Σy^2	110 185	117 088
$\Sigma x^2 \Sigma y^2$	55 769 807 195	25 155 771 360
Σxy	143 591	93 863
$(\Sigma xy)^2$	20 618 375 281	8 810 262 769
$\sqrt{N-2}$	5.09	5.09
$t_{df=26}$	5.374	1.945
$p \leqslant$	0.0005	n.s.

	Months prior to attendance 7-9	10-12
Σx^2	113 909	271 894
Σy^2	39 558	113 070
$\Sigma x^2 \Sigma y^2$	4 506 012 222	30 743 393 790
Σxy	21 006	48 087
$(\Sigma xy)^2$	441 252 036	2 312 359 569
$\sqrt{N-2}$	5.09	5.09
$t_{df=26}$	2.967	2.397
$p \leqslant$	0.005	0.025

APPENDIX VIII. iii. continued

	Months prior to attendance 13-15	16-18
Σx^2	67 637	56 995
Σy^2	28 384	82 388
$\Sigma x^2 \Sigma y^2$	1 919 808 608	4 695 704 060
Σxy	12 171	18 018
$(\Sigma xy)^2$	148 133 241	324 648 324
$\sqrt{N-2}$	5.09	5.09
$t_{df=26}$	2.373	0.977
$p \leqslant$	0.025	n.s.

	Months prior to attendance 19-21	22-24
Σx^2	68 315	110 433
Σy^2	36 967	37 219
$\Sigma x^2 \Sigma y^2$	2 525 400 605	4 110 205 827
Σxy	17 245	26 204
$(\Sigma xy)^2$	297 390 025	686 649 616
$\sqrt{N-2}$	5.09	5.09
$t_{df=26}$	1.690	3.184
$p \leqslant$	n.s.	0.005

APPENDIX IX.

LAPSE OF TIME BETWEEN ONSET OF COMPLAINTS AND FIRST ATTENDANCE IN THE PATIENT SAMPLE

Patient No.	
1	4 months
2	24 "
3	11 "
4	11 "
5	4 "
6	3 "
7	18 "
8	24 "
9	2 "
10	24 "
11	2 "
12	12 "
13	24 "
14	1 "
15	9 "
16	19 "
17	21 "
18	8 "
19	24 "
20	24 "
21	3 "
22	12 "
23	12 "
24	7 "
25	12 "
26	24 "
27	½ "
28	7 "
29	24 "
30	1 "
31	3 "
32	5 "
33	10 "
34	1 "
35	3 "
36	6 "
37	6 "
38	6 "
39	8 "
40	12 "
41	8 "
42	7 "
43	7 "
44	12 "
45	3 "
46	3 "
47	14 "
48	3 "
49	4 "
50	6 "

APPENDIX X.

Computation of values of T

i. for the total event rate between onset and attendance

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	6	-	6	21.5	
2	13	8	5	16.5	
3	1	7	- 6	-21.5	21.5
4	6	1	5	16.5	
5	5	3	2	8.5	
6	4	1	3	11.5	
7	14	5	9	25	
8	14	8	6	21.5	
9	5	-	5	16.5	
10	10	4	6	21.5	
11	-	1	- 1	- 3.5	3.5
12	10	3	7	24	
13	13	8	5	16.5	
14	2	-	2	8.5	
15	3	1	2	8.5	
16	17	7	10	26	
17	4	5	- 1	- 3.5	3.5
18	6	1	5	16.5	
19	13	8	5	16.5	
20	29	10	19	27	
21	3	2	1	3.5	
22	6	3	3	11.5	
23	6	7	- 1	- 3.5	3.5
24	4	3	1	3.5	
25	7	3	4	13	
26	5	5			
27	-	1	- 1	- 3.5	3.5
28	4	2	2	8.5	

T = 35.5

N = 27 (the total no. of d's having a sign), hence significance of T is determined by formula

$$z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

z = -3.68

p 0.000 16

APPENDIX X. continued

Computations of values of T ii. for the total severity of events between onset and attendance

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	155	-	155	20	
2	297	79	218	26	
3	-	217	-217	-25	25
4	140	-	140	18	
5	127	37	90	11	
6	87	27	60	8.5	
7	308	135	173	22	
8	509	171	338	27	
9	137	-	137	17	
10	243	121	122	15	
11	-	39	- 39	- 5	5
12	245	89	156	21	
13	247	117	130	16	
14	57	-	57	7	
15	52	-	52	6	
16	318	130	188	23	
17	54	114	- 60	- 8.5	8.5
18	110	-	110	14	
19	341	247	94	12	
20	664	39	625	28	
21	77	54	23	2	
22	254	49	205	24	
23	249	179	70	10	
24	105	97	8	1	
25	141	46	95	13	
26	26	55	- 29	- 3.5	3.5
27	-	29	- 29	- 3.5	3.5
28	157	13	144	19	

T = 45.5

N = 28 (the total no. of d's having a sign), hence significance of T is determined by formula

$$z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

$z = -3.57$

$p < 0.000\ 23$

APPENDIX XI.

Computation of values of T, between onset and attendance, i. for the rate of 'health' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	1	1			
2	4	1	3	20.5	
3	-	-			
4	1	-	1	5.5	
5	1	-	1	5.5	
6	1	-	1	5.5	
7	2	1	1	5.5	
8	3	1	2	14.5	
9	2	-	2	14.5	
10	3	4	- 1	- 5.5	5.5
11	-	-			
12	4	1	3	20.5	
13	2	1	1	5.5	
14	-	-			
15	3	-	3	20.5	
16	3	-	3	20.5	
17	2	1	1	5.5	
18	2	-	2	14.5	
19	1	1			
20	3	2	1	5.5	
21	2	1	1	5.5	
22	-	-			
23	2	-	2	14.5	
24	2	-	2	14.5	
25	3	1	2	14.5	
26	1	-	1	5.5	
27	2	-	2	14.5	
28	2	-	2	14.5	
					T = 5.5

N = 22 (the total no. of d's having a sign)

for N = 22, $T_{\alpha\ 0.005} \leqslant 43$, therefore our T = 5.5 is highly significant

APPENDIX XI.ii.

Computation of values of T, between onset and attendance, for the severity of 'health' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	13	53	-40	-14.5	14.5
2	76	13	63	18	
3	-	-			
4	13	-	13	1.5	
5	13	-	13	1.5	
6	16	-	16	4.5	
7	69	53	16	4.5	
8	82	53	29	10	
9	35	-	35	13	
10	82	212	-130	-24	24
11	-	-			
12	135	53	82	21.5	
13	69	53	16	4.5	
14	-	-			
15	119	-	119	23	
16	82	-	82	21.5	
17	106	53	53	16.5	
18	66	-	66	19.5	
19	13	53	-40	-14.5	14.5
20	82	106	-24	- 7	7
21	69	53	16	4.5	
22	-	-			
23	29	-	29	10	
24	29	-	29	10	
25	119	53	66	19.5	
26	53	-	53	16.5	
27	29	-	29	10	
28	29	-	29	10	
					T = 60

N = 24 (the total no. of d's having a sign)

for N = 24, $T_{\alpha\ 0.005} \leqslant 61$, therefore our T = 60 is highly significant

APPENDIX XI.iii.

Computation of values of T, between onset and attendance, for the rate of 'work' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	3	-	3	14	
2	4	-	4	17	
3	-	1	-1	- 5.5	5.5
4	1	-	1	5.5	
5	1	-	1	5.5	
6	-	1	-1	- 5.5	5.5
7	4	-	4	17	
8	2	1	1	5.5	
9	-	-			
10	3	-	3	14	
11	-	-			
12	4	2	2	11.5	
13	2	1	1	5.5	
14	-	-			
15	-	-			
16	2	5	-3	-14	14
17	-	1	-1	- 5.5	5.5
18	-	-			
19	3	2	1	5.5	
20	5	1	4	17	
21	-	-			
22	1	-	1	5.5	
23	-	2	-2	-11.5	11.5
24	-	-			
25	1	1			
26	-	-			
27	-	1	-1	- 5.5	5.5
28	-	-			

T = 47.5

N = 18 (the total no. of d's having a sign)

for N = 18, $T_{\alpha 0.025} \leqslant 40$, therefore our T = 47.5 is not significant

APPENDIX XI.iv.

Computation of values of T, between onset and attendance, for the severity of 'work' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	81	-	81	15	
2	129	-	129	18	
3	-	36	-36	-11	11
4	20	-	20	3	
5	27	-	27	6.5	
6	-	27	-27	- 6.5	6.5
7	97	-	97	17	
8	67	36	31	10	
9	-	-			
10	96	-	96	16	
11	-	-			
12	97	52	45	12	
13	56	29	27	6.5	
14	-	-			
15	-	-			
16	83	130	-47	-14	14
17	-	20	-20	- 3	3
18	-	-			
19	110	83	27	6.5	
20	173	26	147	19	
21	-	-			
22	20	-	20	3	
23	-	46	-46	-13	13
24	-	-			
25	27	20	7	1	
26	-	-			
27	-	29	-29	- 9	9
28	-	-			

T = 56.5

N = 19 (the total no. of d's having a sign)

for N = 19, $T_{\alpha\, 0.025} \leqslant 46$, therefore our T = 56.5 is not significant

APPENDIX XI.v.

Computation of values of T, between onset and attendance, for the rate of 'intimate and family' events

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	1	-	1	6.5	
2	4	1	3	15.5	
3	-	1	- 1	- 6.5	6.5
4	-	-			
5	2	1	1	6.5	
6	1	-	1	6.5	
7	2	2			
8	6	1	5	19	
9	2	-	2	13.5	
10	-	1	- 1	- 6.5	6.5
11	-	1	- 1	- 6.5	6.5
12	1	1			
13	3	2	1	6.5	
14	-	-			
15	-	-			
16	4	-	4	17.5	
17	-	1	- 1	- 6.5	6.5
18	1	-	1	6.5	
19	5	3	2	13.5	
20	10	1	9	20	
21	-	-			
22	4	-	4	17.5	
23	5	2	3	15.5	
24	2	1	1	6.5	
25	1	-	1	6.5	
26	-	-			
27	-	-			
28	2	1	1	6.5	
					T = 26

N = 20 (the total no. of d's having a sign)

for N = 20, $T_{\alpha\, 0.005} \leqslant 32$, therefore our T = 26 is highly significant

APPENDIX XI.vi.

Computation of values of T, between onset and attendance, for the severity of 'intimate and family' events

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums with the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	30	-	30	6	
2	112	15	97	17	
3	-	65	-65	-15	15
4	-	-			
5	42	-	42	11	
6	26	-	26	4.5	
7	26	63	-37	- 7.5	7.5
8	286	37	249	21	
9	83	-	83	16	
10	-	63	-63	-14	14
11	-	39	-39	- 9.5	9.5
12	44	37	7	1.5	
13	70	63	7	1.5	
14	-	-			
15	-	-			
16	109	-	109	18	
17	-	37	-37	- 7.5	7.5
18	44	-	44	12	
19	211	165	46	13	
20	372	-	372	22	
21	-	-			
22	210	-	210	20	
23	229	86	143	19	
24	68	42	26	4.5	
25	15	-	15	3	
26	-	-			
27	-	-			
28	39	-	39	9.5	
					T = 53.5

N = 22 (the total no. of d's having a sign)

for N = 22, $T_{\alpha\,0.01} \leqslant 56$, therefore our T = 53.5 is significant

APPENDIX XI.vii.

Computation of values of T, between onset and attendance, for the rate of 'personal and social' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	2	-	2	11	
2	3	3			
3	1	4	-3	-16.5	16.5
4	4	1	3	16.5	
5	2	1	1	4	
6	3	-	3	16.5	
7	6	-	6	23	
8	6	4	2	11	
9	2	-	2	11	
10	6	2	4	19.5	
11	-	-			
12	5	-	5	21.5	
13	6	4	2	11	
14	1	-	1	4	
15	2	1	1	4	
16	11	2	9	24	
17	3	2	1	4	
18	5	1	4	19.5	
19	3	2	1	4	
20	11	6	5	21.5	
21	3	1	2	11	
22	1	2	- 1	- 4	4
23	1	1			
24	2	-	2	11	
25	5	2	3	16.5	
26	4	2	2	11	
27	-	-			
28	2	1	1	4	

T = 20.5

N = 24 (the total no. of d's having a sign)

for N = 24, $T_{\alpha 0.005} \leqslant 61$, therefore our T = 20.5 is highly significant

APPENDIX XI.viii.

Computation of values of T, between onset and attendance, for the severity of 'personal and social' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	44	-	44	14	
2	68	63	5	1	
3	13	91	-78	-20	20
4	95	13	82	21	
5	58	20	38	12	
6	61	-	61	16	
7	130	-	130	25	
8	256	122	134	26	
9	37	-	37	10.5	
10	120	31	89	22.5	
11	-	-			
12	66	-	66	17.5	
13	127	69	58	15	
14	19	-	19	5	
15	40	13	27	8	
16	179	53	126	24	
17	50	32	18	4	
18	79	13	66	17.5	
19	69	44	25	6	
20	215	126	89	22.5	
21	77	37	40	13	
22	24	32	- 8	- 2	2
23	24	13	11	3	
24	37	-	37	10.5	
25	99	26	73	19	
26	57	31	26	7	
27	-	-			
28	42	13	29	9	
					T = 22

N = 26 (the total no. of d's having a sign), hence significance of T is determined by formula

$$z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

$z = -3.92$

$p = 0.000\ 05$

APPENDIX XI.ix.

Computation of values of T, between onset and attendance, for the rate of 'financial' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	2	4	- 2	-16.5	
3	-	1	- 1	- 7	
4	1	-	1	7	7
5	-	1	- 1	- 7	
6	-	-			
7	2	3	- 1	- 7	
8	-	2	- 2	-16.5	
9	1	-	1	7	7
10	1	1			
11	-	-			
12	1	-	1	7	7
13	2	1	1	7	7
14	1	-	1	7	7
15	1	-	1	7	7
16	-	-			
17	1	1			
18	-	-			
19	2	1	1	7	7
20	3	2	1	7	7
21	-	1	- 1	- 7	
22	-	1	- 1	- 7	
23	-	2	- 2	-16.5	
24	-	2	- 2	-16.5	
25	-	-			
26	1	3	- 2	-16.5	
27	-	-			
28	2	-	2	16.5	16.5

T = 72.5

N = 19 (the total no. of d's having a sign)

for N = 19, $T_{\alpha 0.025} \leqslant 46$, therefore our T = 72.5 is not significant

APPENDIX XI.x.

Computation of values of T, between onset and attendance, for the severity of 'financial' changes

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	76	89	-13	- 2	
3	-	38	-38	-14.5	
4	38	-	38	14.5	14.5
5	-	17	-17	- 5.5	
6	-	-			
7	55	72	-17	- 5.5	
8	-	76	-76	-19.5	
9	17	-	17	5.5	5.5
10	38	38			
11	-	-			
12	38	-	38	14.5	14.5
13	55	17	38	14.5	14.5
14	38	-	38	14.5	14.5
15	25	-	25	10	10
16	-	-			
17	17	38	-21	- 9	
18	-	-			
19	34	38	- 4	- 1	
20	93	76	17	5.5	5.5
21	-	17	-17	- 5.5	
22	-	17	-17	- 5.5	
23	-	34	-34	-11	
24	-	55	-55	-17.5	
25	-	-			
26	17	72	-55	-17.5	
27	-	-			
28	76	-	76	19.5	19.5
					T = 98.5

N = 20 (the total no. of d's having a sign)

for N = 20, $T_{\alpha 0.025} \leqslant 52$, therefore our T = 98.5 is not significant

APPENDIX XII.i.

Computation of values of T for

rate of 'entries'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	1	-	1	3	
3	-	-			
4	1	-	1	3	
5	-	-			
6	-	-			
7	-	-			
8	-	-			
9	-	-			
10	-	-			
11	-	1	-1	-3	3
12	-	-			
13	2	2			
14	-	-			
15	-	-			
16	1	1			
17	-	-			
18	-	-			
19	1	1			
20	2	2			
21	-	-			
22	-	-			
23	-	-			
24	-	-			
25	1	-	1	3	
26	1	1			
27	-	-			
28	1	-	1	3	
					T = 3

N = 5 (the total no. of d's having a sign)

for N=5, $T_{0.025} \leqslant 0$, therefore our T = 3 is not significant

APPENDIX XII.i. continued

Computation of values of T for

severity of 'entries'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	39	-	39	6	
3	-	-			
4	40	-	40	8	
5	-	-			
6	-	-			
7	-	-			
8	-	-			
9	-	-			
10	-	-			
11	-	39	-39	-6	6
12	-	-			
13	57	57			
14	-	-			
15	-	-			
16	18	40	-22	-4	4
17	-	-			
18	-	-			
19	45	39	6	1	
20	89	68	21	3	
21	-	-			
22	-	-			
23	-	-			
24	-	-			
25	18	-	18	2	
26	18	18			
27	-	-			
28	39	-	39	6	

T = 10

N = 8 (the total no. of d's having a sign)

for N = 8, $T_{\alpha\,0.025} \leqslant 4$, therefore our T = 10 is not significant

APPENDIX XII.ii.

Computation of values of T for rate of 'exits'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	4	1	3	14.5	
3	-	2	-2	-12	12
4	1	-	1	5.5	
5	2	1	1	5.5	
6	1	-	1	5.5	
7	1	1			
8	3	2	1	5.5	
9	1	-	1	5.5	
10	1	1			
11	-	-			
12	1	1			
13	-	1	-1	-5.5	5.5
14	-	-			
15	-	-			
16	4	-	4	16	
17	-	1	-1	-5.5	5.5
18	1	-	1	5.5	
19	1	2	-1	-5.5	5.5
20	3	-	3	14.5	
21	1	1			
22	2	-	2	12	
23	2	-	2	12	
24	-	-			
25	-	-			
26	-	-			
27	-	-			
28	2	1	1	5.5	

T = 28.5

N = 16 (the total no. of d's having a sign)

for N = 16, $T_{\alpha 0.025} \leqslant 30$, therefore our T = 28.5 is significant

APPENDIX XII.ii. continued

Computation of values of T for

severity of 'exits'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	113	37	76	13	
3	-	83	-83	-14	14
4	18	-	18	3.5	
5	81	63	18	3.5	
6	18	-	18	3.5	
7	18	63	-45	-11	11
8	165	74	91	15	
9	18	-	18	3.5	
10	37	63	-26	- 9	9
11	-	-			
12	18	37	-19	- 7.5	7.5
13	-	63	-63	-12	12
14	-	-			
15	-	-			
16	97	-	97	16	
17	-	37	-37	-10	10
18	18	-	18	3.5	
19	18	126	-108	-17	17
20	112	-	112	18	
21	18	37	-19	- 7.5	7.5
22	128	-	128	19.5	
23	128	-	128	19.5	
24	-	-			
25	-	-			
26	-	-			
27	-	-			
28	47	29	18	3.5	
					T = 88

N = 20 (the total no. of d's having a sign)

for N = 20, $T_{\alpha 0.025} \leqslant 52$, therefore our T = 88 is not significant

APPENDIX XII.iii.

Computation of values of T for

rate of 'positive events'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	-	1	-1	- 6	
3	-	1	-1	- 6	
4	2	-	2	12	12
5	-	-			
6	-	-			
7	1	1			
8	-	-			
9	-	-			
10	-	1	-1	- 6	
11	-	-			
12	1	-	1	6	6
13	1	-	1	6	6
14	1	-	1	6	6
15	-	-			
16	-	1	-1	- 6	
17	-	1	-1	- 6	
18	-	-			
19	1	1			
20	2	3	-1	- 6	
21	-	-			
22	-	-			
23	-	-			
24	-	-			
25	-	-			
26	-	1	-1	- 6	
27	-	1	-1	- 6	
28	-	-			

T = 30

N = 12 (the total no. of d's having a sign)

for N = 12, $T_{\alpha 0.025} \leqslant 14$, therefore our T = 30 is not significant

APPENDIX XII.iii. continued

Computation of values of T for

severity of 'positive events'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	-	-			
2	-	38	-38	- 7	
3	-	38	-38	- 7	
4	78	-	78	13	13
5	-	-			
6	-	-			
7	38	38			
8	-	-			
9	-	-			
10	-	38	-38	- 7	
11	-	-			
12	29	-	29	2.5	2.5
13	38	-	38	7	7
14	38	-	38	7	7
15	-	-			
16	-	40	-40	-11	
17	-	38	-38	- 7	
18	-	-			
19	45	38	7	1	1
20	79	126	-47	-12	
21	-	-			
22	-	-			
23	-	-			
24	-	-			
25	-	-			
26	-	38	-38	- 7	
27	-	29	-29	- 2.5	
28	-	-			

T = 30.5

N = 13 (the total no. of d's having a sign)

for N = 13, $T_{\alpha 0.025} \leqslant 17$, therefore our T = 30.5 is not significant

APPENDIX XII.iv.

Computation of values of T for

rate of 'negative events'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	2	-	2	6	
2	4	1	3	10.5	
3	-	1	-1	- 2	2
4	-	-			
5	2	1	1	2	
6	-	-			
7	2	1	1	2	
8	9	6	3	10.5	
9	3	-	3	10.5	
10	6	2	4	13.5	
11	-	-			
12	5	-	5	15.5	
13	1	1			
14	-	-			
15	-	-			
16	5	-	5	15.5	
17	-	-			
18	2	-	2	6	
19	6	3	3	10.5	
20	11	1	10	17	
21	1	1			
22	4	-	4	13.5	
23	4	2	2	6	
24	2	2			
25	2	-	2	6	
26	-	-			
27	-	-			
28	2	-	2	6	

T = 2

N = 17 (the total no. of d's having a sign)

for N = 17, $T_{\alpha 0.005} \leqslant 23$, therefore our T = 2 is highly significant

APPENDIX XII.iv. continued

Computation of values of T for

severity of 'negative events'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	55	-	55	8.5	
2	160	37	123	15	
3	-	65	-65	-10	10
4	-	-			
5	105	63	42	6	
6	-	-			
7	48	63	-15	- 2	2
8	485	198	287	19	
9	102	-	102	13	
10	167	74	93	12	
11	-	-			
12	141	-	141	17	
13	44	63	-19	- 4	4
14	-	-			
15	-	-			
16	110	-	110	14	
17	-	-			
18	55	-	55	8.5	
19	224	173	51	7	
20	412	11	401	20	
21	19	37	-18	- 3	3
22	210	-	210	18	
23	210	86	124	16	
24	68	80	-12	- 1	1
25	38	-	38	5	
26	-	-			
27	-	-			
28	76	-	76	11	
					T = 20

N = 20 (the total no. of d's having a sign)

for N = 20, $T_{\alpha 0.005} \leqslant 38$, therefore our T = 20 is highly significant

APPENDIX XII.v.

Computation of values of T for rate of 'positive' against 'negative' events separately in the patient and control groups

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

PATIENTS

no.	Event rate +	Event rate −	d	Rank of d	T
1	-	2	-2	- 7	
2	-	4	-4	-13.5	
3	-	-			
4	2	-	2	7	7
5	-	2	-2	- 7	
6	-	-			
7	1	2	-1	- 2	
8	-	9	-9	-19.5	
9	-	3	-3	-11	
10	-	6	-6	-18	
11	-	-			
12	1	5	-4	-13.5	
13	1	1			
14	1	-	1	2	2
15	-	-			
16	-	5	-5	-16.5	
17	-	-			
18	-	2	-2	- 7	
19	1	6	-5	-16.5	
20	2	11	-9	-19.5	
21	-	1	-1	- 2	
22	-	4	-4	-13.5	
23	-	4	-4	-13.5	
24	-	2	-2	- 7	
25	-	2	-2	- 7	
26	-	-			
27	-	-			
28	-	2	-2	- 7	

T = 9

N = 20(no. of d's with a sign)

for N = 20, $T_{\alpha 0.005} \leqslant 38$

therefore our T = 9 is highly significant

CONTROLS

no.	Event rate +	Event rate −	d	Rank of d	T
1	-	-			
2	1	1			
3	1	1			
4	-	-			
5	-	1	-1	- 4.5	
6	-	-			
7	1	1			
8	-	6	-6	-13	
9	-	-			
10	1	2	-1	- 4.5	
11	-	-			
12	-	-			
13	-	1	-1	- 4.5	
14	-	-			
15	-	-			
16	1	-	1	4.5	4.5
17	1	-	1	4.5	4.5
18	-	-			
19	1	3	-2	-10.5	
20	3	1	2	10.5	10.5
21	-	1	-1	- 4.5	
22	-	-			
23	-	2	-2	-10.5	
24	-	2	-2	-10.5	
25	-	-			
26	1	-	1	4.5	4.5
27	1	-	1	4.5	4.5
28	-	-			

T = 28.5

N = 13 (no. of d's with a sign)

for N = 13, $T_{\alpha 0.025} \leqslant 17$

therefore our T = 28.5 is not significant

APPENDIX XII.vi.

Computation of values of T
for rate of events 'independent of illness'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	1	-	1	8	
2	4	1	3	22.5	
3	-	-			
4	1	-	1	8	
5	2	1	1	8	
6	1	-	1	8	
7	3	2	1	8	
8	3	1	2	18.5	
9	1	-	1	8	
10	2	1	1	8	
11	-	1	- 1	- 8	8
12	2	-	2	18.5	
13	4	2	2	18.5	
14	-	-			
15	-	-			
16	2	-	2	18.5	
17	-	1	- 1	- 8	8
18	1	-	1	8	
19	2	3	- 1	- 8	8
20	3	-	3	22.5	
21	-	1	- 1	- 8	8
22	2	-	2	18.5	
23	1	3	- 2	-18.5	18.5
24	-	1	- 1	- 8	8
25	-	1	- 1	- 8	8
26	-	-			
27	-	-			
28	2	1	1	8	
					T = 66.5

N = 23 (the total no. of d's having a sign)

for N = 23, $T_{\alpha 0.025} \leqslant 73$, therefore our T = 66.5 is significant

APPENDIX XII.vi. continued

Computation of values of T for

severity of events 'independent of illness'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	20	-	20	4.5	
2	117	37	80	20	
3	-	-			
4	20	-	20	4.3	
5	105	63	42	13	
6	26	-	26	7	
7	72	89	-17	- 2	2
8	127	37	90	22	
9	44	-	44	16.5	
10	57	63	- 6	- 1	1
11	-	39	-39	-10.5	10.5
12	64	-	64	18	
13	129	102	27	8	
14	-	-			
15	-	-			
16	42	-	42	13	
17	-	20	-20	- 4.5	4.5
18	44	-	44	16.5	
19	88	165	-77	-19	19
20	112	-	112	23	
21	-	37	-37	- 9	9
22	83	-	83	21	
23	63	106	-43	-15	15
24	-	42	-42	-13	13
25	-	20	-20	- 4.5	4.5
26	-	-			
27	-	-			
28	68	29	39	10.5	

T = 78.5

N = 23 (the total no. of d's having a sign)

for N = 23, $T_{\alpha 0.025} \leqslant 73$, therefore our T = 78.5 is not significant

APPENDIX XII.vii.

Computation of values of T for

rate of events 'independent and possibly independent of illness'

Wilcoxon matched-pairs signed ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Rate of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	3	-	3	17.5	
2	8	1	7	20	
3	-	3	-3	-17.5	17.5
4	2	-	2	12	
5	4	2	2	12	
6	1	1			
7	5	2	3	17.5	
8	5	3	2	12	
9	1	-	1	4.5	
10	3	2	1	4.5	
11	-	1	-1	- 4.5	4.5
12	3	3			
13	6	3	3	17.5	
14	-	-			
15	-	-			
16	8	6	2	12	
17	-	2	-2	-12	12
18	1	-	1	4.5	
19	6	6			
20	14	4	10	21	
21	1	1			
22	2	-	2	12	
23	1	3	-2	-12	12
24	-	1	-1	- 4.5	4.5
25	1	1			
26	-	1	-1	- 4.5	4.5
27	-	1	-1	- 4.5	4.5
28	2	1	1	4.5	

T = 59.5

N = 21 (the total no. of d's having a sign)

for N = 21, $T_{\alpha 0.025} \leqslant 59$, therefore our T = 59.5 is not significant

APPENDIX XII.vii. continued

Computation of values of T for severity of events 'independent and possibly independent of illness'

Wilcoxon matched-pairs signed-ranks test

(T = the smaller of the sums of the like-signed ranks)

Pair no.	Severity of events Patients	Controls	d	Rank of d	Rank with less frequent sign
1	76	-	76	19	
2	226	-	226	25	
3	-	96	-96	-23	23
4	60	-	60	18	
5	109	20	89	22	
6	26	27	- 1	- 1	1
7	95	63	32	9	
8	211	110	101	24	
9	44	-	44	14.5	
10	104	83	21	5	
11	-	39	-39	-10.5	10.5
12	93	89	4	3	
13	166	92	74	20	
14	-	-			
15	-	-			
16	222	170	52	16	
17	-	57	-57	-17	17
18	44	-	44	14.5	
19	238	268	-30	- 8	8
20	423	136	287	26	
21	40	37	3	2	
22	83	-	83	21	
23	63	106	-43	-13	13
24	-	42	-42	-12	12
25	27	20	7	4	
26	-	26	-26	- 6	6
27	-	29	-29	- 7	7
28	39	-	39	10.5	

T = 97.5

N = 26 (total no. of d's having a sign), hence significance of T is determined by formula

$$z = \frac{T - \frac{N(N+1)}{4}}{\sqrt{\frac{N(N+1)(2N+1)}{24}}}$$

z = -2.00

p = 0.0228

APPENDIX XIII.

Computation of correlation between total rate of events after onset and lapse of time between onset and attendance

Patient no.	Rate of events*	Time in mths.**
1	6	4
2	13	24
3	1	11
4	6	11
5	5	4
6	4	3
7	14	18
8	14	24
9	5	2
10	10	24
11	0	2
12	10	12
13	13	24
14	2	1
15	3	9
16	17	19
17	4	21
18	6	8
19	13	24
20	29	24
21	3	3
22	6	12
23	6	12
24	4	7
25	7	12
26	5	24
27	0	½
28	4	7
29	7	24
30	1	1
31	1	3
32	7	5
33	11	10
34	2	1
35	2	3
36	6	6
37	3	6
38	5	6
39	3	8
40	5	12
41	6	8
42	4	7
43	4	7
44	8	12
45	2	3
46	0	3
47	5	14
48	2	3
49	5	4
50	1	6

Pearson product-moment coefficient of correlation

$$r_{xy} = \frac{\Sigma xy}{\sqrt{(\Sigma x^2)(\Sigma y^2)}}$$

* - X
** - Y

$\Sigma X/N$	6
$\Sigma Y/N$	10
Σx^2	1 344
Σy^2	2 926.25
Σxy	1 430
r_{xy}	+ 0.721
$p <$	0.01

APPENDIX III.ii.

HEALTH	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
1. Has a recent illness or injury kept you in bed for a few days?	☐	☐	☐	☐	☐	☐	☐	☐
2. Have you been in hospital recently?	☐	☐	☐	☐	☐	☐	☐	☐
3. Have you recently been in a car (or motorcycle) accident in which you were the driver?	☐	☐	☐	☐	☐	☐	☐	☐
4. Have you recently been in a car (or motorcycle) accident in which you were a passenger?	☐	☐	☐	☐	☐	☐	☐	☐
5. Have you recently had an accident other than while driving?	☐	☐	☐	☐	☐	☐	☐	☐
6. Has there been a recent change in your sleeping habits? (time of day, number of hours per day, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
7. Has there been a recent change in your eating habits? (eating more, eating less, change in diet, time you eat, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
8. Has there been a recent change in the amount or time spent doing heavy physical work or exercise?	☐	☐	☐	☐	☐	☐	☐	☐
WORK								
9. Have you changed to a new type of work recently?	☐	☐	☐	☐	☐	☐	☐	☐
10. Has there been a recent change in the number of hours you work per day?	☐	☐	☐	☐	☐	☐	☐	☐
11. Have you recently been demoted?	☐	☐	☐	☐	☐	☐	☐	☐
12. Have you recently been "passed over" for promotion (or made redundant)?	☐	☐	☐	☐	☐	☐	☐	☐
13. Have you been promoted recently?	☐	☐	☐	☐	☐	☐	☐	☐
14. Have you been dissatisfied with your rate of progress at work recently?	☐	☐	☐	☐	☐	☐	☐	☐
15. Have you been transferred at work recently? (by your superiors/bosses)	☐	☐	☐	☐	☐	☐	☐	☐
16. Have you been transferred at work recently? (at your own request)	☐	☐	☐	☐	☐	☐	☐	☐
17. Has there been a recent change in your responsibilities at work?	☐	☐	☐	☐	☐	☐	☐	☐
18. Have you recently had a decrease in your responsibilities at work?	☐	☐	☐	☐	☐	☐	☐	☐

WORK (cont'd)	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
19. Have you recently had an increase in you responsibilities at work?	☐	☐	☐	☐	☐	☐	☐	☐
20. Have you recently had trouble with your superiors (bosses)?	☐	☐	☐	☐	☐	☐	☐	☐
21. Have you recently had trouble with your work-mates or people under your supervision?	☐	☐	☐	☐	☐	☐	☐	☐
22. Has your work gone quite poorly recently?	☐	☐	☐	☐	☐	☐	☐	☐
23. Has your work gone especially well recently?	☐	☐	☐	☐	☐	☐	☐	☐
24. Have you worked out of your trade or profession recently?	☐	☐	☐	☐	☐	☐	☐	☐
25. Have you recently taken any correspondence courses or studied at home for your job?	☐	☐	☐	☐	☐	☐	☐	☐
26. Have you recently finished at school, college or university?	☐	☐	☐	☐	☐	☐	☐	☐
WIFE (GIRLFRIEND), HOME AND FAMILY								
27. Have you recently changed your place of residence?	☐	☐	☐	☐	☐	☐	☐	☐
28. Have you married recently?	☐	☐	☐	☐	☐	☐	☐	☐
29. Have you become engaged recently?	☐	☐	☐	☐	☐	☐	☐	☐
30. Have you recently been separated from your wife/husband - due to his/her work?	☐	☐	☐	☐	☐	☐	☐	☐
31. Have you recently been separated from your wife/husband due to marital problems?	☐	☐	☐	☐	☐	☐	☐	☐
32. Has a child (or children) been born into or adopted by your family recently?	☐	☐	☐	☐	☐	☐	☐	☐
33. Has a relative or in-law moved in with you recently?	☐	☐	☐	☐	☐	☐	☐	☐
34. Have you recently been concerned over the mental or physical health of a member of your family?	☐	☐	☐	☐	☐	☐	☐	☐
35. Have you recently been concerned over the health of your girlfriend/ boyfriend?	☐	☐	☐	☐	☐	☐	☐	☐

WIFE (GIRLFRIEMD), HOME AND FAMILY (cont'd)	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
36. Have you recently had problems with your in-laws?	☐	☐	☐	☐	☐	☐	☐	☐
37. Has your wife/husband started or stopped work recently?	☐	☐	☐	☐	☐	☐	☐	☐
38. Have you recently had serious problems with your wife/husband	☐	☐	☐	☐	☐	☐	☐	☐
39. Have you recently had serious problems with your girlfriend/ boyfriend?	☐	☐	☐	☐	☐	☐	☐	☐
40. Has your wife (girlfriend) recently had an unwanted pregnancy?	☐	☐	☐	☐	☐	☐	☐	☐
41. Has your wife (girlfriend) recently had a miscarriage or abortion?	☐	☐	☐	☐	☐	☐	☐	☐
42. Have you recently had sexual difficulties?	☐	☐	☐	☐	☐	☐	☐	☐
43. Have you been divorced recently?	☐	☐	☐	☐	☐	☐	☐	☐
44. Have you lost a child through death recently?	☐	☐	☐	☐	☐	☐	☐	☐
45. Have you lost your wife/husband through death recently?	☐	☐	☐	☐	☐	☐	☐	☐
46. Have your parents recently become separated or divorced?	☐	☐	☐	☐	☐	☐	☐	☐
47. Have you recently had serious problems with your parents?	☐	☐	☐	☐	☐	☐	☐	☐
PERSONAL AND SOCIAL								
48. Has one or both of your parents remarried recently?	☐	☐	☐	☐	☐	☐	☐	☐
49. Have you recently lost a close relative through death?	☐	☐	☐	☐	☐	☐	☐	☐
50. Have you recently lost a close friend(s) through death?	☐	☐	☐	☐	☐	☐	☐	☐
51. Has there been a change recently in your usual number of "get togethers" with relatives?	☐	☐	☐	☐	☐	☐	☐	☐
52. Has there been a change recently in your usual number of "get togethers" with friends?	☐	☐	☐	☐	☐	☐	☐	☐
53. Have you recently broken off a strong friendship?	☐	☐	☐	☐	☐	☐	☐	☐

PERSONAL AND SOCIAL (cont'd)	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
54. Has your social life increased recently?	☐	☐	☐	☐	☐	☐	☐	☐
55. Has your social life decreased recently?	☐	☐	☐	☐	☐	☐	☐	☐
56. Has there been a recent change in your personal habits? (dress, friends, interests, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
57. Have you recently been smoking more?	☐	☐	☐	☐	☐	☐	☐	☐
58. Have you recently stopped smoking?	☐	☐	☐	☐	☐	☐	☐	☐
59. Has there been a change in your political beliefs recently?	☐	☐	☐	☐	☐	☐	☐	☐
60. Has there been a change in your religious beliefs recently?	☐	☐	☐	☐	☐	☐	☐	☐
61. Have you been attending religious services more often?	☐	☐	☐	☐	☐	☐	☐	☐
62. Have you been attending religious services less often?	☐	☐	☐	☐	☐	☐	☐	☐
63. Have you recently taken time off work for a holiday?	☐	☐	☐	☐	☐	☐	☐	☐
64. Have you recently been in a physical fight?	☐	☐	☐	☐	☐	☐	☐	☐
65. Have you recently had any major disciplinary actions taken against you at work?	☐	☐	☐	☐	☐	☐	☐	☐
66. Have you recently committed any minor offences against the law? (traffic offences, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
67. Have recent troubles with the law led to your being held in the cells?	☐	☐	☐	☐	☐	☐	☐	☐
68. Have you recently left the armed services?	☐	☐	☐	☐	☐	☐	☐	☐
69. Have you recently made any major decisions about your future? (regarding your job, retirement, marriage, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
FINANCES								
70. Have you recently got behind in paying your bills?	☐	☐	☐	☐	☐	☐	☐	☐
71. Have you recently been unable to make contracted payments so that legal action was threatened?	☐	☐	☐	☐	☐	☐	☐	☐

FINANCES (cont'd)	0-3	4-6	7-9	10-12	13-15	16-18	19-21	22-24
72. Have you recently earned substantially less money than before?	☐	☐	☐	☐	☐	☐	☐	☐
73. Have you recently earned substantially more money than before?	☐	☐	☐	☐	☐	☐	☐	☐
74. Have you recently built or made major improvements on your home?	☐	☐	☐	☐	☐	☐	☐	☐
75. Have you recently made a purchase(s) for more than £60.00, but less than £2000.00? (a car, T.V. set, stereo, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
76. Have you recently made a purchase(s) for more than £2000.00 but less than £5000.00? (a big car, furnishing a house, a small business, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
77. Have you recently made a purchase(s) for more than £5000.00? (home mortgage, etc.)	☐	☐	☐	☐	☐	☐	☐	☐
78. Have you recently borrowed up to £500.00?	☐	☐	☐	☐	☐	☐	☐	☐
79. Have you recently borrowed between £500.00 and £2000.00?	☐	☐	☐	☐	☐	☐	☐	☐
80. Have you recently borrowed between £2000.00 and £5000.00?	☐	☐	☐	☐	☐	☐	☐	☐
81. Have you recently borrowed more than £5000.00?	☐	☐	☐	☐	☐	☐	☐	☐

EVENT 1

EVENT 2

EVENT 3

EVENT 4

EVENT 5

EVENT 6