LIFE EVENTS, STRESS AND THE CONSUMPTION OF HEROIN, ALCOHOL AND TOBACCO

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To my father and mother

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(ABSTRACT) : A considerable literature exists on a possible link between life events and illness, both physical and psychiatric. This literature is reviewed in the first chapters of this thesis. The evidence that life events affect drug use is then examined. A number of methodological flaws exist in these studies and it is therefore difficult to draw any conclusions about the impact of life events.

In part II of the thesis, models of drug use are reviewed and some preliminary hypotheses about the nature of the link between life events and drug use are drawn up. These hypotheses are (1) Drug use is a response to stress (2) Drug use is maintained by the stress which arises from drug use and (3) Remission from drug use results in stress reduction.

These hypotheses were examined in a study using three groups of substance user; these were a group of heroin users, a group of drinkers and a group of tobacco smokers. These subjects were interviewed at three month intervals over an eighteen month period. At each interview measures of previous weeks drug consumption and of life events from the three month period preceding interview, were collected.

The study found that although the heroin and alcohol users reported more events than controls, these were mainly events caused by the drug use. These two groups were also less aware than were controls of events in their lives which were not connected with drug use. The tobacco group was, for the most part, similar to the control group in the way in which they reported events.

The influence of events on drug consumption was found to operate at a perceptual level i.e. remission and relapse were influenced by the subjects perception of events rather than by the objective events per se.

A model of drug use is outlined in which the impact of life events on consumption varies with the persons stage in a hypothesized cycle of remission/relapse.

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PART I : LIFE EVENTS

CHAPTER ONE

LIFE EVENTS AND PHYSICAL ILLNESS

The historical basis for life events research

That stress may be an underlying cause of illness is an old idea. Le Shan (1959) notes that the Greek physician Galen was one of the first to suggest this (c. 199 AD), and research on this topic continues to the present day (e.g. Kasl and Cooper 1987). Dohrenwend and Dohrenwend (1974) refer to work carried out in the earlier part of this century by Canon (1929). His work consisted of detailed observations of patients in whom he attempted to relate physiological change to emotional change.

Later, in the 1950's, this relationship, (i.e. between stress and physical illness), was examined in a systematic way by Meyer. Meyer (1951), a psychiatrist, taught his students to construct 'life charts' for their patients on which were recorded both the occurrence of important events and periods of illness. In so doing he focussed on the stressful nature of naturally occurring events,of a sort which are likely to happen to the majority of individuals at some point in their lives, e.g. leaving school, moving house, getting a job, marriage. A similar concept of stress was proposed by Seyle (1956), who believed 'stress' to

be a natural byproduct of all our activities.

The ideas of these early researchers were developed by many subsequent workers. While Meyer's life chart focussed on the stressful nature of particular events occurring to particular individuals, Holmes and Rahe (1967) developed a checklist of stressful events which was standardized to represent the average response of the average person to specified events. The total rating of stressfulness for any one individual was calculated from these standardised scores. Like Meyer (1951), Holmes and Rahe (1967) defined a stressor as any event requiring change in the individual's life pattern. No account was taken of whether the event was positive or negative in emotional terms. (In other words, both positive and negative events were considered stressful). Subsequent developments in the measurement of life events and life stress will be elaborated later in this thesis. For the present, however, it is sufficient to note that despite an abundance of studies examining the life stress and illness relationship which have been carried out since the above studies, no clear or unequivocal evidence has yet been found which shows that there is a causal link between stressful events in life and illness in humans (Leventhal and Tomarkin 1987). What evidence there is will be examined but first it is necessary to outline how researchers in this field have viewed the nature of stress.

THE NATURE OF STRESS IN LIFE EVENTS RESEARCH

Despite advances in many areas of medicine, it is still not possible to predict with great confidence who will and who will not succumb to physical illness. There is therefore an increasing tendency to take account of the psychosocial environment and in particular the role of life events in contributing to illness. The hypothesis that life events are contributors to the development of physical illness is based on the assumption that (i) certain events are in some way stressful, and (ii) that stress can cause physical illness. There is a vast body of literature on "stress", some of which will be reviewed in this chapter. Disagreement still exists however, as Marmot and Madge (1987) point out, over the meaning of the term, the means of measuring "stress" and about how it might operate to cause physical illness.

(i) The stress of life events : Brief mention has already been made of the approaches of Meyer, 1951, Seyle, 1956 and Holmes and Rahe 1967. The latter focus on the actual situations or events which occur to individuals as being sources of stress. Others, for instance Saracon, Johnson and Siegal (1978), define stress as the result of the individual's perception of those situations or events in terms of their 'negative' or 'positive' nature. Yet another set of investigators

(primarily Brown and Harris 1978) define the stressfulness of events as arising out of the context in which those events occur.

These different definitions have led to different methods of measurement. Holmes and Rahe's (1967) concept of stress is of a kind which Leventhal and Tomarkin (1987) refer to as "a unitary stress state" and these authors cite Mason's (1971) view that there is no such thing. Stress, according to these authors, must be conceptualized as multi-levelled involving social, psychological and biological factors. The lack of such a conceptualization may account for the apparently contradictory results found by different studies.

(ii) Life events as causes of illness : The way in which stressful life events may operate to bring about physical illness should also be considered. Contrada and Krantz (1987) suggest three ways in which the process may operate. They suggest firstly that stress may operate directly. This would imply that stress directly affects the body's physiological processes and thus gives rise to physical illness.

Secondly, they suggest that stress may operate by influencing life style. This is the implied modus operandi in many studies of stress and drug use. It is often believed that stressful life events may lead, for instance, to increased smoking and drinking, which may

subsequently result in physical illness.

The third way which these authors suggest stressful events may cause physical illness is through the individual's self-identity or personality. If, for example, one's perception of a particular event leads to non-compliance with medical advice, then health may be adversely affected.

An examination of the available evidence shows that many investigators are unclear both about what they believe to be stressful in a life event and unclear also about how that life event might operate to promote physical illness. Before presenting these studies, however, there are a number of other problems which make interpretation of these conclusions difficult. These are presented below.

ILLNESS AND ILLNESS BEHAVIOUR

The distinction between illness and illness behaviour is one that has been raised by a number of authors, e.g. Mechanic (1974). Illness is often operationally defined in research programmes in terms of treatment seeking, e.g. attendances at the G.P. or number of hospitalizations, or it is calculated from medical records. Yet White et al (1961) found that only one-third of people with illness which was serious enough to require some action to be taken, actually sought medical help. Similarly, Mechanic (1974) found that those seeking medical care do so most frequently for

ailments which occur with high frequency in the whole population but which are also frequently untreated. The conclusion from these studies is that treatment seeking or illness behaviour may not be a good correlate of 'real' illness. Illness behaviour is determined by sociocultural and situational factors (Mechanic 1972a) such as a family history of seeking medical help. Furthermore, illness behaviour may be more related to stress than is illness itself. Hinkle (1959), for example, in a study of telephone operators, found that those who believed themselves to be 'healthy' also liked their work and found work easy and satisfying. On the other hand, operators who were described as 'ill' (i.e. on the basis of having higher rates of absenteeism resulting from minor illnesses such as colds or respiratory diseases) had a much greater likelihood of not enjoying their work and of working out of necessity. Much of the research on absenteeism rates in different occupations has, for instance, shown that higher incidence of illness and absenteeism correlate negatively with job satisfaction. It seems then, that people who are bored or unhappy are more likely to focus on symptoms which may be ignored by people who are satisfied and happy in their work and lives.

Not all research has focussed on treatment seeking as a definition of 'illness'. Self-report of illness has also been used as a dependent variable; but

self-reported illness as a dependent variable in stress/illness research is open to the same criticisms as is 'treatment seeking'. It could be the case, for instance, that those reporting a higher incidence of illness are merely more focussed on those symptoms. It is clear that unambiguous and verifiable definitions of illness are required in order to test the stress-illness link. As shall be seen from the review of the literature, such definitions are rare. This problem is particularly pronounced in the research on substance abuse, where the definition of the 'condition' varies with the model adopted to explain that condition.

STRESS AND PHYSICAL ILLNESS : THE EVIDENCE

The development of the Social Readjustment Rating Scale (SRRS) by Homes and Rahe (1967) made possible the easy and systematic investigation of the putative relationship between stress and illness. Early studies using this scale as a measure of life stress produced impressive and consistent results supporting the hypothesis that the experience of stress can lead to the development of physical illness. The most extensive early work was carried out by Rahe, McClean & Arthur (1967) and Rahe, Mahon & Arthur (1970) in a number of studies on American navy personnel. In one such study (reported in Rahe 1972), over 2000 navy personnel reported on their physical illnesses over the previous 10 years. Their life change units (LCU's) were

calculated for the same period using the SRRS to provide a "life stress score". A positive and significant correlation between life change and physical illness reports was found. Those with LCU's of over 300 for a given year had a far higher frequency of illness than those with less than 150 LCU's. In another study carried out by Rahe and Holmes (reported in Holmes and Masuda 1974) 200 doctors who were told the purpose of the research, were asked to complete the Schedule of Recent Experiences (SRE, an updated version of the SRRS) and to list all major health changes over the previous 10 years. Here again, the authors report an association greater than chance between stressful life events and physical illness and report that there was a "direct relationship between the magnitude of the life crisis and the risk of health change". In yet another study by Rahe and Lind (1971), a positive association between life change and sudden cardiac death was found. The life change information was again collected retrospectively. A number of other authors have in fact found positive correlations supporting the physical illness and stress link, in studies using retrospective data, Hawkins, Davies & Holmes (1957) found a relationship with the development of pulmonary tuberculosis, and Rahe, Bennet, Romo, Siltanen & Arthur (1973) found life stress to be a factor in the development of coronary heart disease.

However, despite the fact that typical

correlations reported in these studies are below .30 (Rabkin and Struening 1976), which means that they explain at most 9 per cent of the variance, Schroeder and Costa (1984) maintain that even this modest claim may be exaggerated. They state that "prospective studies that have used objective indices of physical outcome have consistently failed to replicate the retrospective findings". For instance, Thurlow (1971) examined employees in a Canadian brewery and although there was a significant positive relationship between scores on the SRE and days off for illness in the following two years, the relationship was not maintained when other independent variables, such as socio-economic and marital status, were controlled for. Goldberg and Comstock (1976) carried out a prospective study on two communities, Kansas City and Washington County. A total of 1009 individuals received two interviews each. At the initial interview the original Holmes and Rahe (1967) events list was used. At the second interview almost one year later, detailed questions about health, illness and hospitalizations in the intervening period were asked. A 'case' was defined as any individual who died or was hospitalized in the period between interviews. Control subjects were those who did not experience such illness. Cases and controls were carefully matched so that there were no statistically significant differences between the cases and controls on any of the variables used for matching

in either community. A number of analyses were used to examine the data. Very few events were reported for the year before initial interview. The median number for cases and controls was 2.2 and 2.0 respectively. Comparisons between cases and controls on the basis of (1) percentage of individuals experiencing at least one event, (2) events which were considered gains or losses or (3) the total change required by events (calculated from Holmes and Masudas (1967) original weights or mean scores for a particular event), produced no significant differences between the groups in either of the communities.

Casey, Thoreson and Smith (1970) used a prospective design to examine army inductees and the occurrence of subsequent illness. When L.C.U.'s were calculated, there was no significant correlation found between these and the incidence of subsequent periods of illness.

Theorell, Lind & Floderus (1975) carried out an impressive prospective study on 9097 middle aged men. The study involved looking for predictors of (1) any type of illness, or (2) death from any cause over the following 12 to 15 month period. They were unable, however, to find any relationship between high numbers of life events and deaths or illness in this large sample.

It would, however, be unfair to imply that no

studies using a prospective design have supported the life stress and illness link. Rubin, Gunderson and Arthur (1969 and 1971) examined recent life event history, (i.e. over the previous 18 months), of the crews of a battleship and an attack carrier. A positive relationship was found between these data and the occurrence of subsequent illness. However, the same types of events did not predict illness amongst seamen and amongst petty officers, nor was it the case that the types of events predicting illness were similar on both ships. Illness was however extremely loosely defined and consisted of reports to a "physician" of "bodily symptoms". Rahe, Mohan & Arthur (1970 and 1970) also studied illness amongst 2500 seamen on navy ships and related this to life change units, which had been calculated at the start of their cruise. The authors here report a positive relationship between life stress prior to the cruise and illness occurring during the cruise.

Hinkle, Christenson, Benjamin, Kane, Plummer and Wolff (1961) studied the incidence of common cold and respiratory illness amongst a group of female telephone operators. Weekly diaries of events were kept by the women over a six month period and weekly records of illness were made by the authors. They report that events which caused either sadness and weeping or sexual excitement were likely to be followed by acute respiratory illness. However, Hinkle (1974) notes that

the number of "instances of these phenomena was too small to allow one to draw any firm conclusions from the data" (p33).

Goldberg and Comstock (1976) concludud that "none of the evidence that stresses from an accumulation of life events can in some way cause illness is incontrovertible" and their own work (1976) does not support the link. More recent work has not provided any stronger evidence for the relationship. Schroeder and Costa (1984) conclude that either there is no link between stress and illness or the second more likely possibility is that "the classical life events paradigm does not employ an appropriate operationalization of stress". These authors suggest that a lot of the evidence supporting the link (such as that reported by the retrospective studies) is the result of methodological flaws in the design of studies. On the other hand the negative evidence reported from the prospective studies may be due to an inappropriate conceptualization of stress, i.e. seeing it as arising directly out of the occurrence of life events. The next section therefore, will examine these and other types of confounding errors which might contribute to the confusing contradictions in the literature reviewed.

METHODOLOGICAL PROBLEMS IN LIFE EVENT RESEARCH

One of the problems with interpretation of the existing research lies in its failure to provide

theoretical insights into just how the mechanism of the stress-illness link might operate (see Kasl 1983). A second difficulty exists at the level of definition. Is stress, for example, to be defined as the occurrence of specific events (stressors) or should stress be measured in terms of the individual's reaction to or perception of those events? Finally, as there is no possibility of using a truly experimental design in studies of stress and illness in human subjects (i.e. where the subject is randomly asigned to an 'ill' or 'not ill' group or to a 'stress' or 'no stress' group), the interpretation of studies on this relationship is problematic. These three problems are now considered below.

(1) ABSENCE OF THEORETICAL INSIGHT

Whilst the need for development of accurate measurement is generally recognized (Leventhal and Tomarkin 1987, Brown and Harris 1978),the need for theoretical development has often been ignored. As a result, even when well designed studies have been carried out, interpretation can be difficult. In fact, Leventhal and Tomarkin (1987) feel that the absence of a theory may have led to a gross underestimation of the relationship between illness and stress. They explain that the best estimation of the relationship could only be obtained by calculating the "probability of disease given the presence of all factors theoretically

necessary for the stress process to lead to disease". Only a comprehensive theory which speculated about the variables through which stress might operate to produce illness, could provide a list of these factors.

In the absence of a theoretical model which would list such factors, investigators have relied on correlations as an estimation of the size of the stress/illness relationship and this may well be an underestimate. As Contrada and Krantz (1987) point out, this reliance on correlation may result in spurious variables which correlate with the 'true' risk factors, being reported as causally related to the illness.

The absence of theory may contribute, also, to what Leventhal and Tomarkin (1987) refer to as "confounds of process". The actual experience of illness may lead to alterations in the reporting of events. The absence of a theory (along with poor study design), make this type of confound difficult to detect. Such a process may influence both (1) the recall of events and (2) their evaluation. A number of studies have shown, for instance, that stress is believed by the general public to be a cause of certain illnesses (Marmot 1982). This knowledge or belief may increase the tendency to report events in such a way as to 'fit' the expected relationship. Nonetheless, this may not be as serious a problem as some authors have implied (again Leventhal and Tomarkin 1987). Schmale and Iker (1971) carried out

a study on women who had had cervical smears on which abnormal cells had been detected but who were awaiting the results of biopsy on the cells to determine malignancy. Despite the fact that the retrospective bias was eliminated in this case (as the data were collected before the biopsy was carried out), the cancer status of three-quarters of the women was correctly identified on the basis of interviews about life stresses and feelings of hopelessness. The base rate of cancer in this group was found (subsequent to these classifications) to be approximatly 50%. This means that a higher number of the women were identified on the basis of the interviews tham would have been expected from random allocation to cancer/ non-cancer groups.

(2) THE PROBLEM OF DEFINITION

The second problem referred to at the start of this section concerns definition of the independent variable i.e. stress. The difficulty is that the stimulus (events) can become confused with response to the stimulus (illness). One way in which such a problem occurs is when, for example, measurement of the stresses or events involves items which are also measurements of the illness. Hudgens (1974) states that of the original 43 SRRS items, 29 could themselves be symptoms of disease, for example major personal injury, or sleep disturbance. Leventhal and Tomarkin (1987) refer to this type of problem as a "confound of

content". The stimulus can also become confused with the response in a number of other ways besides the type of physical illness contamination just referred to. In a recent study by Schroeder and Costa (1984), four ways in which research results could be "contaminated" were listed. These were as follows:

1. physical illness contamination: when the actual occurrence of the illness may influence both the occurrence of events and the subsequent illness reports.

2. neuroticism contamination : when events are direct symptoms of neurotic psychopathology. Reports of sexual difficulties are cited by these authors as a <u>possible</u> example of this type of event. A further type of neurotic contamination is when neurotic traits influence both the occurrence of events and the reports of illness. Divorce or job loss may sometimes result from this type of process.

3. retrospective bias : when the actual occurrence of the illness inflates the reports of events as the subject may try to attribute the illness to these events.

4. subjective judgement : When events require considerable judgement on the part of the subject as to whether they have occurred or not. For example the Holmes and Rahe item "revision of personal habits".

In Schroeder and Costa's 1984 study 384 adults completed standard measures of life events and physical

illness. They divided the events reported into four categories in an attempt to identify those which could have been contaminated in any of the four ways mentioned above. These categories were health events, neuroticism related events, events which could be considered subjective and finally a category of uncontaminated events. They found that whereas the total number of events reported correlated significantly and positively with illness (r=.29), and all three "contaminated " categories also correlated positively and significantly, the uncontaminated events did not. Their conclusion is that reports of significant life events and illness correlations are most likely due to 'errors of content'.

(3) ABSENCE OF RANDOM ASSIGNMENT

A number of problems arise from the fact that truly experimental designs cannot be applied in this area of research, when human subjects are used. As these subjects can neither be assigned to 'ill' and 'not ill' groups or to 'stress' and 'no stress' groups, it is possible for the data to be contaminated in a number of ways. It is, for instance, possible for a disease to antedate a stressor and even to be responsible for that stressor, and yet to be seen as a response to the stressor. This could occur if, for instance, a disease remains undetected and operates at subclinical levels for many years. It is known for example, that this is

the case with some types of tumours and in particular with certain types of brain tumour. At this stage the disease may exert an influence over the development of events. Cerebral pathology may alter personality, mood and ability to cope. This may occur prior to any clinical symptoms of disease (Lipowski 1975). When the disease does appear it may be attributed to the psychological states or events (i.e. of altered personality and depression) which were in fact caused by the disease when it was at subclinical levels. The disease may thus have resulted in such events as job loss or divorce.

A second source of contamination which could be controlled were random assignment possible, involves error due to individual differences between subjects. Both biological and psychological differences may lead to individuals who give high scores on measures of stress also giving high scores on measures of illness. A good example of this is given by Contrada and Krantz (1987) in reporting on the Belgian-French Pooling project (1984) where it was found that neuroticism correlated positively with illness in a prospective study of angina pectoris. However, Costa et al (1982) found that many patients with diagnosis of angina had no evidence of artery disease when angiographic examination was carried out. These patients had high scores on a measure of neuroticism, whereas patients who had electrocardiograph evidence of disease or

myocardial infarction had normal scores on personality measures. It seems that individuals with high levels of neuroticism were more likely to be diagnosed as having angina although it was possible that these individuals did not actually have the disease.

A final problem to be considered in this section relates again to the conceptualization of stress. As mentioned earlier, stress is best conceived of as multi-dimensional, i.e. having social, psychological and biological aspects. The assessment of stress, therefore, should be carried out at all of these levels, if its influence on disease is to be correctly determined. Typically life events measures do not take account of this and measure stress on one level only.

In the next section, some of the literature on animal studies, where the above confounding factors are controlled for, is examined and the evidence for the stress-illness link is re-considered. The few studies which are discussed are illustrative of the nature of animal research on stress and illness :- no comprehensive review of this area is attempted.

STRESS AND DISEASE IN ANIMAL STUDIES

One of the advantages of animal studies, (although they may be ethically dubious), is the ability to use truly experimental designs. Thus, animals can be randomly assigned to stressful/non-stressful situations or to

identical stressors without fear that conditions prior to the experiment would selectively contaminate the results. As has been demonstrated in the last section, such a concern is always present with studies of naturally occurring life stresses in humans. As Weiss (1972) points out, the use of randomization has allowed investigators to assume that even variables whose influence on the development of disease is unknown, are randomly distributed throughout the experimental population.

Two animal studies will now be described in some detail in order to illustrate the methods used in such research. Weiss (1972) exposed two or more animals to identical physical stressors by giving them both the same electrical shocks. Thus one source of bias was controlled for. One of these two rats was given a warning signal (i.e. a buzzer was sounded) prior to the occurrence of the shock. A third rat was also used and was placed in a similar box, but no shock was given to this rat. Stomach ulceration was used as the dependent variable in this experiment. Weiss (1972) found that animals receiving no shocks experienced little or no stomach ulceration compared to the animals who received a shock. It may appear therefore that it was the stressor i.e. the shock, that caused the disease. However those animals who could predict the occurrence of shock (as a result of hearing a warning signal) showed less ulceration than those who could not predict the shock. Weiss concludes that it was the

psychological variable of predictability that determined the occurrence of disease and not the shock itself (as both sets of randomly assigned rats experienced identical shocks).

In a second experiment in which weight loss in response to stress was examined, Weiss (1972) used an identical experimental design. In this study an important variation in the conditions was determined by the coping strategies available to the rats. One rat could avoid or terminate the shock for both himself and his partner by jumping onto a platform, either when the warning signal was heard or at any time after the shock had begun. The next rat had no control over his experience of shock, although in this case he could hear the buzzer. His own behaviour therefore had no effect on his experience of shock which was determined by the behaviour of the first rat. Both rats thus experienced the same physical conditions but the first rat had control of the situation. In this case the results showed that the helpless rats experienced considerable weight loss (up to 80% of normal body weight), whereas those rats who had control, although experiencing identical shocks, lost only 30% of body weight. In this case it was concluded that the availability of coping strategy was the crucial factor, and not the actual experience of the shock. These results were further confirmed when gastric ulceration was used as the dependent variable, thus linking the

experience of the stressor in the absence of a coping response to the development of physical disease. Finally when the warning signal was not given, it was still found that less ulceration occurred in those rats who had some control in terminating the shock than occurred in those who did not, although the presence of a warning signal further reduced the amount of ulceration in both groups.

These results are opposite to the conclusions drawn by Brady (1958) in his famous "executive monkey" study.In his experiment, it was the monkeys who had control over their shock who were most likely to develop ulcers. Weiss (1972) tries to reconcile the difference in these results and focusses on the feedback available to the animals. He proposed that it is a possibility that simply having control over a stressor may not in itself be beneficial. He hypothesizes that it may be necessary for the animals to be aware that their actions are preventing shock (either because their actions terminate shock itself or the warning signal). In Brady's experiments the monkeys had to respond every 20 seconds and in fact got no feedback (once this behaviour was learned), that they were preventing a shock. Attractive though Weiss's explanation may be, it cannot fully account for the differences between the two sets of experimental results, as there were a number of serious methodological flaws in Brady's experiments. The

animals were not, for instance, assigned randomly to the 'helpless' or 'in control' conditions. The monkey out of every pair, which showed the fastest response rate was always assigned to the 'in control' condition. It is unknown therefore, whether such animals may have had a predisposition to develop gastric ulcers.

Despite the opposite conclusions about the implications of having control over a stressor, Weiss's experiments show that some link between stress and physical illness exists, at least in animals. It is hoped that future research on life events will pay greater attention to research design and methodological problems so that the ideal conditions available in experimental animal research could be approximated in research on humans.

CONCLUSIONS

The link between life events and physical illness in humans is at best unproven. Perhaps the use of more rigorous research design will strengthen the evidence for that link. Retrospective design is one of the problems confounding interpretation of the findings reported and what prospective research has been carried out has produced disappointing results. Despite this, the belief that stress is an important factor in determining the development of physical illness persists. The reasons for this must be examined. It seems most likely that Schroeder and Costa's (1984)

assertion, about the possible inappropriateness of current life event scales as a measure of stress, is relevant here. It must be concluded that Dohrenwend's (1973) belief, that "change rather than undesirability is the characteristic of life events that should be measured for the more accurate assessment of their stressfulness", is incorrect. Similarly, Holmes and Rahe's (1967) definition of social stressors as "any set of circumstances , the advent of which signifies or requires change in the individual's ongoing life pattern", must be an insufficient definition of stress. Brown and Harris (1978), whose work on depression will be reviewed in the next chapter, conceive of the stressfulness of events as being determined by the 'context' in which they occur. It is likely that this, along with the individuals interpretation of that context, is the way forward in investigating the stressfulness of events. Although the link between life events and illness may be unproven, it seems that the possibility remains that stress and illness may be linked and that more rigorous ways of determining the stressfulness of events must be developed before any firm conclusions about life events and physical illness can be drawn. Because of the failure to find conclusive evidence for the stress/illness link, several researchers have moved towards an examination of individual vulnerability factors to the stressfulness of certain events. Although a welcome development, it may be premature as

a research development if the same tools are used in measuring life events as have been used in previous research.

When the evidence for a link between stress and drug use is examined (chapter three) it will be seen that similar problems to those outlined in this chapter exist. Before examining the evidence that drug use is a stress induced disorder, however, some relevant methodological developments, which have arisen through research on life events and psychiatric disorder, will be examined in the next chapter.

CHAPTER TWO

LIFE EVENTS AND PSYCHIATRIC ILLNESS

In the literature on life events and physical illness, which was reviewed in the last chapter, a recurring problem in the interpretation of results concerned the measurement of the independent variable. The measurement of stress, or of life events, which for some purposes are often assumed to be equivalent, poses a number of difficulties which were outlined. It is somewhat surprising then, that the most important advances in overcoming these difficulties have been made, not in the area of physical illness, where most of the work on life events has taken place, but in research into the link between life events and depression. This is surprising, because research on <u>any</u> psychiatric/psychological problem poses a further difficulty in the the assessment of the dependent variable. This is because in research on physical illness there is often objective evidence for the existence of disease. In psychiatric illness no such objective evidence is easily available and often, as in the case of depression, it is necessary to rely on the self-report of the subject in order to define the subject as "ill". This problem arises generally in research on life events and psychiatric illness, and is parallelled by similar problems in research on life events and drug use. Furthermore, in the discussion in

chapter four it will become clear that although the theoretical link between stress and drug use has its origins in research on stress and physical illness, much controversy surrounds the disease notion, both as applied to "alcoholism", and to "drug use".

The aims of this chapter are threefold :

(1) to list the main evidence for a link between life events and psychiatric illness highlighting the recurrence of the types of methodological difficulty already referred to in chapter one.

(2) to examine methodological advances in the measurement of life events which have taken place largely in the research on depression.

(3) to draw parallels with the difficulties and available solutions for research into life events and drug use.

1. THE LINK BETWEEN LIFE EVENTS AND PSYCHIATRIC ILLNESS

A body of literature is available on the following disorders: schizophrenia, neurotic disorder, parasuicide and depression. Each of these will be considered in turn.

(i) SCHIZOPHRENIA

An early important study examining, in a systematic way, the impact of life events on onset of psychiatric illness was carried out by Brown and Birley (1968).

These authors examined the frequency of certain types of life crisis which occurred in the 13 week period prior to the onset of an acute schizophrenic episode. In practise, this meant that the start of this 13 week period varied from 14 to 22 weeks prior to the interview (this was the result of variation in the time of admission to hospital after the onset of acute symptoms, and interviews were conducted in hospital).

Patients admitted to the hospital as a result of schizophrenic attack were compared to a general population control group who were interviewed about events which occurred during the 13 week time period immediately prior to the interview.

It is worth mentioning, that although this study was carried out 20 years ago, the authors were aware of, and made attempts to control for, many of the methodological flaws common in life event research which still occur with high frequency in more recent literature. For example, in an attempt to overcome the problem of retrospective design, these authors did not use patients' own rating of the stressfulness of the events . They believed that patients own ratings of events might be susceptible to the "effort after meaning" flaw identified by Bartlett (1932). This is the type of error where the subject tries to make sense of recent experience, in this case the experience of the illness itself, by reference to past events. The authors were also aware of the necessity for a control

group.

What this study reported was that schizophrenic patients experienced a much higher frequency of events in the three weeks prior to onset of their illness, than did the control group for the same period. The authors took this as evidence that "environmental factors can precipitate a schizophrenic attack and that such events tend to cluster in the three weeks before onset". Unfortunately, despite the worthy attempts of these authors to control for methodological flaws, many still remain in this study. For example, the control group were not matched for relevant socio-economic variables. All of the subjects in the control group were working, which is unlikely to have been the case for all of the schizophrenic group. Furthermore, the time period covered for the schizophrenic and control groups varied, thereby making the interpretation of results problematic. The control group were interviewed about the immediately preceding 13 week period but this was not true for the other group. It is possible that this may have had some contaminating effect on the results. The final criticism of this study, but one which it is recognized is extremely difficult to control for, is that personality factors were not taken into account. Mechanic (1974) has shown, for instance, that personality affects who does and does not seek medical help. Therefore it is possible that it affects also the reporting of stressful health events.

A more recent study examining the possibility of life events in the aetiology of schizophrenia, is cited by Paykel (1974) and was carried out by Jacobs at Yale University. Here, a group of schizophrenic patients were compared to a group of depressive patients and were matched for socio-demographic variables. Overall the schizophrenics reported significantly less events than did the depressives in the year prior to onset of symptoms. Earlier work by Paykel (1969) had classified events as 'desirable' or 'undesirable' and as 'entrance' or 'exit' events. The latter referred to events involving some sort of personal loss, whereas 'entrance' events referred to the introduction of someone or something new into the patient's life. Jacob's study found that whereas there was no difference between schizophrenics and depressives in the number of reported 'entrance' or 'desirable' events, the two groups differed significantly in the occurrence of 'exit' and 'undesirable' events. In both cases the depressive group reported more of these types of events.

Rabkin (1980) reviewed the evidence for a relationship between life events and schizophrenia. It seems, according to this author, that clinicians who elicit reports of events occurring immediatly prior to a schizophrenic episode, attribute lower levels of pathology to the patient and are less likely to

hospitalize these patients than patients who do not report any particular event as having preceded onset of the illness. She groups research studies into three: (1) those that compare the life events of schizophrenic patients with other psychiatric patients; (2) those that compare schizophrenics life events with those of normal controls; and (3) within group designs, comparing the life events of schizophrenic patients who relapse with those who don't. In all, eleven studies are examined and the author concludes, on the basis of this evidence, that schizophrenic patients do not report significantly more events preceding illness than other psychiatric patients and the events reported are not of a different kind to those reported by other psychiatric patients. No differences were found between normal controls and schizophrenics for the number of stressful events reported, which were independent of the illness, although patients who relapsed may have experienced more events than those who remained in remission. The conclusion of this author is therefore that although schizophrenics do not experience more life stress than 'normals', when events do occur in the lives of these patients they "may contribute incrementally to an already inflated stress level and so may influence timing, if not the probability of illness (i.e. schizophrenic) onset". In other words stressful events occurring in the lives of these patients may precipitate a schizophrenic episode whereas the same level of stress may have no effect on

'normals'.

Overall, although there is good evidence for the influence of psychosocial factors in schizophhrenia (Hirsch 1983, Leff and Vaughan 1980), the evidence seems to point to an interaction between life events and other factors, rather than a direct influence of life events themselves.

(ii) NEUROTIC ILLNESS

The experience of life events was studied in 213 mixed psychiatric patients (although the majority of these were reported to be suffering from neurotic disorder), by Uhlenhuth & Paykel (1973). Relatives of the subjects were used as a control group although the paper does not state how these were selected. Data were collected about events occurring during the 12 months prior to the assessment. A measure of life events was developed by Paykel, Prusoff and Uhlenhuth (1971) and this 61 item list was used to examine frequency of life events. A total stress score for each patient was calculated by adding together weights for the stressfulness of individual events. The conclusions of the authors are firstly, that patients, particularly daypatients and inpatients, exhibited higher stress scores than did their relatives. Secondly, amongst outpatients and daypatients (but not inpatients), overall symptom intensity correlated positively with stress scores. The

authors suggest that "by controlling the dosage of life stress within tolerable limits", that is, planning the timing of dependent events (i.e. those over which one has control) one could avoid the subsequent onset of neurotic illness.

One of the main difficulties with this study, as with any research examining the impact of life events on psychiatric illness, is that the experience of the psychiatric illness itself may lead to distorted perception of life events. Consequently, the relationship that was found between symptom intensity and life stress, may simply reflect a confounding of the dependent and independent variables.

In a further paper by the same authors, (1973), using the same subjects, the relationship of life stress to "symptom configuration" was examined. The symptoms of these subjects were related on five factor dimensions, to stress scores. The factors were (i) irascibiblity, i.e. relating to feelings of anger, (ii) somatization, i.e. the tendency to express psychological distress in terms of physical symptoms (iii) compulsiveness, (iv) anxiety and (v) depression. No relationship between symptom configuration and stress score was found in these neurotic patients. The authors conclude, from these results and those of the previous paper referred to, that "amount of life stress per unit time helps to determine the time of onset of psychiatric symptoms and their intensity, but not their

configuration".

(iii) PARASUICIDE

Paykel (1975) compared the life events reported by a group of individuals who had attempted suicide with the events reported by two control groups. The control groups consisted of a general population sample and a group of depressed patients. Events which had occurred in the six months prior to the suicide attempt were compared to events reported by the normal controls in the six months preceding the interview. The depressed patients were interviewed about the six month period preceding onset of depression, the median time between onset and interview being five months. This means that the actual time period covered varied substantially between the groups. The six month period covered for the depressives usually began eleven months before interview, between seven and eight months before interview for the suicide attempters and only six months before the interview of the normal controls. The study found that suicide attempters reported four times as many events as normals and 1.5 times as many events as the depressives for the respective six month periods covered by the interviews.

Paykel concludes that this is evidence of "a strong and immediate relationship between suicide attempts and life events". This conclusion does not seem to be

justified, given the recurrence of the methodological problems in this study.

Platt and Kreitman (1984) examined the relationship between life events and parasuicide in a different fashion. They examined the influence of a single life event, namely unemployment. Rates of unemployment in the population were compared to rates of parasuicide in the same population, over a ten year period. They showed that with increasing unemployment, the "percent attributable risk" of parasuicide in the unemployed population increased. Although this is a very interesting study, evidence for a causal relationship between unemployment and parasuicide is not demonstrated, since the statistic used is inappropriate as a measure of causality.

(iv) DEPRESSION

A number of studies have examined the relationship between life events and depression and in the course of the more recent work in this area, new and important techniques for measuring life events have been developed (Brown and Harris 1978). However earlier work by Paykel, Myers & Dienelt (1969), examined the incidence of life events in a group of depressed patients. The authors reported, at that time, that there were no adequately controlled studies published, which examined life events and depression. A general population control group was used in this study, and

was matched to the patient group on the following variables : sex, age, race, marital status and social class. A checklist approach was used to record frequency of life events, that is, subjects merely indicated whether or not events had occurred. The control group listed events which had occurred during the immediately preceding six month period and the depressives about the six months prior to the onset of symptoms. The depressed patients reported almost three times as many events as the controls. As in the Paykel (1974) study referred to in the section on schizophrenia,events in this study were categorized as 'exit' and 'entrance' events and 'desirable' and 'undesirable' events. Although there was no difference between the groups for the number of 'desirable' or 'entrance' events, the depressives reported more of the 'exit' and 'undesirable' type. What is most interesting is the fact that the type of events reported by depressives were not necessarily major or catastrophic, but were usually minor or everyday events. No explanation is offered as to why these events apparently produce depression in some individuals and not in others. However, the authors feel that the results of this study "point to the importance of life events in the genesis of clinical depression".

Cadoret, Wineker, Dorzat & Baker (1972), on the other hand, failed to substantiate this conclusion in a study comparing depressed patients with their relatives

on the number of threatened or real personal losses occurring in the year prior to interview. Only a group of early onset patients (i.e. those aged less than 40 years) showed increased frequency of life event reporting over their relatives. However, even this difference disappeared when events were eliminated if they were clearly preceded by symptoms of depression. The authors hypothesize, however, that this failure to replicate the findings of Paykel et al (1969) may be attributable to a type II error (i.e. not finding a difference when one does exist) as a result of too small a subject pool. (They examined 100 patients and 51 control subjects whereas the Paykel et al (1969) study examined 185 patients and 185 control subjects).

The work of Brown and Harris (1978) is an attempt to overcome the methodological problems which have been referred to in other research. Details of their method of measuring life events will be elaborated in the next section of this chapter. These authors carried out a community survey of women in the Camberwell area of London. They compared the incidence of life events in women who were found to be suffering from clinical levels of depression, with the incidence of events reported by a non-ill group. They found that when events were categorized as either severe or non-severe, the depressed women were four times as likely to report severe events as the normal women. There was no significant difference between the groups for the

number of non-severe events reported. Severe events were those which could be characterized as having marked or moderate long term threat. Events for which the consequences cleared up within a week, were categorized as non-severe and were not found to relate to depression, no matter how serious they were.

This study laid the foundations for what has come to be known as the 'vulnerability model' of depression. Several factors were found to interact with the occurrence of life events to increase susceptibility to depression. These 'risk factors" were as follows: (1) loss of a mother in childhood through death or separation; (2) absence of a confiding close relationship; (3) having three or more children under the age of 14 years; and (4) being unemployed. These were found to interact with social class and with "provoking agents" i.e. life events, to produce depression. So, for example, the study found that life events in working class women who had the first three of these risk factors, were eight times more likely to result in depression than when the same life events occurred to middle class women who did not have these "risk factors" (p359). However, such risk factors were not found to have any effect unless the women were exposed to some form of adversity or chronic life difficulty.

Miller and Ingham (1983) used Brown and Harris's methods to examine life events in another community

survey of 1058 adults. They developed a new method of scoring life events which involved classifying events on the following characteristics : anti-social acts (A), hopelessness (H), uncertainty of outcome (U), choice of action (C), personal loss (L) or threat (T). Life events which occurred over the previous three month period were examined. They found that the mere presence of events mattered hardly at all in determining onset of depression. What was important was the intensity of the situation, with the overall number of events and "pattern of characteristics" (i.e. the combination of variables A,H,U,C,L and T), adding to the likelihood of depression. They also found some support for Brown and Harris' (1978) 'vulnerability model' of depression, in that extra weight could be given to events if the subject was a woman, of low social class and had little emotional support.

The causal relationship between life events and depression is questioned however by Tennant, Bebbington & Hurry (1981). These authors point out that the relationship of life events to depression is at least reciprocal and they hypothesize that a positive feedback mechanism may operate whereby events cause disorder, which in turn leads to more events. According to Tennant et al (1981), a properly designed prospective study could establish whether or not this was the case. They conclude that Brown and Harris's work is open to the possibility of this type of

confounding. In another study by the same authors, (Bebbington, Sturt, Tennant & Hurry, 1984) little support is found for the vulnerability model of depression. Although it was found, in this community study, that working class women with young children were "particularly prone to respond adversly to misfortune", in fact social class itself was the main determinant of this reaction. None of the other vulnerability factors mentioned were found to be directly related to depression.

Paykel (1974), concludes that life events occur "to an extent greater than chance expectation before a variety of psychiatric disorders" and furthermore, that findings "would be hard to attribute merely to reporting bias". It would seem , however, that any such conclusion is premature. Reporting bias occurs in a wide number of ways and a greater understanding of these, allied to the development of methods aimed at overcoming the problems of retrospective bias, need to be developed before any firm conclusions about a causal relationship between life events and psychiatric illness can be inferred. Some useful advances have however already been made in this direction and in the next section these are considered.

2. MEASUREMENT AND LIFE EVENT SCALES

The earliest attempts at life events (LE) measurement, referred to in chapter one, involved the construction

of a life chart on which the important events in life were entered. The periods of illness in the individual's life were then entered on the chart and an attempt made to relate the two (Meyer 1951). Subsequently, other authors developed checklists of events which were designed to measure the incidence of events in subjects' lives. A major step forward was the development of the Social Readjustment Rating Questionnaire (SRRQ) by Holmes and Rahe in 1967. This consists of a list of events, with subjects being asked to indicate which events on the list had occurred to them over a given time period. In Holmes and Rahe's original study (1967), each event was given a score (a weight). This weight was derived from the ratings of the potential stressfulness of each event, obtained from a sample of 2000 people . The average of these scores was then calculated for each event and the weights consist of these average scores. Subjects using this scale tick events which have occurred. The total stress score is calculated by adding together the weights of all ticked events to give an overall measure of stress experienced by that individual over that time period.

Saracon, Johnson and Seigal (1978) further expanded the life stress concept and developed a life event scale which allows for both positive and negative stress. Each event which occurs is rated by the subject using this scale, as either negative or positive and

the degree of stressfulness (mild, moderate or severe) is also assessed by the subject. From these ratings a total positive score, a total negative score and a total overall score are calculated.

However, the most sophisticated method of measurement to date is that developed by Brown and Harris (1978). Their Life Experiences Schedule (LES), attempts to assess the severity of events by taking into account the context in which those events occur and this will be more fully described below.

The Life Events and Difficulties Schedule (LES), 1978:

Collecting information about life stresses using the type of checklist developed by Holmes and Rahe (1967) can be problematic. Brown and Harris have shown that people tend to 'make sense' of their lives. They cite , as an example, a study carried out by Stott (1957), which examined the role of stressful events in the aetiology of Down's Syndrome. Mothers were asked about the occurrence of life events during their pregnancy. The mothers of Down's Syndrome babies reported a much higher frequency of stressful events during their pregnancies than did mothers of normal babies and it was concluded, at the time of the study, that stressful life events during pregnancy were relevant factors in the aetiology of Down's Syndrome. Later research however, demonstrated that Down's Syndrome is a chromasomal abnormality; stressful events during

pregnancy are not therefore involved in the aetiology of the condition.

Stott's findings show that the mothers of the Down's syndrome babies were seeking an explanation for the condition. Thus they may have retrospectively interpreted events as more stressful than had actually been the case when the events occurred. It is even possible that the mothers of normal babies experienced the same events but did not subsequently attach the same significance to those events. In the attempt to 'make sense' of physical illness (or depression or drinking), individuals frequently seek explanations in terms of their recent experiences. Brown and Harris believe that this is a type of error, and that it is likely to occur when a simple checklist is used to collect the data on life events. They argue that apparent causal relationships between life events and illness may be found using the S.R.E. simply because of the open-endedness of the questions and they state "cause and consequence may be related to the unit not because of shortcomings of definition but because of possible bias in the measurement procedure itself" (p77).

Their schedule, the LEDS, is however specifically designed to overcome the problem of attributing a causal relationship where one does not exist. The method involves 'independent raters' who assess severity of events, it does <u>not</u> rely on assessments made by the individuals reporting the

events nor by the interviewers who are recording them. The interviewer elicits information about events from the subject, by asking a series of questions concerning possible events which may have occurred. The actual topics resemble the types of events found on most other life events scales i.e. health matters, financial and family matters amongst others. The interview is however "semi-structured" in that the interviewer varies the wording used when enquiring about different events. Nonetheless the information required and the topics to be covered are laid down very specifically in the interview schedule. Details of the subject's life situation are then relayed by the interviewer to the panel of independent raters, who rate the event taking into account the context in which it occurs. Here the term 'independent' means simply that the raters never meet the subjects. The importance of this type of 'contextual rating' (as it has been called), is that that the same event, given different circumstances or a different context, could be assessed as having a different impact. Brown and Harris' believe that in this way their work is free from the 'effort after meaning error' (Bartlett 1932), which occurs in so many of the other studies reviewed,

Independent rating of events

Brown and Harris state specifically that the independent raters should make judgements "without considering the subjects personal reaction to the

event" (p90). The individual subject merely reports the occurrence of events. The independent raters, who are blind as to whether the subject experienced depression or not, judge the severity of each event. They indicate this on a scale ranging from 1 to 6 (where one indicates most severe and six indicates least severe). The judges also decide the degree of long term threat posed by a particular event to each subject who experiences that event. Hence, there is no danger that the experience of the dependent variable (depression), will influence the assessment of the independent variable (events).

Although this method goes some way towards overcoming the 'effort after meaning flaw', it unfortunately introduces a new problem. It is often the particular idiosyncratic interpretation of events which leads to a depressive reaction rather than the events themselves. The events themselves may be of little importance in determining behaviour but the individuals <u>interpretation</u> of those events and why they have occurred is likely to be important. The <u>interpretation</u> of lifes experiences <u>must</u> be a central component in any relationship between events and human behaviour. Yet, it is this, the very heart of the matter, which is rejected by the LEDS method. Shakespeare (in Hamlet) states " there is nothing either good or bad, but thinking makes it so". According to Becks' (1978) theory of emotional disorder, for example, altered

cognitions or underlying assumptions about situations and events have a greater impact on depression than the actual events themselves. A similar relationship may exist between life events and drug use. For example, an individual who is drinking very heavily and is hospitalized as a result of liver damage, may not subsequently reduce drinking unless they <u>believe</u> that the liver damage resulted from drinking and assess that consequence of drinking to be a negative one. A system of independent rating of events, which does not take into account the individuals perception of those events can be likened to throwing out the baby and keeping the bathwater. The method involves an implicit assumption that individuals are merely <u>victims</u> of their circumstances and contexts, and have no thought (cognitions) about their experiences which might influence their subsequent behaviour. This philosophical position involves such a major assumption about the nature of human functioning that it cannot be accepted by this author.

One further methodological point concerning 'independent rating' must be raised. The selection of 'contextual information' by the interviewers, for subsequent presentation to the raters, is open to the same criticism as the ratings of events by the subjects themselves. It is hard to see how the interviewers cannot be influenced in their selection of what is relevant, by their observation of the subject. The LEDS system may thereby simply introduce one more step at

which data can be distorted instead of removing a source of bias.

RESEARCH PROBLEMS IN PSYCHIATRIC ILNESS AND LIFE EVENTS

All of the problems referred to in chapter one with respect to the methodology of life events and physical illness research are applicable to research on life events and psychiatric illness.

The first of these has been mentioned briefly already and concerns the confounding of the dependent and independent variables. The experience of psychiatric illness is itself likely to lead to alteration in the interpretation of life experiences. In fact the diagnosis of some psychiatric illnesses is based on altered interpretation of events. Beck (1978) defines depression as the state of mind resulting when an individual negatively interprets his life, the world and himself, such an altered perception of the world influencing reporting of life events.

Schizophrenia can be diagnosed if an individual reports experiencing events which are not observable to others (hallucinations) or interprets other real events in an unusual way (delusions). The study of life events and psychiatric illness must take account of the possible reporting bias which may result from these types of data distortion. Similarly the use of drugs results often in an altered state of consciousness which may lead to distortions in the reporting of

events. Heroin, alcohol and tobacco (which are the focus of the current study) are mind altering drugs. Events which occur may actually be <u>experienced differently</u> as a result of the use of these substances. A review of the literature on life events and drug use in the next chapter will illustrate how frequently this problem arises. Tennant et al (1981) recommend that to overcome this problem, where altered perception of events results from experience of the dependent variable, only events which are logically independent of the condition being studied should be taken account of in research. Drug use however, is likely to influence the interpretation of even this type of event. The use of a prospective design where subjects are interviewed both at times when they are not using drugs and at periods of their life when they are, could therefore be a solution. However, the point was already mentioned and elaborated in the last section, that the actual occurrence of events is not believed to be the most important variable in behaviour change and it is more likely that the individual's own interpretation of events will explain better the relationship between life events and behaviour change.

(b) The second difficulty to be discussed here, is the necessary reliance on self-report measures for both the dependent and independent variables. Whereas objective indices of the dependent variable are often available in the study of physical illness, no such

objective measures are available for the measurement of psychiatric illness. Similarly, in the study of drug use, the researcher must rely on the self report of the subject to measure previous levels of drug consumption. A full discussion of reliability of measures of drug consumption is to be found in chapter six. For the moment it is sufficient to note that researchers should be aware of problems with reliability of self-report measures when assessing the impact of life events on substance abuse. The evidence for this link is considered now in the next chapter.

CHAPTER THREE

LIFE EVENTS AND SUBSTANCE ABUSE

Life event research has been conducted on a wide variety of sample types indicated by the reviews in chapters one and two. Some studies have revealed relationships between events and the onset of illness, whereas others have found no such relationship, and in other cases findings have been difficult to reconcile. In the specific area of addiction, as with the other areas reviewed, the overall picture is confused, frequently contradictory, and a coherent and replicable account of the role that life events play in substance abuse has not emerged. The aim of this chapter is, therefore, to show how research on life events and substance abuse fits into the wider field of life event research. Some hypotheses about the nature of life events and substance abuse will emerge from this review and these will be examined in detail in the study presented later in this thesis (chapters five to ten).

The papers referred to will be divided into (1) those that show an increase in consumption or relape amongst drinkers, heroin users and smokers resulting from life stress and (2) those that show a decrease in, or remission from, use of addictive substances after life change. As indicated in chapter one, treatment seeking is not a reliable indicator of illness. It is

also possible that treatment seeking is not a reliable indicator of level of drug use. Therefore, studies of treatment outcome will be considered separately and will be subdivided into those which focus on (i) the effects of LE's on treatment outcome and (ii) studies of the incidence of LE's in the lives of drug users, drinkers and smokers who are in treatment. Alcohol, heroin and smoking studies will be considered separately.

INCREASED DRUG CONSUMPTION OR A RETURN TO DRUG CONSUMPTION AS A RESULT OF LIFE CHANGE.

(i) The Effects of Life Events on Treatment Outcome.

Alcohol Rosenberg (1983) administered the Life Experiences Survey (LES), developed by Sarason et al.(1978), to 45 veterans attending a Veterans Administration Centre residential alcohol treatment programme. He found that the scores of relapsers differed from those of non-relapsers. Although the actual number of LE's was similar for both groups the non-relapsers showed a higher positive events score and the relapsers a higher negative events score. A criticism of this study, as with many of those reviewed in chapters one and two, is that all data were collected after the subjects had relapsed. There is a strong possibility that relapsers perceived their events as more negative than non-relapsers, as a way of explaining their relapse. Non-relapsers, however, would perceive the same events in a more positive way

as these events had not preceded relapse for them. Here again the tendency to 'make sense' out of their experiences is a possible explanation for the findings and is a criticism which is frequently valid in the literature on life stress and drug use. For example, a study by Litman et al (1979) examining differences in both relapse precipitants and coping behaviours in alcohol relapsers and 'survivors', illustrates well the difficulties in interpreting data collected retrospectively. The study compares a group of drinkers who have relapsed within the two weeks previous to the day of testing, with a group who have been abstinent for 6 months prior to testing. The most important discriminator between the groups was perceived cognitive control. The relapsers perceived themselves as having significantly less cognitive control than the abstainers. The second most important discriminator was in the number of situations which were perceived as being likely to lead to relapse. The relapsers perceived significantly more situations as being likely to lead to a relapse than did the "survivors". What is unclear however, and is also impossible to ascertain from this study, is whether the relapsers would have perceived the same events as 'dangerous' before they relapsed. Perhaps it is precisely because they relapsed that they perceived more events and situations as 'dangerous' and also perceived themselves to have less cognitive control. Suggestions for treatment aimed at increasing cognitive

control and decreasing the number of situations perceived as dangerous would be of little use, if prior to relapse these individuals already perceived themselves to have high cognitive control and did not perceive many situations as dangerous. In order to establish whether or not the conclusions drawn by the authors are valid, a prospective study assessing subjects on cognitive control and perceived relapse precipitants prior to relapse and a follow-up of these subjects some time later should be carried out. Life events are often reported as precipitants of relapse. Events such as marriage, divorce, new job, redundancy or legal problems are often listed as reasons likely to bring about change in use of addictive substances. Therefore the results of such a proposed study would be of great interest and value in treatment of substance abuse.

Nonetheless, it is possible to use a prospective design and still be subject to the confound of context referred to earlier, i.e. where dependent and independent variables are confused. A study by Moos, Bromet and Moos (1979) showed that better treatment outcome was associated with fewer negative LE's occurring in the families of their alcoholic subjects. However, there was no relationship between positive LE's and family environment, or positive LE's and alcohol consumption. The study fails to clarify the process of change involved in relapse and examines only

the environment after relapse. As the authors themselves point out, "the inter-relationship between the family milieu and post-treatment functioning makes the attribution of cause and effect...exceedingly problematic". In other words it is not possible from this study to argue that stress causes differential treatment outcomes as it is equally possible that the stress results from the different outcomes. However, a study by Marlatt & Gordon (1980) which found that stressful interpersonal emotional states, social pressure to drink and interpersonal conflict preceded the majority of relapse incidents lends greater weight to these findings; but in this study the emphasis is on states and social processes that would not qualify as life events in the some other studies.

The possible importance of family and work environment as variables which mediate the impact of events is suggested in the two following studies. Billings & Moos (1983) compared two groups of alcoholics and their families 2 years after treatment. The groups were (a) a group which had relapsed and (b) a group which had regained control. A matched community group was also used as a control. Although they found that severity of patients intake symptoms and type of treatment were moderately related to outcome, these factors, along with socio-demographic variables, accounted for only 20% of the variance at 2-year follow-up. Stressors, coping and social resources were

examined to see how these affected treatment outcome. Relapsers were found to have experienced about twice as many negative and only half as many positive events as those who maintained control. Work environment and stress, the family environment (interpersonal conflict and disorganization) along with LE's, were significantly related to follow-up funtioning, even after controlling for prior levels of functioning as well as initial levels of stressors and initial resources.

The final paper in this section is a study by Miller, Hendrick and Taylor (1983). The individual life problems of 93 problem drinkers were assessed at intake to treatment and at 6, 12 and 24 months follow-up. Tension/anxiety followed by family problems were the two most frequently-reported problems at intake. These problems were significantly reduced in those whose drinking was reduced. The authors state that "it is noteworthy that these changes appeared shortly after a treatment process which in large part, focussed exclusively on drinking behaviour and made no attempt to intervene in other life areas". A relationship between non-reduction in drinking and non- remission of problems was found. However, as the author points out, the direction of causation cannot be discerned from these data.

Heroin and other illicit drugs: A study by Krueger (1981) looked at the relationship between stressful LE's and relapse in heroin addicts on methadone maintenance programmes. The 270 subjects were administered the Social Readjustment Rating Scale (SRRS). Any subjects who were observed to relapse (n = 48) during the following year were re-administered the SRRS. Comparisons were then made between scores at different times and with scores of non-relapsers at the time of first measurement. The author concludes that "the number and magnitude of stressful life events are significantly related to patients not adhering to methadone maintenance and returning to heroin use" and he explains this return to use as a response to stress. However, as the author himself points out, the omission of an SRRS score for the control group at the second point in time is a serious criticism of the research. He feels it unlikely that "the lapse of time per se would produce a significant change in scores" and so feels this control is not necessary; but the absence of base rate data on the stability of scores in the control group remains problematic. In addition, the study does not take account of the possibility that certin LE's depend on the addiction behaviour itself. It is possible that individuals experienced certain life events because they had already returned to heroin use. The use of random urine analysis in this study to identify relapsers would not have indicated if this were so, as it would not have indicated at what point

in time the subject returned to heroin use.

Tobacco A study by Prochaska & Lapsanski (1982) looked at 'life change' in relation to both cessation and relapse amongst smokers. The Life Experience Survey (LES), was used. Positive, negative and total change scores are derived using this scale. Surprisingly the results showed a significant negative correlation between maintaining abstinence and positive change scores. Subjects who relapsed in the 4 months follow-up period experienced more positive change in the 6 months prior to the initial treatment session than did those who maintained cessation. Negative and total change scores were found to have no relation to relapse. The authors speculate that positive change prior to treatment reduced motivation to maintain cessation. However, a study by Gunn (1983) found that recent life stress 3 months prior to treatment correlated positively with failure at quitting smoking in male attenders at a smoking clinic. No such relationship was found for women. This study used a modified version of the SRRS in which no separate score for negative and positive change was derived. The authors conclude that life stress is a component of "what appears to be poor motivation in men who come to 'stop smoking clinics'". Although the findings from these two studies are not necessarily incompatible, the ex post facto motivational theories derived therefrom

would appear to be so.

(ii) The incidence of life events in the lives of drug users

Alcohol A study by Dudley, Roszell and Mules (1974) which examined heroin and alcohol users in a Veterans' Administration Hospital found high levels of life change in both alcohol and heroin groups. However, they found that when compared to Holmes and Rahe's (1967) normative groups, the alcohol group "underperceived" the amount of life change necessary to cope with specific events, whereas the heroin users slightly overestimated, but were very similar to the normative group. Elaborate conclusions and implications for treatment were made from these results by the authors, despite the fact that there was no attempt to account for the differences between groups by matching for age, social class, sex or other relevant variables. In a later paper, the same group of authors , Dudley, Mules, Roszell, Glickfield and Hague (1976), again found a high incidence of life change in the two addiction groups before they were hospitalized but on this occasion, there were no significant differences between the two groups of addicts and both groups had a high frequency and magnitude of life change. Again, no matched control group was used in this study which makes it difficult to interpret the results. In neither study was account taken of whether the events

experienced were as a result of the drug use in the first place. At least four of the seven events which were common to both the heroin and alcohol groups often occur as the result of drug use rather than as its cause. These were: (a) major personal illness, (b) prison sentence, (c) change in financial state, (d) break-up of marriage. The particular relevance of this is that although the authors speculate that high life change "could act as a causal factor in perpetrating chronicity and complicating treatment", it is equally sensible to argue that treatment aimed at reducing stressful addiction-related events will serve to allow the addiction to carry on undisturbed by removing the negative consequences of the behaviour. A study by Tattossion, Charpy, Remy, Prinquey and Poinso (1983) looking at life change in the lives of 120 alcoholics, examined (retrospectively) the year before beginning alcohol abuse, the first year of abuse, and the following 5 years. It was found that during the year prior to abuse, the frequency of LE's dramatically rose and remained high throughout the following 5 years. It could be that, initially, LE's contribute causally to addiction, but later they increasingly become consequences. Again the absence of a control group and the retrospective nature of the data create problems of interpretation. Reinecker & Zauner (1983) administered the Life Event Schedule of Brown and Harris to 25 'at risk' excessive drinkers and 29 'not

at risk', all aged 18 - 24 years. Although the authors concluded that "the results showed clear evidence for the basic hypothesis of life event research" (presumably a causal relationship between life events and addiction) another study by Morrisey & Schuckit (1984) examining women attending an alcohol detoxification centre produced contradictory evidence. Their results showed "no strong temporal association between the occurrence of stressful life events and the onset of alcohol problems". Likewise a study on a general population sample of women by Cooke & Allan (1984) concluded that no relationship existed between experience of life events and elevated alcohol consumption. This was true even amongst the heavier drinkers in what was considered to be a special risk category aged 35 - 54 years. A study by Mules, Hague and Dudley (1977) looked at the frequency and perception of life change in alcoholics. Alcohol addiction was found to be associated both with high life change and reduced awareness of that life change. A study by Hoffman & Noem (1975) examined social background, source of referral and LE's immediately preceding the onset of the present episode of drinking in the lives of 650 male and 74 female alcoholics. Several types of LE's were identified as commonly preceding the period of drinking which led to treatment. Two categories of event were produced - (1) financial and marital, which the authors state may be produced by alcoholism and (2) other types of events

such as death of a significant other, anticipated or realized responsibility, and changes associated with ageing which the authors conclude "might precipitate alcoholism". Sex differences were noted for some LE's but not for others. However, the absence of a control group in this study again renders the results uninterpretable.

Finally in this section, two studies looking at the relationship between alcoholism, life events and depression will be considered. A study by Fowler, Liskow and Tanna (1980) compared alcoholics with and without secondary depression. Those subjects with depression were found to have experienced more negative LE's than the non-depressed subjects. However, possible contradictory results were found by Neff & Hussaini (1983) examining the stress-buffering role of alcohol consumption. They predicted that if alcohol does serve such a function then the number of events will be less strongly associated with depressive symptomatology amongst drinkers. They found that although the number of LE's increased across drinking categories, the difference was not significant. However the relationship between life events and depression amongst abstainers (i.e. the more events reported by abstainers the more depressive the symptomatology) was most significant. This relationship was not found in the moderate drinking group and although the heavy drinking group did show a

relationship they were less depressed than the abstainers with the same number of events. The study could thus indicate the functional role of alcohol in alleviating depression. The types of events most likely to produce this relationship were "health and relationship events" in the heavy drinking group, but "financial and calamitous" events in the abstaining group. The authors point out that they make no aetiological inference that events will cause either drinking or depression and that "it is equally possible that drinking causes events". Although this is an extremely interesting study, some doubt about its usefulness is perhaps cast on the results by the method of categorization and estimate of consumption of the drinkers. It is, however, a possibility that even more significant results would have been found if categorization of heavy drinkers had been on a more realistic basis. Heavy drinkers were those drinking more than five units per week.

Heroin and other illicit drugs Duncan (1977)studied 31 drug-dependent adolescents. Coddington's Life Event Record was administered and the frequency of LE's noted. Data from the 31 subjects in the study were compared to Coddington's normative data for 1014 junior high school and 913 high school students collected 3 years earlier. The period of study was the previous 6 years. The results showed the drug-dependent subjects

to have life stress scores significantly higher than the normative means. The author concludes that these results "lend support to the theory that drug dependence is a stress induced disorder". Unfortunately there was no attempt to match the subjects with non-drug dependent controls and this renders the conclusion of the author somewhat suspect. At best it can be said that the drug-dependent subjects reported more LE's in the 6-year period prior to seeking treatment than did a random sample of the junior and high school population. As there was no matching for education, social class, marital status or economic factors, no conclusions about stress induced drug dependence can be made. Rounsaville, Weismann, Wilber and Kleber (1982) categorized 384 opiate addicts into three groups on the basis of the sequence of early events in the course of their addiction. Subjects were asked about the occurrence of events which were hypothesized to be frequently present in the history of addicts. When they reported that these events had occurred, the subjects age at time of occurrence was determined. Three groups were identified (1) addicts who had experienced at least two events in childhood, the first being prior to either initial soft drug use or initial criminal activity, i.e. initial childhood trauma group (31% of sample), (2) an early delinquency group - addicts whose first delinquent activity preceded illicit drug use (24% of sample) and (3) an initial drug use group, i.e. those

whose first drug use preceded criminal record or traumatic childhood events (45% of sample). Although the authors state that these three categories "resemble prototypes of addicts described by theorists who have contrasting views about the aetiology of opiate addiction", no evidence of a causal relationship between drug use and either criminal activity or childhood trauma is presented. It is in fact worth noting that 69% of the addicts, i.e. groups 2 + 3, began opiate use prior to the experience of any childhood traumatic events. Another study by Kostan, Rounsaville and Kleber (1983) prospectively examined changes in depression (Beck inventory scores) of 123 heroin addicts over a 6 month period. Addicts with low numbers of recent life events (RLE's) (such as 'arguments and exits', i.e. events involving departure of some kind, such as deaths, moving away from area, leaving home) were significantly less likely to become or remain depressed than addicts who experienced high numbers of RLE's (i.e. between 9 and 15). As in the Fowler et al.(1980) study referred to earlier in this review, addicts who remained depressed were likely to have experienced more negative 'RLE's'. (However, in the Fowler study non-drinkers were found to be even more depressed given the same number of LEs than were the drinkers.) In another study Kosten, Rounsaville, Herbert and Kleber (1986) interviewed 268 opiate addicts 2.5 years after contact with treatment

services. The relationship between major depressive illness at initial interview and recent life events and treatment in the 5 months prior to follow-up was examined. A number of extremely interesting results seem to emerge from this study. Both depression and recent life events emerge as risk factors for continued drug use and the absence of treatment exacerbates these risk factors. Furthermore, treatment appears to be more successful at increasing abstinence rates amongst those who have experienced more life stresses (i.e. > 8) in the past 5 months, than it is with a group experiencing less life stresses (i.e. < 9). They also found that life crises had a substantially bigger impact than did depression on drug abuse. This latter conclusion is based on the high association found between drug use and recent life events. A number of further interesting conclusions with implications for treatment are made by the authors. It is suggested for example, that treatment could best take the form of crisis intervention and attention is drawn to the fact that argument events occurred in the lives of 68% of the addicts but in only 3% of a sample of normal subjects. The authors are careful however, to state the limitations of the study. They mention that "although a causal link between drug abuse and life crisis or depression is clinically appealing this study cannot establish that link and can only document an association". Despite this statement the conclusions that are drawn and the recommendations for treatment

made are apparently based on the existence of this causal link. Although the findings in relation to depression are extremely interesting, in this study also there is a fundamental flaw with respect to life events data. A recent life events schedule, derived from the Holmes and Rahe (1967) social readjustment rating scale, was used to assess life stress. No distinction was, however, made between those events which were the result of, and those which were independent of, continued drug use. As the use of opiates causes many life stresses such as financial, family, social and legal problems resulting from involvement in crime or arrest for possession, it is hardly surprising that those who relapse experience more life stress. The main problem with this and a number of other studies which purport to find a causal link between life stress and drug abuse is that they do not establish the direction of the causal link. It is prima facia just as likely that drug abuse causes life stress as vice versa and unless dependent and independent events are clearly identified and seperated, the direction of causality is not established. It is one hypothesis of the present study that the main differences in life events between substance users and non-users can be explained by events which are caused by the substance use in the first place. Even the finding by Kosten et al (1986), that substance users while abstinent still experience

high life stress has a number of possible explanations alternative to the one given. The authors suggest that addicts need high life change levels to prevent them feeling bored. It is possible that high life change levels are the result of earlier drug abuse rather than of a greater need than non-users to create stimuli for themselves. This more economical explanation should be examined before more complex explanations are accepted and recommendations for treatment made on their basis.

Finally a study by Roszell & Mules (1975) found that heroin addicts maintained high levels of life change, but unlike the Mules & Hague (1977) alcohol study (see above) the addicts had normal or augmented, rather than attenuated perception of life change.

Tobacco Apart from the treatment studies already reported, no studies have been found which examine the incidence and magnitude of LEs amongst smokers and show a resultant increase in smoking.

LIFE EVENTS AND DECREASE IN OR REMISSION FROM DRUG USE.

(i) Effects of Life Events on Treatment Outcome.

No studies of alcohol, opiate or smoking treatment programmes have been found which indicate that LE's are associated with better treatment outcome. Studies of the addiction problems of those in treatment which show high life event scores do not necessarily provide evidence of a causal relationship between life events,

increased drinking, or relapse so much as lend evidence to the hypothesis that LEs can lead to treatment seeking behaviour. If this latter hypothesis is correct, a lower number of LEs in subjects matched for addiction problems, but who are not in treatment, would be expected.

(ii)The incidence of life events in remission from drug problems.

Alcohol 'Spontaneous Remission' from alcoholism has been examined by many studies and Smart (1976) has reviewed the literature. The purpose of the paper along with reviewing the literature was to ascertain what is known of the reasons for this recovery. The term 'spontaneous' is defined in the literature as remission "without the intervention of professional or trained therapists and without hospitalization". Nine studies were reviewed and the conclusion was that the reasons for spontaneous recovery, although not well understood, probably include "changes in health, jobs, marriages or residence". The highest rates of remission were found for alcoholics being treated for physical illness as a consequence of drinking. In 1979 Saunders & Kershaw (1979) conducted a community study of alcohol-related problems in Clydeside. Of the survey respondents 115 were found to have experienced alcohol problems in the past but to be symptom-free at the time of data collection. These were reinterviewed to determine which processes had been influential in

their recovery. The self-reported reasons for remission given were marriage, job change, physical illness, family advice, financial reasons, GP advice, maturity, retirement, new girlfriend, leaving 'heavy team' and purchase of a car. Although some of these reasons were actually consequences of drinking, more were independent of drinking. Another study by Tuckfeld (1981) on a U.S. population contacted through a media campaign studied 62 individuals who had resolved alcohol problems without treatment. The factors associated with resolution in this study were found to be: (1) personal illness or accident, (2) education about alcoholism, (3) religious conversion or experience, (4) direct intervention by immediate family or friends, (5) financial problems created by drinking, (6) alcohol-related death or illness of another person, (7) alcohol-related legal problems, (8) personal humiliation, (9) exposure to negative role models, (10) events during pregnancy, (11) attempted suicide and (12) personal identity crisis.

Although none of these studies administered a standardized life history questionnaire to measure life change, the results do appear consistent with Cahalan's (1970) statement (cited in Saunders & Kershaw (1979)) that "findings as regards increases and decreases in drinking emphasize environmental role factors rather than psychological factors". This view, however, assumes a high degree of conceptual distinction between

environmental and psychological components.

Heroin and other illicit drugs A 10-year follow-up of patients attending heroin clinics in London was carried out by Stimson & Oppenheimer (1982). One hundred and twenty-eight patients from these clinics were followed up and 40 of these (31%) were found to be abstinent 10 years later. There were no differences in terms of social class, sex, work, crime, drug use and income in 1969 between those that gave up drug use and those that continued as addicts in 1979. The approaches to withdrawal of the group that had successfully 'come off' were examined. One approach involved a gradual reduction of a daily dose over a planned period of time. The second involved changes in personal circumstances leading to reduced dosage, but with an added trigger necessary to cause the final stage. Such triggers or LE's as suicide of a friend, death of someone in the clinic waiting room, a final rejection by parents or spouse, an arrest with threat of imprisonment, a bad drug effect or a sudden deterioration in health were found to be important. The third approach also involved some external pressure for those whose lives were not changing, such as imprisonment or coercion by others. A most interesting finding of this study is in relation to the hypothesis that drug addiction is a reaction to stress. One type of addict in 1969 was described as 'stable'. These addicts in 1969 were employed, avoided other addicts,

avoided crime, health problems and other problems associated with addiction. The other type of addict was described as 'chaotic'. These were defined as those addicts who suffered from frequent overdoses, hospitalization for other medical problems and imprisonment. It would seem plausible to assume that this latter group suffered more life stress than the former, yet in 1979 it was the former group who were more likely than any other addicts to have remained addicted and to have received heroin prescriptions since 1969 without interruption (Stimson & Oppenheimer (1982) p. 130). It would appear the hazards and problems associated with drug use lead either to death (in the case of 15 patients) or 'coming off' (40 patients). This would appear to contradict the conclusions of some of the studies reported earlier such as Krueger (1981) who explains continuing heroin use as a response to stressful life events, or Duncan (1977) who concludes that his findings support a 'stress induced' theory of drug dependence.

However, in the Stimson & Oppenheimer (1982) study just reported no standardized psychometric scale of 'life events' that would make their conclusions comparable with those of the other studies mentioned was administered; similarly it is not possible to compare those addicts who remained addicted with those who "came off".

It would appear from the contradictory results of the studies just referred to that the influence of LE's cannot be assessed simply by counting them or by trying to measure the impact of individual events. A theory that attempts to explain these contradictions must look at the interaction between trait characteristics of the person, events, and the state of the individual at the time of occurrence.

Tobacco Eisenger (1972) followed up 278 smokers 2 years after initial interview. The aim of this prospective study was to find out which subjects were most likely to give up tobacco, and for what reasons. He was able to identify four variables which could predict smoking change. These were: (1) number of cigarettes smoked, (2) perceived difficulty of stopping smoking (3) belief that research would "find a cure for smoking associated illnesses before I get them", (4) the health of an acquaintance being adversely affected by smoking. This latter variable was the most effective predictor of smoking behaviour change. Of those reporting such an event 27.1% quit as opposed to 9.7% of those who did not report such an event. Of course, this alone cannot be taken as evidence of LE's causing remission; it is possible that smoking-dependent life events (i.e. those that are consequences of smoking such as ill health) may be more likely to lead to remission than independent events.

METHODOLOGY AND INTERPRETATION

As with physical and psychiatric illness, interpretation of studies on life events and substance use is made difficult by a number of recurring methodological problems. Although the issues have already been raised in chapters one and two, they will now be considered in relation to life events and substance use.

Rerospective design : The problem of 'making sense' of events with the benefit of hindsight is by now almost a cliche in this thesis and in life event research generally. With drug use there is the added difficulty that not only may subjects have the benefit of hindsight but the use of drugs subsequent to events may genuinely alter the impact and, in some cases (such as with impairment due to severe alcohol problems) the memory, of those events.

A number of studies have illustrated the problem of retrospective data collection in substance use. Todd (1966) found that when smokers were asked about their smoking habits 6 years earlier, the answers that were given were in fact closer to information about their current behaviour than to their actual behaviour six years earlier. The same subjects had in fact been interviewed about their smoking 6 years earlier and so comparisons could be made. It is recognized, however, that retrospective data collection is not a problem which can be easily overcome even though a number of

possible improvements on present designs do exist e.g. (1) The use of Brown & Harris' independent rates, (2) the use of prospective design. This latter solution is unpopular and this is possibly explained by Duncan's (1977) statement that prospective studies would lead to "potentially prohibitive expenditure of resources and time". Other more serious difficulties with prospective design do exist. Namely, it is obviously impossible to collect information about events which have not yet occurred. However in some instances it may be possible to collect data <u>after</u> the events but <u>before</u> the occurrence of the independent variable. This can be done when a large population sample is used and the dependent variable is not expected to occur in all subjects. The careful identification of target groups likely to display the required behaviour would make this an easier option.

<u>Absence of control groups</u> : The problem here is really no different to that raised in the chapters on physical and psychiatric illness. In the absence of control groups, causal inferences about the role of life events on any dependent variable can be drawn. One particular difficulty with creating control groups for substance users arose however, in the context of the present study. Here it was necessary to find a control group of mainly male, unemployed youths of social class 4 and 5 who were not smokers or drinkers. This raised the

problem that (a) it was extremely difficult to find such a group and (b) once identified one would be justified in asking why this subgroup was so different from their peers. To be a non user of all kinds of drugs is such a deviation from the norm in these sections of society that such individuals could not validly be considered controls. In order to overcome this in the present study, it was necessary to use individuals who did drink alcohol, but only in small quantities, as controls.

Absence of a coherent theory : Similar concerns arise here as do in the literature on physical and psychiatric illness. Principally, any results can be taken as confirmation of the most general life events hypothesis i.e. that there is a relationship between life events and drug use. As research on drug use is currently a potent political issue in our society, the atheoretical approach of much research is a concern. This is because any findings can be made to support any particular political philosophy and this is not so when clear hypotheses about the underlying processes have been outlined. For instance, a study which finds an association between the incidence of life events (such as unemployment, divorce and illness) and high alcohol consumption, could be taken as evidence that it is not the alcohol which leads to such problems but the underlying social conditions to which the alcohol abuse is a response. Conversly however, the absence of such a

numerical association could also be taken as evidence that alcohol does not cause life problems. Two studies mentioned in the review illustrate the difficulty with the atheoretical approach to research. Prochaska & Lapsanski (1982) interpreted positive life change to reduce motivation to quit smoking, whereas Gunn (1983) found positive life change correlated with increased abstinence from smoking. No explanation is offered for these contradictory finding and the absence of a theory means they must both be taken at face value.

The problem with the atheoretical approach is that a model of the role of life crises and drug use may emerge which is based more on political outlook, as has happened in the past with explanations for alcohol problems, than on objective scientific evidence (in so far as there is such a thing). Such a development would hinder once again our understanding of the underlying processes in the development of addictive type behaviours.

DISCUSSION

It is difficult to elicit any conclusive evidence concerning the relationship between life events and substance use from the studies reviewed in this chapter. This is mainly due to the methodological problems outlined. The original intention was to examine the following hypothesis (1) substance users experience more life events than 'normals' and (2)

substance users in treatment have recently experienced increased life stress.

The evidence for both of these hypotheses in the review of the literature presented here was found to be equivocal since no clear understanding of the underlying relationship between life events and drug use emerged.

The study presented in later chapters is aimed at clearing up some of the confusion and contradictory evidence presented above. It examines the hypothesis that life events influence drug use and takes into account the methodological problems which have flawed so many of the studies reported. This general aim of the study will be stated as specific testable hypotheses before each seperate data analysis.

The last three chapters have reviewed a body of literature concerning the influence of life events, and the present chapter has concentrated specifically on that influence in relation to drug use. The following chapter will examine some aetiological theories of drug use focussing on how different types of explanation predict a different role for life events.

PART II : THEORETICAL MODELS OF DRUG USE

CHAPTER FOUR

AETIOLOGICAL MODELS OF DRUG USE AND THE IMPACT OF LIFE EVENTS

The relationship between stressful life events and illness was examined in the chapters one and two. Before carrying out a study of life events and drug use, it is important to ask the question as to why a link between life events and drug use should exist at all.? This chapter examines this issue and aims to establish some hypotheses about the nature of that link. It is therefore concerned with : a) outlining the different types of model used to explain drug use; b) examining hypotheses generated by each type of model with respect to life events; and c) examining the historical context in which these models have developed.

Fig 4.1 (overleaf) shows schematically two dimensions which are used to classify different models of drug use in this chapter. These dimensions are:(1) physical versus psychological type explanations and (2) explanations which focus on conditions preceding drug use versus those which focus on conditions arising as a result of drug use.

In many cases these distinctions are not as clearcut as it may seem and some blurring of the boundaries thus occurs. However, they serve as a useful means of classification and are presented here solely for this purpose. It is beyond the scope of this thesis

		PHYSICAL	PSYCHOLOGICAL
ALCOHOL	PRE-EXISTING	1.1 Models based on genetic evidence	1.2 Alcoholic Personality
	ACQUIRED	1.3 Alcohol Dependence Syndrome	1.4 Social learning models
TOBACCO	PRE-EXISTING	2.1	2.2 Smoking personality
	ACQUIRED	2.3 Addiction models	2.4 'Psychological Tool' model
HEROIN	PRE-EXISTING	3.1	3.2 Opiate addict personality
	ACQUIRED	3.3 Opiate Dependence Syndrome	3.4 Social learning type explanations

Fig. 4.1 : CLASSIFICATION OF MODELS OF DRUG USE

to cover in detail the literature on all relevant models of drug use. Consequently, only the models which seem dominant for each type of drug are included. It can be seen from figure 4.1. that the explanation for each type of drug use varies with the drug in question. Whereas explanations for alcohol abuse focus on differences between abusers and non-abusers prior to developing alcohol problems (although recently there has been a shift amongst some workers towards the 'acquired condition' type of explanation), tobacco use is primarily explained in terms of the individual's response to the drug, whether that be physiological, psychological or a combination of both. Attempts to explain tobacco use as resulting from an innate physical condition are rare.

Dominant explanations for heroin use focus similarly on the acquired dimensions in fig. 4.1. Heroin addiction (and possibly all illicit drug addiction) is explained primarily as the response which would result from use of the drug by any individual. The acquired condition which results in heroin addiction is hypothesized to be both physical and psychological and the dominant model is one where it is believed that anyone using the drug will acquire the condition. This differs obviously from the model for alcohol abuse where it is sometimes assumed that although most people can use the drug without developing a problem, it is only a small number of

individuals who possess a pre-existing characteristic which makes them prone to become 'addicted'. These differences are represented on fig 4.1. by the empty cells on the tobacco and heroin tables. It is acknowledged that dredging the literature would produce some models to fit even these empty cells. They are left blank however, because it is the opinion of this author that these models have not had sufficient impact on research, treatment or policy making to warrent their inclusion here.

The explanation offered in this thesis for the differences between these aetiological models of drug use is to be found in the historical context of use of these substances. Attitudes to drug use are inextricably linked to social and economic factors and the differences outlined in fig.4.1. cannot fully be attributed to properties of the drugs themselves without appeal to the former. Consequently the historical context in which current attitudes to use of alcohol, heroin and tobacco have developed will now be summarized. This will help explain, for example, why cell 1 for tobacco in fig 4.1 is blank, but not the corresponding section of the alcohol table.

HISTORICAL CONTEXT OF DRUG USE IN BRITAIN

Alcohol

Despite current concerns about increasing per capita consumption of alcohol, in 18th century Britain

consumption of alcohol and level of public drunkeness were at far higher levels than at present (Porter, 1985). It was not until the 19th century that drunkeness began to result in public disapproval and even then this disapproval was on moral as opposed to health or legal grounds. The Temperance movement, which began in America in the 18th century and later spread to Britain, did not at first disapprove of alcohol consumption per se but of drunkeness; the consumption of spirits was disapproved of while no harm was believed to result from beer or wine, even to habitual drunkards (Rush, 1785). On the other hand, in Britain, Trotter (1804) believed that abstention from all alcohol was the only cure for the habitual drunkard.

The Temperance movement, which had a remarkable effect in changing public attitudes to alcohol consumption, was effective for a number of reasons. By far the most important single change in the 18th and 19th century was the advent of the industrial revolution. Whereas in the past, the consumption of alcohol did not affect a worker's functioning in an agricultural setting, it is likely that factory owners became concerned about the hazards of inebriated workers operating industrial machinery. Concern with increasing production levels led to a banning of alcohol in the workplace. A further reason for the success of the movement has been put forward by Gusfield (1963). The new middle class emerging from the

industrial revolution, in an attempt to distinguish themselves from the working classes, adopted abstinence as a status symbol because it had become associated with qualities of self-control, industriousness and thrift.

Attitudes to alcohol and alcohol consumption were therefore, influenced more by economic and social factors than by considerations of health.

Heroin

Heroin, which is a derivative of opium, was first marketed at the end of the 19th century as a cough mixture. Opium itself however, had been widely available in Britain without restriction for most of the century and was one of the most commonly used drugs at that time. It was available in many forms from raw opium to the main ingredient in most patent medicines of the day (Stimson and Oppenheimer, 1984). Opium was imported in large quantities into Britain and there were attempts, though largely unsucessful for climatic reasons, to cultivate opium in Britain.

Unlike the growth of the temperance movement for alcohol, the anti-opium movement was non-existent in the early part of the 19th century and remained ineffective for most of the last half of the century. When, for instance, the first restrictions on opium use were introduced in 1868, this merely confined the sale of opiates to pharmacies, whereas up to this point the drug had been freely on sale at market stalls, shoe

shops and every small corner shop (Berridge and Edwards, 1981). The Act of Parliament limiting the sale of opiates, which was introduced in 1868, was the result of pressure from the Pharmaceutical Society. The interests of this society were purely economic, that is, the Pharmacists were interested primarily in creating a monopoly of outlets for sale of the drug and desired also to establish themselves as a restricted profession. The health effects from abuse of opium were not a major consideration in this pressure. In fact, Britain continued the trade in opium from India to China throughout the 19th century and actually fought two wars (1839-42 and 1856-58) in order to preserve what it saw as the right to this trade. The anti-opium movement that did begin slowly in the 19th century was initiated mainly by religious groups. Medical and political groups, when they did become involved in the anti-opium movement, used opium "as a scapegoat for broader defects in society at the time" (Berridge and Edwards 1981). In fact, given the widespread use of the drug, the mortality figures were surprisingly low and did not justify the level of concern that developed. A number of other issues were therefore used to support the opium restriction movement.

One concern was with reduced longevity resulting from prolonged use of the drug. However a survey carried out by Cristison as early as 1832, in Edinburgh, had concluded that there was no evidence that opiates themselves were damaging or reduced

longevity. A second concern was with the high level of poisonings, both deliberate and accidental, which resulted from opium use. There is no doubt that the restrictions placed on the sale of opium in 1868 reduced these poisonings. A third concern was with what was referred to as 'infant doping', i.e. the widespread use of opium preparations for children. As Berridge and Edwards (1981) indicate however, most of the ailments in children were the result of poor housing and sanitation and were not really related to opium use. Rather than tackle these real social issues, and probably for economic reasons, the politicians focussed instead on drug use. It was only much later,when it became a concern that British soldiers were using opium during the first world war, that real restrictions on the possession of opium were introduced (The Defense of the Realm Act, 1916). This act forms the basis for current British legislation on heroin and opium derivatives , as it marks the first restrictions on possession. As with alcohol, health concerns were far from being of primary importance in determining attitudes of the day or governmental policy, a trend which is still in evidence today.

Tobacco

Unlike either opium or alcohol, tobacco had its antagonists from its first introduction into popular usage. Although 'discovered' for the 'old world' by

Columbus, recreational usage was at first confined to sailors and inhabitants of maritime ports. By 1604 however, the habit had spread to such an extent that James I felt it necessary to write and publish, what he titled "A Counterblaste to Tobacco". This was however without effect and tobacco use continued to spread despite the introduction of heavy taxes on imports to Britain. Even the severe punishments introduced by Peter the Great of Russia in the 17th century, which included whipping, exile to Siberia and sometimes death, failed to curtail use (Corti, 1931).

By the 19th century , tobacco use had become sufficiently normalized not to warrent much consideration. No major trends or changes in attitudes against tobacco use developed during the 19th century (Ashton and Stepney, 1982). The main development in the 19th century was the invention of the cigarette making machine. This invention, accompanied by refinements in the methods of flue curing, meant that tobacco use, far from being curtailed,became easier and cheaper at this time and the habit spread even further.

It was not until well into the 20th century, when evidence relating tobacco use to poor health became undeniable (Doll and Hill 1952), that a change in attitude towards the use of this drug began to emerge. Nevertheless, only minimal legislative control over the drug has yet been introduced.

The differences, illustrated in fig 4.1., between the dominant models of different types of drug use, can

be explained now on a number of different levels. Perhaps it is the case that as tobacco use , unlike alcohol and opium use, has as yet posed no threat to the economic order, serious legislative controls on availability and use have not been introduced. The political explanation for the minimal legislative control on tobacco is that nicotine differs from both alcohol and heroin in its social and medical consequences. The study presented in the following chapters examines the differing impacts of alcohol, heroin and tobacco use on the life experiences of individuals, which includes the social, medical and economic consequences.

The attitudes which have developed from these economic and social considerations are important as determinants of current models of drug use and possibly explain the differences between drugs in fig 4.1.. Legislative controls, which restrict availability of different substances for instance, influence attitudes towards use of the substance. It has been shown that historically, legislative controls are introduced when a threat to the social or economic order is posed by use of a particular substance and not necessarily in proportion to the harm to an individual resulting from use of that substance. It may be argued that alcohol currently poses a far greater threat to social and economic order than heroin and yet far greater restrictions are placed on heroin use than on alcohol

use. However, although the economic loss to society from abuse of alcohol is without doubt far greater than that from heroin, the economic loss that would result from curbing alcohol use would be even greater (in terms of job losses and taxation revenue). On the other hand, as heroin use does not provide jobs or government income, there is no economic loss from curtailing use and introducing restrictive legislative contols. The relevance of this to models of drug use is that a model of alcohol abuse in which the problem occurs only within particular individuals (e.g as a pre-exisiting physical abnormality) becomes necessary. It is implicit in such a model that alcohol problems would not be affected by legislative controls. On the other hand, no such model is necessary to explain heroin use.

The next section of this chapter reviews the most common explanations for each type of drug use and the implications for life event theory in each type of model will be outlined.

AETIOLOGICAL MODELS OF DRUG USE

Each cell in fig 4.1. will be considered in turn and the appropriate models which fit each cell will be outlined. The purpose is to establish which category of model is most appropriate to the theory that social and environmental influences, such as life events,affect drug use. Once the models in a particular cell have been reviewed, the role of life events in that category of model will be considered. Starting then with the top

left cell on the alcohol section of the table (cell 1.1), it is seen that this consists of models of alcohol abuse as resulting from a pre-existing physical abnormality.

ALCOHOL

1.1 PRE-EXISTING PHYSICAL CHARACTERISTICS AND ALCOHOL ABUSE

The underlying philosophy of any model which fits into this category, is that problem drinkers possess some physiological pathology which may be inherited and which differentiates them from other individuals who use the same drug.

The most well known example of this type of model is the Alcoholics Anonymous movement (AA) model of alcohol abuse. Unlike the early temperance movement, in which the problem behaviour was attributed to the substance (Heather and Robertson, 1986), the AA philosophy is that the source of a drinking problem is in the individual drinker and exists in the form of a physical abnormality. Not all drinkers are believed to possess this physical abnormality and therefore it is possible, according to this set of beliefs, to be an extremely heavy drinker and not be an 'alcoholic'. 'Alcoholism', according to this model , is a physical allergy to alcohol (Alcoholics Anonymous, 1939). Drinking in individuals who possess this allergy results in a "loss of control" , that is, the drinker

is believed "powerless over alcohol" and "only a power greater than self could restore us (the drinker) to sanity" (from 'The Big Book', 1939). The main principles of the AA model are as follows : (1) alcoholism is a discrete entity and entirely qualitatively different from any 'normal' drinking; (2) the alcoholic's drinking results from 'loss of control' and an abnormal craving for alcohol; (3) the disease is irreversible; (4) if left untreated the disease leads invariably to a progressively deteriorating condition.

Some support for this type of model was provided by Jellineck (1960), who deliniated five types of 'alcoholism', of which two, gamma and delta alcoholism, correspond closely to the AA model of alcohol abuse. The other types of drinker outlined by Jellineck describe heavy drinkers who do not have a disease. Not all heavy drinkers therefore, possessed the physical characteristic which could lead to AA type 'alcoholism'. Jellineck believed that it was physio-pathological changes in alcoholics which brought about craving and loss of control. However, he himself kept an open mind as to whether these changes were acquired or were pre-existent in the drinker. Nonetheless, his work has been used to support the AA model of alcoholism as a preexisting physical abnormality. Further support for models in this cell in fig 4.1., has been sought in genetic research.

The search for the specific physical

abnormality predisposing the individual to develop alcohol problems has focussed on a number of different areas. Research has concentrated both on generalized differences in alcoholism rates, in populations which have different genetic relationships to each other, and also on specific physical factors which have been hypothesized to differentiate alcoholics from non-alcoholics. Murray and Gurling (1982) have reviewed the evidence on genetic theories of alcoholism and conclude that although the evidence from twin and adoption studies does offer some support for a theory of an inherited disposition towards developing alcohol problems, the extent of the inherited contribution may not be substantial. It is also not clear what exactly is being inherited.

Goodwin (1976) examined rates of alcohol problems amongst sons of alcoholics who had been separated from their parents at birth. He found that when compared to the adopted sons of non-alcoholics, the sons of the alcoholics had problem drinking rates four times higher than the other adoptees. The groups were not found to differ in any other ways (except divorce rate). He therefore concluded that it was not a generalized personality disorder that was being inherited but something specific to drinking. Other twin studies and adoption studies have found results consistent with the latter though they have not necessarily discounted the possibility that a generalized personality disposition is inherited.

These studies were conducted on male adoptees, and in In studies reviewed by Murray and Gurling (1982), no evidence of a genetic component in 'alcoholism' amongst women was found. Even if there is an inherited component in alcohol problems , this does not mean that the 'condition' cannot be altered by environmental factors. The Royal College of Psychiatrists (1986) report on alcohol states that "it is common to find that some genetic contribution can be established for many aspects of human attributes and disorders (ranging from musical ability to premature balding) and drinking is unlikely to be an exception. What is more difficult to establish is the precise degree of genetic contribution, the manner in which the genetic influence acts and the extent to which the genetic influence may be modified by the environment" (p128).

The other line of research on genetic factors in alcoholism concerns the focus on specific physical factors. Blood groups, colour blindness and rates of metabolism of alcohol, to name just three, have all been found at various times to differentiate 'alcoholics' from 'non-alcoholics' (Heather and Robertson, 1986). It seems, however, that such findings to date have been chance ones as efforts to replicate them have so far failed. Overall then, the only evidence for a predisposing physical factor in alcohol problems comes from twin and adoption studies but even

this offers little evidence of a specific physical mechanism accounting for the disorder.

The idea that life events and other environmental influences affect alcohol abuse clearly does not follow from the model in question, therefore.In fact this type of model implies that such social and environmental influences would have no impact on problem drinking. Its failure to adequately explain problem drinking is one of the main reasons why this thesis will seek evidence for the role of environmental factors in problem drinking, which emerge more strongly in some of the other cells in figure 4.1.

1.2 PRE-EXISTING PSYCHOLOGICAL FACTORS AND ALCOHOL ABUSE

Despite Goodwin's (1976) conclusions which were reported in the last section, a possible further interpretation of the evidence from twin and other genetic studies remains to be examined, namely that a generalized personality disposition or psychological characteristic might be inherited, which predisposies the individual towards alcohol problems. The common assumption of models classified in cell 1.2, is that addiction results from a psychological trait in the individual and that this trait is not determined by experiences or life situation but results from genetic make-up. As with theories of physical predisposition, only a minority of individuals who possess this characteristic could therefore become addicted to

alcohol.

The characteristics of this 'alcoholic personality' have been sought by a number of theorists. Freud (1917) initially conceived of alcoholism as resulting from fixation at an early stage of personality development. He suggested that the alcoholic was fixated at the 'oral stage' of development. Later however, (Freud, 1930) he revised his theory of alcoholism and proposed that it was the result of supressed homosexual tendencies. Such theories are however notoriously difficult to test empirically. Even if these explanations are true for a small number of individuals, it is difficult to imagine them as appropriate generalized explanations for alcohol problems. Therefore evidence for the alcoholic personality must be considered on a different level.

A long term follow up study of 500 men over a 40 year period was carried out by Vaillant (1983). Amongst other things, personality tests and assessments were carried out on these subjects in their school days and over the following years. The personality profiles of those who subsequently developed alcohol problems did not differ significantly in any way from those who did not develop alcohol problems. There was no support therefore, in this impressive study, for the concept of an 'alcoholic personality' predisposing towards problem drinking. The conclusion of the Royal College of Psychiatrists report on alcohol (1986) on the basis of this and other evidence is that " there appear to be a

great many personality traits, which given the right circumstances, predisposed to excessive drinking and any of these traits can be found in varying degrees rather than as absolutely present or absent" (p130).

Here again, weakness in the evidence that alcohol problems can be attributed to one inherited factor justifies examining the impact of other variables such as environmental inflences, on drinking patterns. The theory that 'alcoholism' results from a pre-existing personality disorder does not rule out a possible role for life events in determining the development of problems of alcohol abuse. Life events therefore, according to models in this cell, could hypothetically affect personality development but thereafter have little impact on drinking patterns. The remaining types of model of alcohol abuse will now be considered.

1.3. ACQUIRED PHYSICAL CONDITIONS AND ALCOHOL ABUSE

As the 'Alcohol Dependence Syndrome', a model of alcohol problems, has had a significant impact in the literature, it will be dealt with in some detail here. Those models already outlined are characterized by the distinction that is made between individuals who suffer from the disease of 'alcoholism' and those whose drinking at any level is not considered a disease. The 'alcohol dependence syndrome' (ADS), (cell 1.3 in fig 4.1), introduced by Edwards and Gross (1976), preserves this dichotomy in types of alcohol problems. Despite

this, the original conceptualization of the authors was to introduce the idea of environmental and social factors having an influence on alcohol problems. Edwards (1986) argues in a review of the research on the ADS, that the 'dependence syndrome' and 'alcohol problems' constitute two independent dimensions. The syndrome consists of seven elements which present to varying degrees and these seven elements are as follows:

(i) narrowing of the drinking repertoire : Drinking becomes less and less responsive to environmental stimuli and the behaviour itself becomes less varied;

(ii) salience of drink seeking behaviour : the procuring of alcohol comes to dominate the persons thinking and behaviour;

(iii) increased tolerance to alcohol : the ability to consume increasing quantities of alcohol without any apparent incapacitation;

(iv) repeated withdrawal symptoms : when alcohol has not been consumed, physiological symptoms of withdrawal are experienced;

(v) relief or avoidance of withdrawal symptoms: drinking such as morning drinking to avoid withdrawal symptoms;

(vi)subjective awareness of a compulsion to drink: a craving for alcohol may be experienced;

(vii) reinstatement of the syndrome after

abstinence, i.e. the reinstatement of other elements of the syndrome after a return to drinking;

The ADS does not succeed in incorporating a role for social and environmental factors in a model of problem drinking for the following reasons :

1. The development of the severity of alcohol dependence questionnaire (SADQ), by Stockwell, Hodgson, Taylor and Rankin (1979), consists of five sections which deal with physical withdrawal symptoms, affective symptoms, relief drinking, level of alcohol consumption and rapidity of reinstatement of symptoms after withdrawals. Edwards (1986) quotes from this paper stating that the SADQ "fulfills the requirements of the concept of alcohol dependence with respect to its internal structure". The argument here is that no account is taken in the SADQ of the environmental and social influences purported by Edwards and Gross (1976) to be important features of the syndrome. The instrument (SADQ) designed to measure the syndrome, seems to concentrate on measuring physiological symptoms and affective symptoms resulting therefrom.

2. Edwards (1986) further states that the "the syndrome is not all-or-none, but occurs with graded intensity". One of the seven elements of the syndrome is, however, its reinstatement after abstinence, explained by Edwards and Gross (1976) as the reinstatement of other elements of the syndrome on a return to drinking after

a period of abstinence. This element of the syndrome implies irreversibility and Gross (1977) arguesthat it points to long lasting toxic effects of alcohol. This implies that once a particular threshold has been crossed, then one 'has' the syndrome, including these long lasting toxic effects.

The concept of a threshold is not consistent with that of a continuum but with that of an all-or-nothing state. Furthermore, the concept of irreversibility implies that a role for social and environmental factors could only occurr before this threshold has been passed. That is, they may have a role in the development of the syndrome rather than be key elements of the syndrome itself.

3. Edwards and Gross (1976) further state that learning explanations were likely to be important in the development of the syndrome. If learning is however at the heart of the syndrome, the 'irreversible' concept referred to above is contradictory. No theory of learning exists which cannot incorporate the concept of 'unlearning' of a previously acquired habit. Learning, therefore, according to this model, can only be of importance in the development of the syndrome and not in the maintenance of a drinking pattern. It is therefore already apparent that a distinction must be made between models of addiction which aim to explain <u>taking up</u> drug use and those which focus on <u>maintaining</u> that behaviour.

The A.D.S. is a possible model of the first type but offers little by way of explanation about maintenance of a drinking habit. This is unfortunate as it is possible to conceptualize a model of alcohol problems in which the drinking pattern is maintained by acquired physical characteristics interacting with life events.

In summary then, this particular model of drinking (the ADS), does not succeed in incorporating a role for life events once the syndrome has developed (although it allows for the possibility that stressful events may be a factor determining onset). Once an individual has developed the 'syndrome', then life events would not be predicted to have any effect.

Despite the implications of the AA model of alcoholism and the ADS model, there is a lot of evidence that alcohol problems, at least in some cases, can be reversed. Davies (1962),for instance, found that a number of ex-patients , when followed up after discharge from a psychiatric ward, where they had been treated for 'alcoholism' had returned of their own accord to a pattern of normal drinking. Edwards (1985), however, has subsequently challenged these findings and shown that at least some of the subjects in this study continued as problem drinkers and did not remain social drinkers. Nonetheless, the actual size of the group (of returned controlled drinkers) is irrelevant to the theoretical implications if any drinkers at all can return to normal drinking.

Further evidence for the possibility that a problem drinking habit could be reversed is contained in 'The Rand Report' (1976). This American study consisted of interviews with 2339 male alcoholics in treatment, 589 of whom were reinterviewed eighteen months later. A number of those interviewed at this follow-up interview were found to be drinking normally. The Rand Report concluded that for some people who have been diagnosed 'alcoholic', drinking does not necessarily lead to a full relapse into problem drinking.

Heather and Robertson (1983) have reviewed the literature and conclude that controlled drinking does occur, even in some cases of severe alcohol dependence. The possibility of a return to normal drinking after a period of problem use has major implications for a theory of life events and drug use. Several questions arise such as "why do some individuals return to normal drinking whereas others do not?"; "Could life events have a causal role determining changes in alcohol consumption?". In summary then, social and environmental influences on drinking patterns could have an impact, according to models in this cell, in the development of the drinking pattern but thereafter, once the acquired physical condition has developed, they would have no influence on subsequent change in the drinking pattern.

1.4 ACQUIRED PSYCHOLOGICAL CHARACTERISTICS AND ALCOHOL ABUSE

The final cell for models of alcohol abuse in fig 4.1 is that where acquired psychological factors are considered the mainstay of abnormal drinking patterns. One reason for examining the relationship between stressful life events and drug use is the belief that drugs provide tension relief. Thus, a psychological model of alcohol abuse which explains the drinking pattern primarily as a response to stress will be outlined. The 'Tension Reduction Hypothesis' (TRH) assumes that alcohol can both reduce tension and is often consumed in order to do so. The assumption then, is that if life events produce stress and tension then alcohol and/or other drugs can relieve the effect of life events and are taken to avoid these effects.

A classic review of the literature by Cappell and Herman (1972) examined the evidence for the TRH in animal studies. Their conclusion was that "much of the evidence is negative, equivocal and often contradictory". More recently, Mendelson and Mello (1979) cite evidence that not only does alcohol not reduce tension but it also worsens mood states. Mirren, McNamee and Meyer (1976), have shown a similar mood response in heroin users. These conclusions have been challenged by a number of authors. Hodgson, Stockwell and Rankin (1979) distinguish between active and passive avoidance responses to tension. The former are well rehearsed behaviour patterns which are not

elicited by fear and the latter are responses to conditioned fear stimuli. These authors conclude that whereas alcohol does not reduce tension in the active avoidance situation, it does affect passive avoidance behaviour. Furthermore, Stockwell, Hodgson and Rankin (1982) conducted an experimental study on the effects of prolonged alcohol consumption on mood. The severely dependent subjects in this study had lowered mood after prolonged use but expected their mood to deteriorate even more if they were to stop drinking. The moderate drinkers had the same expectations. The implications of the TRH for research on life events and drug use are that the impact of life events, according to this theory, will be lessened as a result of substance abuse and that furthermore, people abuse substances specifically to avoid awareness of the impact of life events. The evidence for these two statements will be considered in the study presented later in this thesis. TRH predicts that social and environmental influences have a major role in the development of problem drinking as they cause the tension which gives rise to the drinking. A more detailed social learning model of alcohol problems will now be outlined.

The concept of 'dependence' has been referred to in the last section, where it was presented as the development of certain physiological/biological symptoms. There are however many examples where these symptoms develop but the individual is not 'dependent'

on the drug. For instance, patients in hospital who are administered opiates for medical reasons may show signs of withdrawal when these drugs are stopped , but do not show any of the signs of craving or further drug seeking. Dependence is essentially a change in the motivational system of the individual, which commonly, but not necessarily, develops around the same time as the physiological changes which lead to withdrawal symptoms in the absence of the drug. This concept of dependence is the basis for the WHO psychological model of alcohol problems (see for example World health Organization (1981) WHO Bulletin, 99, 225-242.) which is used in the international classification of diseases.

Similarly, the Royal College of Psychiatrists (1986) report on alcohol defines dependence as "a form of abnormal learning" and this report also states that "a person is presumed to learn the compulsiveness of dependent drinking" (p61). This type of explanation for alcohol abuse assumes that the context in which drinking takes place and the consequences of the drinking are crucial to its understanding. The evidence for this is now considered.

Many laboratory studies have been conducted on drinking behaviour and it is not possible here to review in detail all of these. Instead, the main findings will be summarized. Traditional symptoms of alcoholism, such as loss of control, craving, tolerance and withdrawal, have all been examined in laboratory

settings, along with their susceptibility to psychological conditioning. Several studies have shown that alcohol given to alcoholics in hospital does not typically lead to loss of control (Engle and Williams, 1972; Marlatt, Demming and Reid, 1973). On the other hand, craving has been shown to be greater amongst severely dependent as opposed to moderately dependent drinkers, when given alcohol in hospital (Hodgson et al, 1979; Stockwell et al, 1982). Even the appearence of withdrawal symptoms does not necessarily trigger drinking when alcohol is availiable in a laboratory setting (Mello and Mendelson, 1971).

In this last experiment the drinkers preferred to store up the alcohol reward which was available to them in small quantities during the day and consume all of it at one time. Heather and Robertson (1986) have argued that each of these 'symptoms' of dependence can be conditioned and may be influenced by cues and environmental stimuli. The absence of appropriate cues in a hospital setting may, for example, explain the non-appearence of craving. They argue that 'alcoholism' is essentially a series of conditioned habits and patterns of behaviour.

Turning now to a different type of evidence, Orford and Edwards (1977) asked recovered problem drinkers what factors were important in leading to their recovery and found that social and environmental influences were reported as most important. Furthermore

the work on spontaneous remission, which was reviewed in the last chapter, is consistent with these findings. Attempts to manipulate socio-environmental influences in a drinker's life in order to improve treatment outcome, have also proved successful (Azrin, 1976), giving further evidence of the importance of environmental influences in the maintenance of problem drinking patterns.

The social learning model of alcohol problems is one which is based on an examination of the social and individual antecedents of drinking and also takes account of social and individual consequences of drinking, which might maintain a drinking pattern. This model of dependence is the one adopted by the WHO. It is illustrated schematically and reproduced in Robertson et al (1984), shown overleaf (fig4.2). Life events could influence drinking patterns at a number of sites in this figure. Events could influence the individual antecedents to drinking through their effect on mood or they may be consequences of drinking which maintain the drinking pattern. The present study will examine both of these hypotheses.

Any model of drinking in which social and environmental influences are hypothesized to have an impact fits best into the category just reviewed. The fact that alcohol is the most widely used psychoactive drug in our society explains perhaps the emphasis on alcohol research when compared to research on heroin and tobacco use. For this reason, models of alcohol

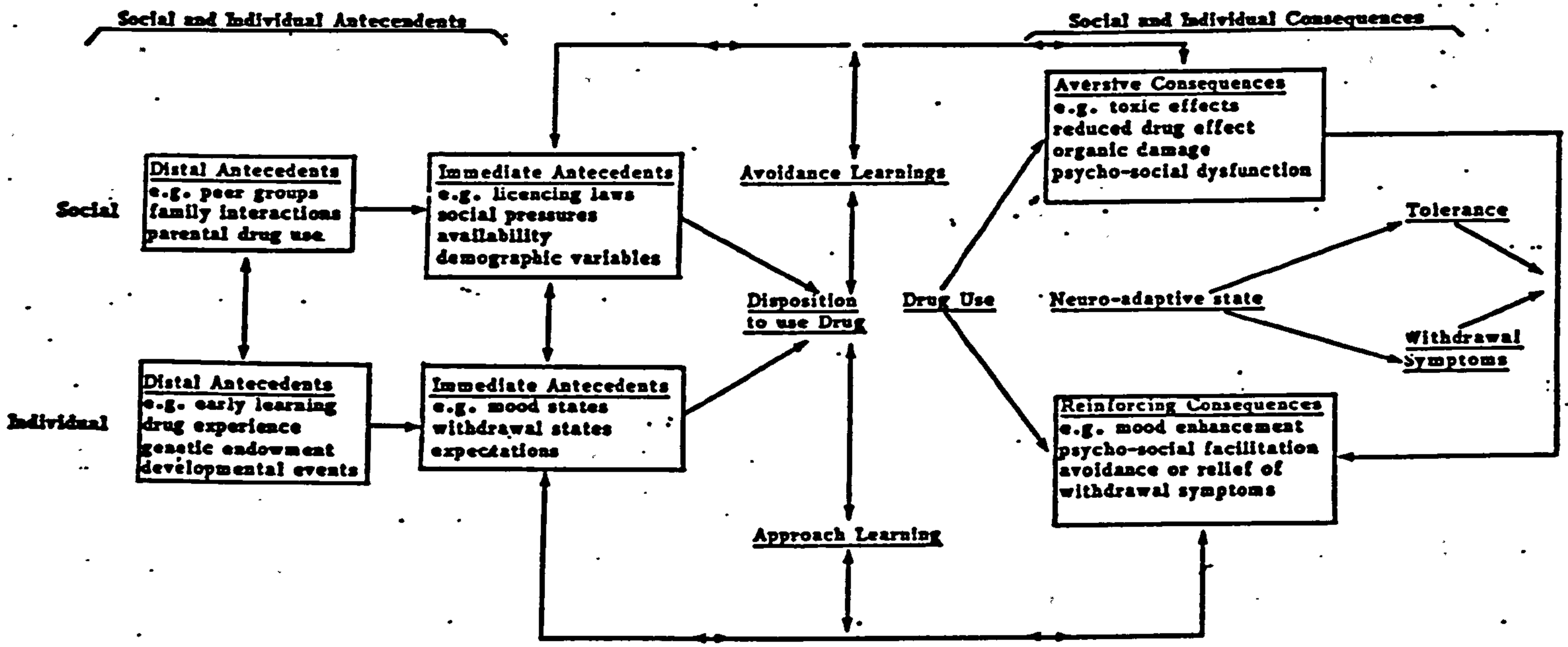


Fig 4.2. A social learning model of alcohol dependence
(Reproduced from Robertson et al 1984)

have been considered first in this chapter. Models of tobacco and heroin use will now be considered.

TOBACCO

2.1 PRE-EXISTING PHYSICAL CHARACTERISTICS AND SMOKING

Much as one might distinguish athletes from non-athletes on the basis of physical characteristics such as body build or heart rate, so too have researchers sought to distinguish smokers from non-smokers on the basis of physiological features. Unlike the work on alcohol however, the discriminating factors which have been found have not been declared as evidence that smoking is a disease just as 'athleticism' is not considered a disease on the grounds that athletes have leaner body build and slower heart rates. Consequently, although many studies have found physiological differences between smokers and non-smokers, these have not been elaborated into a model and philosophy of 'tobacco abuse' such as the A.A. model of alcoholism. It is for this reason that cell 2.1 in fig 4.1 has been left blank.

One study which did look at this was that by Shields (1962), where the smoking habits of 42 pairs of monozygotic twins who had been reared apart were examined. Although this study found that there was far higher concordance of smoking behaviour than expected by chance (p=.001), Kety (1973) points out that there were also a high number of discordant twins, i.e. where

one twin smoked and the other did not. This indicates that genetic factors do not operate exclusively in determining smoking tendencies and the genetic factor accounted for less than 33% of the variance in this study.

There have however been numerous studies showing that genetic similarity increases similarity of smoking behaviour. A study by Eysenck and Eaves (1980) found that whereas 74% of identical twins had the same smoking status (that is both were smokers or both were non-smokers), only 50% of non-identical twins had the same smoking status. Dunn (1973) lists four studies which have found physical differences between smokers and non-smokers although it is not clear whether these differences are pre-existing or are acquired through smoking. A study by Fodor, Glass and Weiner (1969) which found significantly higher triglyceride levels and faster blood clotting time among smokers, attributed these physical differences to the smoking. Dunn (1973) points out however that these differences could just as easily be attributed to some third factor and cannot validly be said to result from smoking but may just as easily cause it. Eysenck and Eaves (1980) did, on the other hand report physiological differences between smokers and non-smokers which are known to have a genetic basis. These included body build, the ability to taste phenlythiouria and possibly differences in blood group. The extent to which smoking is the result of a physical predisposition is therefore unclear. The

purpose of this section has been merely to give an indication of the type of evidence available in relation to smoking and pre-existing physical characteristics and no extensive coverage of the literature was intended. It can be seen however, that the evidence is just as equivocal and vast as that available on alcohol problems and yet, as already stated, it has not been elaborated into a smoking 'disease' model.

The question is, why does this difference exist ? It seems this can only be answered with reference to the historical differences in the social and economic cost of use of these drugs as referred to earlier in this chapter. A second question posed is to establish what impact if any, do environmental influences have on smoking. The theory that smoking results from an innate physical condition has little place for life events as mediators of the behaviour. A different type of model must be found to justify the hypothesis that this type of drug use is influenced by social and environmental events. It is clear that a model of tobacco use in which the drug use is believed to result from a pre-existing physical condition would not include life events as an influences on that behaviour.

2.2 PRE-EXISTING PSYCHOLOGICAL CHARACTERISTICS AND SMOKING

A vast range of studies have attempted to describe the 'smoking personality' (see cell 2.2 in fig 4.1).These have met with varying degrees of sucess. Perhaps the most extensive and widely known is the work of Eysenck and colleagues (1960,1965,1973 and 1979). In a large scale study of men aged between 40 and 70 years, Eysenck, Tarrant and Woolf (1960) examined light, medium,and heavy smokers, ex-smokers and non-smokers. Eysenck's own personality questionnaire with scales measuring extraversion and neuroticism was given to these subjects. A significant positive correlation was found between smoking and extraversion. Even ex-smokers were found to have extraversion scores falling between that of the smokers and 'never smokers'. This would seem to support a model of smoking in which the development of the smoking habit is attributed to pre-existing psychological characteristics. However Smith (1970), reviewing the literature on smoking and personality at that time, found that accuracy of classification of smokers and nonsmokers ranged typically from 50% to 60% (50% accuracy being the level at which one would expect to classify by chance alone). The accurate classification of smokers in the Eysenck study just referred to may be even less than this, as there is a very large overlap between the extraversion scores of each group. In fact, Ashton and Stepney

(1982) indicate that this overlap (between all groups referred to) is as much as 70%, despite the fact that there is a significant difference between the mean extraversion scores of each group. Ashton and Stepney (1982) refer to twenty-five studies examining smoking and extraversion in which the results of twenty-two were similar to the Eysenck et al (1965) study. Despite this evidence, extraversion can only distinguish between populations of smoking types and cannot distinguish at an individual level (because of the overlap referred to) between a smoker and a non-smoker.

The relationship between smoking and neuroticism is even more varied. A study by Cherry and Kiernan (1976) is however of particular interest in that the personality differences reported were found to precede rather than follow the initiation of smoking. Subjects who had completed a personality questionnaire at aged 16 were subsequently (at aged 25 years) asked about their smoking habits. Extraversion and neuroticism, both individually and in their interaction , increased significantly the chances of an individual becoming a smoker. Personality characteristics and smoking in adolescents were also examined in a study by Mausner and Platt (1971). They found a relationship between rebelliousness and smoking and between poor relations with authority and smoking.

In summary, it can be said that although significant personality differences between smokers and non-smokers have been identified at a group level,

there is a high degree of overlap at the individual level. Consequently, models of smoking based on the 'smoking personality', are not satisfactory explanations of the behaviour. If personality factors hold the key to determining who does and who does not become a smoker, then life events would be predicted to have little impact on smoking patterns once the habit has developed. As with the corresponding models of alcohol abuse, social and environmental influences could be hypothesized to account for some of the variance in who actually develops the habit, but have no subsequent influence on behaviour change.

2.3 ACQUIRED PHYSICAL CHARACTERISTICS AND SMOKING

Nicotine, the active ingredient in tobacco, has a number of physiological effects on the body. Domino (1967) in fact points out that it has so many effects acting at a variety of sites that it is difficult to isolate its central effects. In determining which of these effects are relevant to models of smoking, it is important, as indicated by Dunn (1973), to distinguish not between central and peripheral physiological effects but between "motivationally relevant and motivationally irrelevant" effects. The way in which these effects interact with life events in determining smoking patterns is examined in this section.

Ashton and Stepney (1982) have reviewed the evidence that nicotine stimulates reward centres in the brain. There are an abundance of animal studies

supporting this point of view. Although it is beyond the scope of this thesis to go onto detail about how that physiological effect might operate, it seems that the pleasure resulting from smoking, in a physiological sense, is the result of the release of norepinephrine (noradrenaline) (Jarvik, 1970). The release of norepinephrine has been shown by Stein and Weiss (1969) to stimulate pleasure centres of the brain. Other effects which result immediatley after nicotine absorption are, for instance, increased heart rate and coronary blood flow and elevated blood sugar level.

The 'addiction model' of smoking which has been proposed by Schacter (1978) amongst others, and illustrated by Stepney (1980c), is shown overleaf in fig 4.3. (In fig 4.1., this model is classified in cell 2.3). The pharmacological effects of nicotine are seen to be of central importance in this model which holds that "the smokers brain and body become so adapted to the presence of nicotine that he cannot function properly without it" (Ashton and Stepney, 1982). It is interesting that this addiction model of smoking has been developed from the evidence about physical effects which result from the drug use, unlike the A.A. model of alcoholism which explains problem drinking as resulting from physical characteristics existing prior to the drug use. The development of symptoms of tolerance and withdrawal to the effects of nicotine are cited by Ashton and Stepney (1982) as further

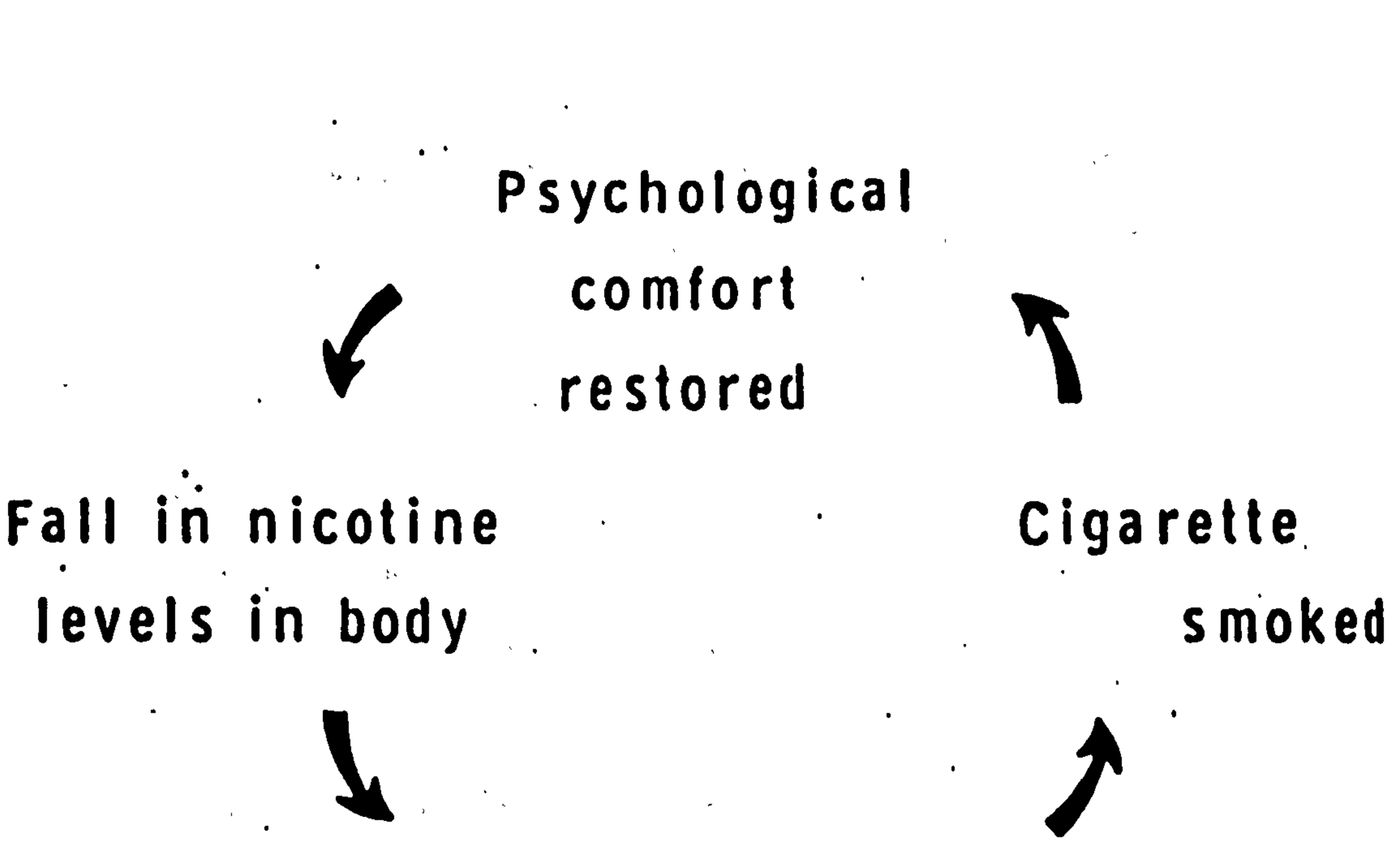


Fig 4.3. The addiction model
of smoking.
(Reproduced from Ashton & Stepney 1982)

supporting evidence for an addiction model Tolerance to nicotine develops initially in much the same way as it does to any drug i.e. gradually increasing doses are required to attain the same effect. As Ashton and Stepney (1982) point out, unlike the development of tolerance to either alcohol or heroin (where dosage seems to go on increasing to what would otherwise be lethal levels), the typical smoker seems to level off dosage at somewhere between 20 and 40 cigarettes per day. This level is then often maintained for the remainder of the smoker's life. The assumption of these authors is that this is because tolerance does not develop to nicotine's effect on the brain and a user may thus obtain this effect without increasing dosage. Alternative explanations for differences in the effects of different substances, which relate to differences in the environmental conditions and social mores surrounding drug use will be explored later in this thesis.

The addiction model of smoking, illustrated in fig 4.3 suggests that once the behaviour has been established, smoking is continued in order to avoid the discomfort of withdrawal symptoms which result from falling nicotine levels in the blood. High levels of nicotine can be maintained by smoking one cigarette every half hour. If such a model is a sufficient explanation of smoking behaviour, then life events and life stresses would have no influence on smoking once

the habit has been established. The only possible role for life events in such a model exists at the early stages in providing the conditions for the initiation of the drug use. However, the model is self-contained in that there is no necessary role for any type of external influence such as environmental/social effects once the behaviour has been established. Any individual for whom the "restoration of psychological comfort" operates, will continue a smoking habit regardless of the events experienced.

2.4 ACQUIRED PSYCHOLOGICAL CHARACTERISTICS AND SMOKING

The final models of smoking to be reviewed in this chapter are those in cell 2.4 of fig 4.1. In this section the theory that smoking is maintained because of its usefulness as a 'psychological tool' will be considered (Myrsten, Andersson, Frankenhauser and Elgerot, 1975). This is essentially the theory that the stimulant/depressant actions of nicotine are used by a smoker to manipulate psychological state by varying both the dose and environmental conditions surrounding use. It is apparent that in such a model of smoking, there would exist a role for life events in changing smoking behaviour.

Nicotine has been shown by a number of studies to have both stimulant and depressant effects on arousal (Mangan and Golding, 1978). Arousal levels have been shown to relate to task performance in a Yerkes-Dodson U-shaped function. The Yerkes-Dodson law

holds that task performance will be poor under conditions of low arousal. Performance will improve with increasing arousal levels and will decrease again if arousal becomes too high. Smoking has been shown to interrupt this relationship (Wesnes and Warburton, 1984). However, in a review of the evidence on smoking levels and arousal, Ashton and Stepney (1982) show that arousal levels and smoking interact with task complexity.

In a series of experiments, Frankenhauser and Myrsten (1971) and Myrsten, Andersson, Frankenhauser and Elgerot (1972 and 1975), show just how complex this relationship might be. Smokers who reported smoking in order to increase arousal performed a monotonous better while smoking than not smoking. Smokers who reported that their primary reason for smoking was to alleviate boredom showed no difference in performance on this type of monotonous task whether they smoked or not. On the other hand, a task that was characterized by high tension was performed better by these latter smokers when they were smoking than when they were not. The 'arousal' smokers, on the other hand, showed no difference on this type of task whether they smoked or not.

The relationship between anxiety, stress and smoking is also a complex one. Laboratory studies show that smokers increase both number of cigarettes smoked and nicotine intake under conditions of stress

(Schacter, 1977 and Ashton, Stepney and Thompson 1978). It is a possibility therefore, that nicotine reduces anxiety. Although laboratory studies on animals have shown that nicotine reduces aggression (Hutchinson and Emley 1973), Jaffe (1978) indicates that the main evidence of an irritability-reducing effect in humans is based merely on the reversal of withdrawal symptoms in regular smokers when allowed to smoke after a period of abstinence. He states that " a direct anti-irritability effect on non-dependent humans has not been conclusively demonstrated".

If it is true that nicotine or tobacco does not reduce stress in non-dependent humans but does in those dependent on it, then this has a major implication for the role of life events in tobacco use. To look for differences in the life stresses of smokers and non-smokers may be a red herring. If a smoker has learnt to use tobacco as a 'psychological tool', to manipulate emotional state, then they may use the drug to manipulate their response to events whether they experience more , less or the same amount of stresses as non-smokers. Fig 4.4 overleaf, illustrates the 'psychological tool' model of smoking. Between group comparisons of smokers and non-smokers are not a useful way of testing for the importance of life events in this model.

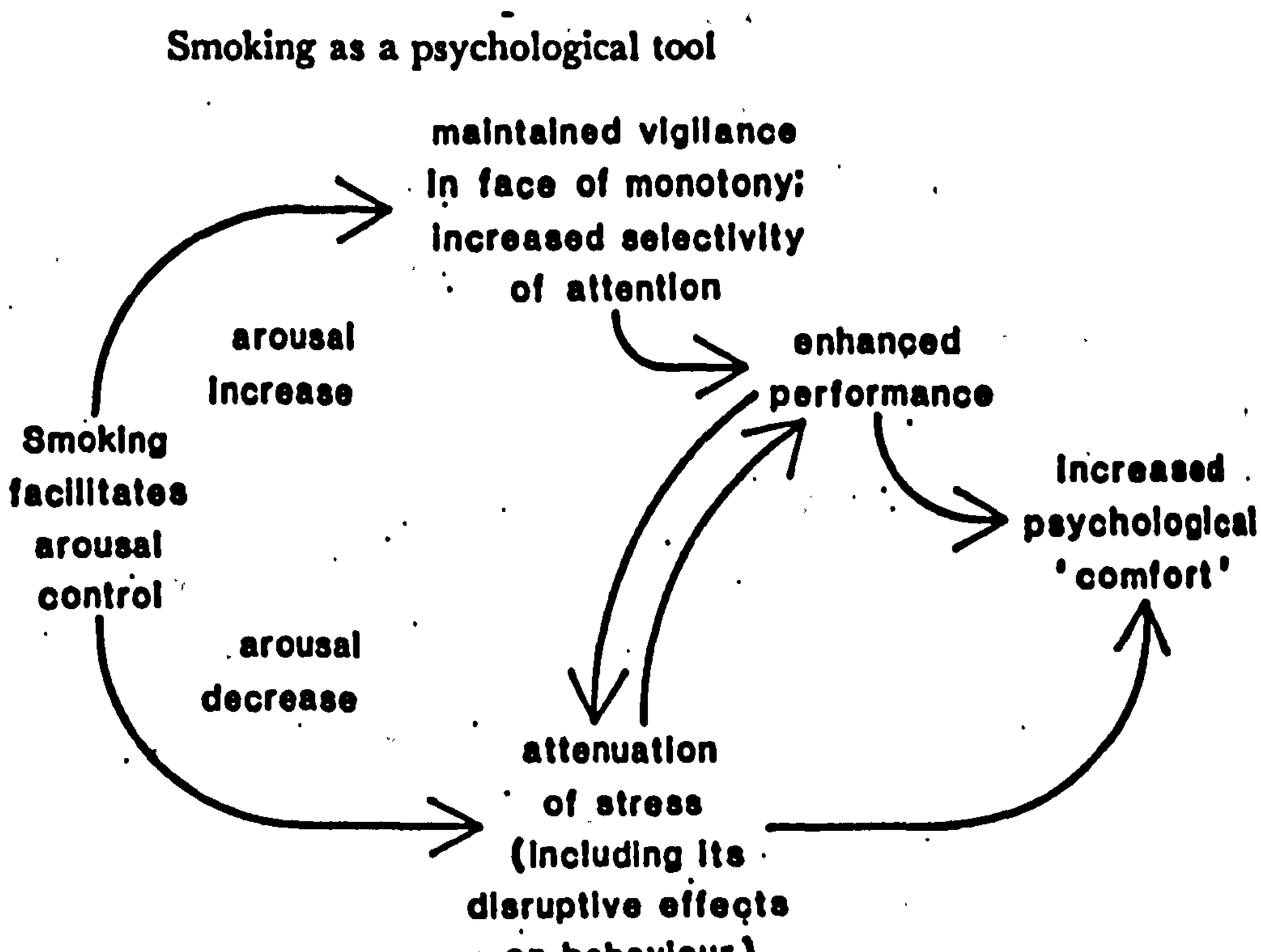


Fig 4.4. The psychological tool model of smoking.

(Reproduced from Ashton & Stepney 1982)

HEROIN

3.1 PRE-EXISTING PHYSICAL CHARACTERISTICS AND HEROIN USE

Although isolated researchers may have carried out work on genetic factors or searched for a physical condition which would explain heroin use, such work has not been successful to date. There are consequently no models of heroin use which have been constructed from such a theoretical stance. Although workers such as Dole (1967) have stated their belief that a specific biochemical abnormality will eventually be discovered which will explain 'addiction', such beliefs are grounded in very little research evidence. Consequently, this cell in fig 4.1 (i.e. cell 3.1) has been left blank. As a consequence of heroin 'addicts' occassionaly being treated in the same physical location as 'alcoholics', they are sometimes exposed to the A.A. philosophy of alcohol problems. A model of heroin use may thus develop along the lines of the A.A. model of alcohol problems, based on similarly poor evidence to that for the corresponding model for alcohol abuse. In such a model social and environmental influences on drug use would not play an important part. By contrast there has been a vast amount of work carried out on the heroin or opiate users 'personality' and so personality characteristics which existed prior to heroin use will be considered in the next section and cell 3.2.in fig 4.1. shows these models.

3.2 PRE-EXISTING PSYCHOLOGICAL FACTORS AND HEROIN USE

Research into heroin use and personality is of two kinds. Firstly, there are studies comparing heroin and non-heroin users on a number of variables including measures of behaviour, such as deviancy, criminality and anti-social behaviour. Differences found between groups on such variables have been attributed to underlying personality factors. Secondly and more recently, there has been a focus on drug use and personality components, including neuroticism, psychoticism, extroversion and introversion. Detailed work has been carried out on the differences between drug users and normals on these variables and also on differences between various subgroups of the drug using population.

Although an association between narcotic use and criminality is well documented (Nurco 1979), does criminality precedes drug use or follow it ? Willis (1971) found that 76% of hospitalized addicts had a court conviction prior to their drug addiction. Nurco and Dupont (1977) found a smaller, but nonetheless substantial proportion of addicts (40%) with criminal records preceding their drug careers. Robins (1979) also reports criminality preceding drug careers. Whatever the relative merits of these studies, it seems safe to conclude that not all criminality of heroin users results from their heroin use. An interesting study by Robins and Ratcliff (1978) found that

antisocial behaviour in childhood was predictive of later drug use, including alcohol abuse. Anti-social behaviour in childhood also predicted adult antisocial behaviour (including drug use). Important variables were :(1) separation from parents on childhood, (2) extreme poverty and (3) lacking parent figures of both sexes. Such early experiences would presumably affect the developing personality. Nurco (1979) proposes five models of the aetiology of drug abuse which are based on personality variables. Any one or combination of these could apply to any given individual. These are listed below.

(1) An inability to cope with intense feelings of anger or frustration. Individuals with this characteristic are presumed to use heroin to dampen and sedate feelings associated with these types of emotion

(2) An inability to delay gratification results in a need for immediate gratification and a need to "satisfy all their libidinal desires at once". Drug use is believed to be a consequence of such a need.

(3) The third explanation is based on uncertainty about sexual identification. As heroin use dampens sexual desire; a possible explanation for use is that addicts can join a subculture in which "no one expects a member to assume a heterosexual role"

(4) A fourth way in which personality may influence drug use is when an individual is a high risk taker in all areas of their life. Heroin use is seen as one more

risk.

(5) Finally, Nurco proposes a model of heroin use based on a need to fight off "boredom and depression which is experienced by some individuals.

The models of drug use outlined so far in this section focus on specific pre-existing psychological characersitics as determinants of heroin use. A second type of research into psychological characteristics and heroin use focusses on more general personality profiles. Gossop and Eysenck (1980) compared a group of mixed drug users (primarily heroin users) with a random sample of normal subjects on Eysenck's Personality Questionnaire (EPQ). The groups were found to differ significantly on 32 of the items. In particular, the groups were found to differ on items measuring neuroticism, with the addicts scoring higher than the normals. These items dealt mainly with feelings of anxiety and depression. Furthermore, the addicts were found to have high scores for psychoticism. This is interpreted by the authors as evidence that drug users are manipulative and have attention seeking personalities. The authors hypothesize that this high psychoticism score artificially inflates the neuroticism score, as the addicts are inclined to present themselves as more worried and depressed than they actually are in an attempt to manipulate the system.

3.3 ACQUIRED PHYSICAL CHARACTERISTICS AND HEROIN USE

In recent years the concept of an 'opiate dependence syndrome has gathered support (see for example, Sutherland, Edwards, Taylor, Gossop and Brady, 1988). These authors (Sutherland et al) state that the application to opiates, of the 'dependence' concept and the development of an instrument to measure it, is important because "it is manifestly impossible to explore the nature of any condition in the absence of any valid and reliable way of determining when and to what degree that condition exists". As with dependence on alcohol, dependence on opiates is proposed to "constitute a separate dimension from problems". The SODQ (Severity of Opiate Dependence questionnaire) developed be these authors, consists of five sections which measure (1) quantity and pattern of opiate use (2) physical symptoms of withdrawal (3) affective symptoms of withdrawal including craving (4)withdrawal-relief drug taking and (5) rapidity of reinstatement of withdrawal symptoms after a perieod of abstinence.

The authors state that dependence "cannot be measured by totting up in ad hoc fashion a catch all of items relating to intensity of drug use, physical complications, social problems, criminal involvement and then one or two items on withdrawal". It is difficult to see how, with the exception of excluding items about social problems and criminal invovement, the SODQ does anything else. In fact the authors even conclude that totting up the items (and obtaining a

total SODQ) score would be a valid use of the questionnaire.

The reason for elaborating on this questionnaire here is that it illustrates how certain models of drug use can come into being. What seems to be happening here is that (1) the existence of a syndrome is hypothesized (2) a questionnaire is developed to test the validity of that syndrome, and then (3)the existence of the questionnaire is used to validate the existence of the syndrome. All that is required to validate the syndrome is for some of the items on the questionnaire to correlate with each other. Items that do not correlate are eliminated and the remaining items are taken as proof that the syndrome has some independent existence.

Skinner and Goldberg (1986) also investigated the evidence for a drug dependence syndrome. They concluded that their study provided "support for the concept of a drug dependence syndrome". When examined in detail their findings can be stated simply; they found that in a group of narcotic users the more drugs that had been taken in the last 60 days, the more likely they were to say that they could not stop using and that they could not get through the week without drugs.

If these findings do provide evidence for a drug dependence syndrome then unfortunately this simple concept of dependence does not advance our understanding of drug use. Furthermore, the explicit

exclusion from the drug dependence syndrome, of items pertaining to health, social or emotional problems implies that life events have no role to play in this model of drug taking.

3.4 ACQUIRED PSYCHOLOGICAL CHARACTERISTICS AND HEROIN USE

Heroin use is sometimes attributed to psychological or personality characteristics, ranging from moral and personal weakness to uncontrolled desire and craving, purported to be the inevitable outcome for everyone who uses this drug. Such explanations of drug use differ substantially from the AA type explanation of alcohol abuse which states that only certain types of individual can actually develop 'alcoholism' (i.e. those possessing in advance the abnormality).

Heroin, on the other hand, is supposed to be addictive to all who use it. These differences in attributions have important implications for the way in which the users of the different drugs are perceived. These perceptions in turn, have important implications for the eventual outcome for drug users. Eiser and Gossop (1979) have shown in fact, that addicts' perceptions of their own drug use i.e whether they think of it as an illness or not, are related to the degree of control they perceive to have over the drug use. Those who see themselves primarily as 'sick' belive that they have less control over their condition

than those who see themselves as merely 'hooked' but not suffering from an illness. Eiser (1978) has also suggested, in relation to smoking, that perceiving oneself as 'sick' makes it more difficult to change the behaviour and it is possible that this applies also to heroin users.

In a different vein, studies such as Robins (1979) have shown clearly the importance of social and environmental influences and the individual's interpretation of these on initiation and remission from heroin use. This particular study examined a group of Vietnam veterans and compared their drug using habits to a group of individuals who had not been drafted but who did not differ substantially in other ways from the veterans. Two main findings are of interest to this section. The first is that the veterans were more likely to become opiate addicts than the controls and this was not accounted for by a mere acceleration of the rate at which they would have become addicts anyway. Robins explains this increased drug use as resulting from the interpretation the users put on drug use in the Vietnam setting. The soldiers believed that (1) it would reduce the stress of battle and (2) that this period in their life was outwith their 'normal' life and therefore not part of reality.

The second finding of interest was that far fewer numbers of these veterans remained addicted on their return from Vietnam than would have been expected from

the normal rates of use. This lower than expected relapse rate can only be explained in terms of social and psychological factors. For instance, the normal cues for use, with which their drug use was associated, were just not around on their return. Consequently they did not experience, to the same degree as would normally be expected, symptoms of craving or withdrawal. The type of model which emerges from this study, provides the strongest hypothesis for the relationship between environmental influences and drug use. Life events are crucial in determining both who does and does not become a user and who maintains use.

DISCUSSION

Four categories of models of drug use have been reviewed and the role of social and environmental influences in each type of model has been considered. Several cells in fig 4.1 have been left blank because it is felt that such work as has been carried out on these cells has not had sufficient impact to warrant inclusion here and the reason for this lack of interest in these particular cells is related to the historical context and different social conventions surrounding use of these substances.

Only when drug use is conceptualized as resulting from pre-existing physical abnormalities, (cells 1.1, 2.1 and 3.1), can the influence of life events be ruled out. In all of the other cells in fig 4.1 a role for life events can be hypothesized. It became apparent in

reviewing these cells however that a distinction had to be made between models which provide explanations for initiating use and models which explain maintaining the habit.Those models which focussed on personality or acquired physical characteristics (i.e. cells 1.2, 2.2, 3.2 and 1.3, 2.3 and 3.3) only explain the taking up of addictive behaviour. However models in cells 1.4, 2.4 and 3.4 which focus on the influence of social and environmental factors in drug use, at least attempt to tackle the issue of explaining maintenance of drug taking.

One of the failures of the above models is the extent to which they have been developed to explain only one type of substance use. The most important recent development in this area has been the attempt by some authors to develop a model of drug taking which is applicable to all types of substance use and even to other types of excessive behaviours (e.g. Orford 1985). The advantage of this approach is that the underlying psychological mechanism involved in drug use can be more clearly outlined for use in general, than when one is confined to explaining use of a particular substance. The model developed by Orford (1985) is one in which all kinds of excessive appetites depend upon "the social meaning of the behaviour to the person concerned and to members of their family, their peer group and their culture" (p123). In this model the influences which lead to a person taking up the

behaviour are primarily social and environmental. Peer group approval and peer group behaviour were both amongst the most frequently cited influences on taking up drug use in the studies cited by this author. The model developed also, unusually, offers a possible explanation as to why drug use is continued even in the face of negative consequences. One proposed psychological mechanism involved is stimulus generalization, where the individual no longer discriminates between appropriate and inappropriate setting and stimuli for drug use. The underlying explanation for the change in behaviour from 'normal' to 'abnormal' is to be found in learning theory and the general principles surrounding reward or reinforcement of behaviour.

This type of model is an extremely important development for understanding behaviour generally referred to as addictive. This understanding will only develop further by standing back from the social conventions and mores surrounding use of drugs and examining the underlying psychological mechanisms involved in the behaviour. The fact that some cells in Fig 4.1 are blank for certain types of drug taking but not for others, is testimony to the influence that social attitudes and conventions have had on "scientific" thinking in the addictions.

As a consequence this thesis will examine a number of different substances in order to throw some light on the role of life events in substance use generally. The

appropriateness of the above models will then be again considered in the light of the data obtained.

PART III : A STUDY OF LIFE EVENTS AND DRUG USE

CHAPTER FIVE

METHODOLOGY OF THE STUDY

The hypothesis behind the study presented in the following chapters is that life events affect drug use. Several studies reporting such a link were shown in chapter three to have methodological flaws. For this reason, the overall objectives of the study are to determine (1) whether or not there is a link between life stress and drug use and, if so, (2) to ascertain the nature of that link.

DESIGN

Overview

The study involved three groups of substance users. These consisted of (1)a group of tobacco smokers, (2) a group of heroin users and (3) a group of heavy drinkers. Three groups were examined in order to distinguish between differences in stressful life experiences attributable to the substance used and those attributable to the social context of its use. It was indicated (in the last chapter) that the social and environmental influences on the use of heroin, for example, differ substantially from alcohol or tobacco.

Subjects were interviewed at three month intervals over an eighteen month period. At each interview details of drug consumption during the previous week and life events over the preceding three

months were recorded. Three separate control groups were identified, one for each of the addiction groups. A total of 169 subjects participated in the study. The breakdown into heroin (H), alcohol (A), tobacco (T) and controls (i.e. heroin controls (CH), alcohol controls (CA) and tobacco controls (CT)) is shown in table 5.1. overleaf. The heroin users tended to be younger than the alcohol users, hence it would not have been possible to use the same control group for both.

The control group for the smokers was however, formed from the subjects in the alcohol and heroin control groups as the age range for the smokers was greater than for either of the other groups. The precise details of the recruitment and matching procedure will now be outlined.

MATCHING PROCEDURE

A stratified sampling procedure was used to match the substance and control groups. Subjects in the addiction groups were recruited first. The characteristics of these groups in terms of sex, age, social class, employment and marital status, were determined and then subjects with matching these characteristics who were non-drug users were recruited as controls. A similar proportion of subjects with each of these characteristics is contained in each corresponding substance and control group. The differences between

Heroin (H)	Alcohol (A)	Tobacco (T)	Control Groups		
			CH	CA	CT
31	33	39	36	27	63

TABLE 5.1 : NUMBER OF SUBJECTS PER GROUP

substance and control groups were not significant, although perfect matching could not be achieved for a number of reasons. For instance, it was extremely difficult to find unemployed males in social class IV or V who were non-smokers. However, as can be seen from table 5.2 (overleaf) the matching was sufficient that there were no major differences between the substance groups and their respective control groups on any of the matching variables.

Data on the age (both mean and range), sex, social class, and employment status, number of children and relationship status (i.e. whether or not subjects were single or married or cohabiting) is shown for each group in table 5.2.

SOURCES OF REFERRAL

Subjects in the study were recruited from a variety of sources including hospitals, prisons, community contacts and unemployed workers centres. A full list of the 18 referral sources is to be found in appendix A. Criteria for selection were not based on referral source, but related to level of consumption or consumption history. Control subjects were recruited from unemployed workers centres or by door to door recruiting in the same geographical areas as those in which the subject groups had been found to live.

	GROUPS					
	HEROIN	CONTROL (H)	ALCOHOL	CONTROL (A)	TOBACCO	CONTROL (T)
AGE X	25.0	27	39	45	36	35
RANGE	18-34	18-59	18-67	17-66	16-66	17-66
SEX MALE	18	18	20	14	15	32
FEMALE	13	18	13	13	24	31
EMPLOYMENT STATUS E	2	20	9	14	7	34
U	29	16	24	13	32	28
SOCIAL STATUS 2	-	3	2	8	1	11
3	9	12	9	5	14	17
4	2	13	5	10	7	23
5-6	20	8	17	4	17	12
MARITAL STATUS YES	11	15	12	16	28	31
NO	20	19	21	10	11	29
NO. OF CHILDREN X	1.5	1.5	2	2.7	2.6	2.0
RANGE	0-9	0-9	0-6	0-9	0-9	0-9
NO./GROUP	31	36	33	27	39	63

TABLE 5.2 : CHARACTERISTICS OF THE GROUPS

RECRUITMENT PROCEDURE

Heroin group. Contact was made with all clinics and other services to heroin addicts which existed between November 1984 and January 1985 in Glasgow. With the exception of one centre (an inpatient unit which had at that time only four beds), all centres agreed to their clientele being approached and asked to participate in the study. Successive referrals to these centres on one particular day each week between March and August 1985, were asked to participate in a study on drug use. (Referrals were included from one day a week only because each centre was attended on a rotating basis each week). Subjects were refered alternatively to the present study and to a parallel study examining attributional style of drug users. Subjects in the heroin group therefore consisted of every alternate referral on a particular day of each week, who attended Glasgow heroin addiction treatment centres during the recruitment peroid.

Alcohol group. As the services for problem drinkers in Glasgow outnumbered the services to heroin users at the time of the recruitment period, it was not possible to use all such agencies as recruitment centres. When both alcohol and heroin treatment services existed together, as was the case in the major hospitals, both services were used. Similarly, day centres for problem drinkers which were in the same areas as the centres for heroin

users were used as recruitment centres. An identical recruitment procedure to that used for the heroin users was employed for the drinkers.

Tobacco group. Very few services for the treatment of tobacco use exist in Glasgow. Consequently a different type of recruitment procedure to that of the other substance groups was used for the smokers. One 'stop smoking'clinic does exist and some subjects for the smoking group were recruited from this service. Secondly, a radio appeal for individuals who had been trying to give up smoking was also used. Finally, some subjects were recruited by calling at homes in the same areas of Glasgow from which the alcohol and heroin groups had been recruited. Sampling of smoking subjects therefore differed unavoidably from that for alcohol and heroin subjects, although once recruited, as with the other groups, every second referral was made to the present study. Furthermore, in order to increase the similarity between the groups, an attempt was made to match the smokers to the heroin and alcohol groups on socio-demographic variables.

CRITERIA FOR SELECTION

Alcohol Group. subjects were included in this group if they were (1) over 18 years of age; (2) had a history of alcohol-related problems as defined by having a documented medical history of alcohol abuse ; (3) had consumed over 50 units of alcohol in the week prior to first interview; (4) reported that this amount of

alcohol was typical of a weeks consumption.The cut off level of 50 units per week was chosen as there is good evidence that drinking above this level on a regular basis increases significantly the probability of developing physical problems related to alcohol abuse.

Subjects were excluded from the group if they were known to be suffering from alcohol related brain damage such as Korsakoff's psychosis, as it was felt that due to the possibility of confabulation on the part of such patients the validity of data about past events could not be assumed.

Heroin Group. (1) Subjects were included in this group if they were over 18 years of age. Parental consent would have had to be obtained for subjects below this age and this would have involved, in many cases, breaking confidentiality. (2) Subjects who reported themselves to be regular users of heroin were included if this report was substantiated by a health or community worker (i.e. doctor, community nurse, social worker or psychologist).

No level of consumption was set for inclusion in this group, as, given the illegal nature of heroin use, all regular use was categorized problematic.

Smoking Group. Subjects were selected for this group (1) if they were over 18 years; (2) if they were

cigarette or tobacco smokers. Finally , although this was not a requirement for participation in the study, all subjects were regular, (i.e.daily) smokers. Although there exist a small number of social or occasional smokers, none participated in the study.

DATA COLLECTION

Data were collected over a twenty-month period from March 1985 until the end of November 1986. Interviews with each subject were carried out at three-month intervals over a period of eighteen months. A maximum of six interviews per subject were carried out. For obvious reasons, it was not always possible to carry out interviews precisely three months after the previous interview. Sometimes appointments were missed or subjects were unavailable. For this reason a time band of six weeks around the 'ideal' date was allowed in which the interview was still considered 'on time'. Every effort was made, however, to ensure that interviews took place as near as possible to the 'ideal' date. If the subject was not contacted within this time band, then the interview was assigned to the missing interview category. Interview dates were calculated with reference to the first interview. If a subject had a second interview three weeks late, he/she would still have had the third interview six months after the first interview (as opposed to three months after the second interview).

Follow-up

Many difficulties arose in the course of following up these subjects. Some were hospitalized, imprisoned, had moved house or had gone into hiding (usually from the police or money lenders). A team of interviewers were employed, under the auspices of the Manpower Services Commission, in order to track down subjects and carry out follow-up interviews. Many of these follow-up interviews were carried out in prisons and hospitals, but the majority were carried out in subjects' own homes.

Follow-up rates for each group at each interview are shown overleaf in Table 5.3. The rates are sufficiently high to carry out the required analyses.

Unless a subject specifically withdrew from the study by informing an interviewer that they wished no further contact, they were continually sent appointments at appropriate times and interviewers continued to call to their homes until some contact was made. Only a handful of subjects (i.e. 10), were either not located or dropped out of the study completely after the first interview. One further subject in the tobacco group terminated contact with the study in the middle of the first interview.

GROUP	INTERVIEW NUMBER 1	2	3	4	5	6
HEROIN	31	21	18	11	11	12
ALCOHOL	33	27	25	20	18	8
TOBACCO	39	35	26	25	20	11
CONTROL H	36	35	30	28	22	4
CONTROL A	27	25	24	23	20	4
CONTROL T	63	60	54	52	42	8

TABLE 5.3 FOLLOW UP RATES : (Number of interviews administered to at each interview wave)

INTERVIEW PROCEDURE (The detailed interview procedure is outlined in appendix C)

INTERVIEW SCHEDULE (see appendix B)

At each interview a number of questionnaires were administered and these will be described in the following section. They were as follows:

(1) a consumption diary;
(2) a life events questionnaire;
(3) a measure of intentions with respect to future use;
(4) a rating of the subjects perception of the effects of relapse/abstinence;
(5) a rating of the subjects perceived enjoyment of their drug use at that time.

(1) MEASUREMENT OF CONSUMPTION

Consumption Diary. It has been shown by several authors (e.g. Pernamon 1974) that a one-week retrospective diary of alcohol is reliable as an indicator of average level of drinking and this will be discussed in greater detail in chapter six, in the discussion of reliability. For this reason this method was used to assess consumption and although no comparable tests of reliability were available, this method was also used for the heroin users and smokers (see appendix Bi for sample diary).

At each interview subjects were asked initially about their consumption of all drugs on the previous day. They were then questioned about drug consumption on the day before that and so on until a full week had been covered. Events which were known to have occurred on particular days were used to improve validity of reporting. For instance, if a subject had had a hospital appointment on a particular day, this was referred to in order to help jog his/her memory about how much had been consumed on that particular day.

At the time of interview, consumption was recorded exactly as reported by the subject, e.g. 2 pints of lager or a £10.00 bag of heroin. Later, however, these were translated into standard units of alcohol, standard units of heroin and standard units of tobacco. Further discussion of the reliability of this method of data collection is to be found in Chapter six and the conversion into units of drugs is discussed below.

Units of alcohol:-

Drinks were converted to standard units of alcohol, with one unit being equivalent to between eight and ten grams of pure ethanol. One unit of alcohol is equal to one measure of spirits or one half-pint of standard beer or lager. A full table showing conversion rates for all beverages consumed in the study is shown in table 5.4 (overleaf).

The total number of units consumed in the week prior to the interview was calculated for each subject

Quantity of alcohol	Units
1/2 pint ordinary beer/lager	1
1/2 pint export strength beer/lager	1.25
1/2 pint strong beer/lager (e.g Pils)	2
1/2 extra strong beer/lager (e.g Carlsberg special)	2.5
1 can extra strength beer/lager	4
1/2 pint ordinary cider	1.5
1/2 pint strong cider (e.g Merrydown)	2
1 bottle strong cider	8
1/4 gill spirits (Scottish measure)	1
1 bottle spirits (70 cl)	30
1 litre bottle spirits	51
1 glass table wine	1
1 bottle table wine	7
1 litre table wine	10
1 measure fortified wine (e.g sherry or martini)	1
1 bottle fortified wine	12
1 litre fortified wine	17

Table 5.4. Units of alcohol

and for each interview. This total score was used as an indication of average drinking level for that particular subject around the time of that interview.

Units of Heroin:-

No standard scale for units of heroin existed and so a conversion scale was developed for the purpose of this study. A number of possibilities existed. One was to calculate units in terms of financial outlay. As the quantity of the drug purchased over a given time period does not vary proportionally with the amount of money spent this was not, however, possible. The following example may serve to illustrate the reason. If one gram of heroin is bought as a single lot, there is a far higher concentration of the drug than when the same amount of money is spent buying smaller quantities over a period of time. This is because dealers often dilute the drug more with each subsequent division.

The second possibility was to estimate the quantity of drug purchased at any one level of financial outlay. As heroin is illegal there are no controls over the strength and no requirements (such as with alcohol) to state what, or how much of, other substances have been used to dilute the drug. Consequently wide variation can exist in the strength of any two purchases even though they are supposedly of the same quantity. There was no way of controlling for this problem without sampling all of the heroin bought

and consumed in the study, an obviously impossible task. The assumption was made, therefore, that although wide variation probably existed, some sort of acceptable norm was operated by the dealers.

The basic unit of heroin was taken as the smallest quantity of heroin that could be purchased on the street, i.e. the £5.00 bag. Information was collected from subjects and dealers about the typical way in which one gram of heroin was divided. Normally the quantities available in Glasgow, which are less than one gram, are a half gram, a quarter gram (costing approx. £25.00), the £10.00 bag and the £5.00 bag. Three £10.00 bags are purported to be equivalent to a quarter gram. The £5.00 bag is usually half, though it can be only one third, of a £10.00 bag. Buying one full gram of heroin in one purchase costs anything between £65 and £100, depending on the contacts of the purchaser.

From this information and using the £5.00 bag as one unit, a scale was constructed for all purchasable quantities of heroin, and one gram of heroin was therefore equivalent to 24 units. The scale, showing quantity purchased, normal price and number of units is shown in Table 5.5 overleaf.

Units of Tobacco :-

As only cigarette smokers participated in the study (both packet and 'own roll') the unit of tobacco

Purchase (Weight)	Price (approx)	Units
1 gram	£65 - £100	24
1/2 gram	£50 approx	12
1/4 gram	£25 - £30	6
A "£10 bag"	£10	2
A "£5 bag"	£5	1

TABLE 5.5 : UNITS OF HEROIN

was taken to be one cigarette. Subjects who used loose tobacco were asked to estimate its equivalent in terms of packets of cigarettes. A consensus emerged that one ounce of tobacco is equivalent to approximately 30 cigarettes. Ounces of tobacco were therefore converted into units of cigarettes. Table 5.6 overleaf shows these conversion rates.

(2) MEASUREMENT OF LIFE EVENTS

Life Events Questionnaire. A life events questionnaire was designed for collecting information on both the occurrence and the effect these events had on the lives of subjects. Methods of life event measurement have already been reviewed in chapter two. The present questionnaire develops the concept of stress that was used in other questionnaires. Information was sought initially about the events which occurred in subjects' lives and also about the impact of those events. In this the questionnaire was similar to those in other life event studies. However, the impact of events in different areas of a subjects' life was also assessed. This aspect of the data collection is discussed in further detail in the next chapter.

For reasons already outlined (in chapter two), the use of independent raters was not considered to be an advantage over the use of subjects' own reports of life events and their perceptions of the impact of those events in their lives. Consequently self reported data

QUANTITY	UNITS OF TOBACCO
1 packet 20 cigarettes	20
1 packet 10 cigarettes	10
1 oz loose tobacco	30

TABLE 5.6 : UNITS OF TOBACCO

consisting of subjects' own judgments of the impact of those events were used in the present study. This method subsequently proved justified and an example from the data collection will illustrate why. One male subject with a long drinking history was drinking very heavily at the time of the first two interviews. By interview 3 he was drinking very little. In the course of the study a number of very serious events had occurred. His best friend had been murdered while drunk and on another occasion he himself had been mugged and robbed. He was unable to defend himself because of his own drunkenness and was left badly scarred by the attack. When asked if these incidents had led to a decrease in drinking, he very disparagingly replied "no, of course not". At the 3rd interview this subject was actually off drink and when asked why he had given up drinking he replied that his chihuahua had had a heart attack. He had been asked by the vet to remain at home to give the dog hourly medication and this prevented him from going to the pub and drinking.

Independent raters would never have predicted this while predicting at the same time that there would be no change with the murder of his best friend.

Although subjects' own reports are used in this study, it is not assumed that this method is flawless. It is still possible that subjects try to interpret events to explain behaviour change. However, it is

felt that the design of the study, which allows behaviour to be examined both retrospectively and prospectively, i.e. by looking at life events at one interview and consumption at the next, will help determine to what extent 'making sense' accounts for any significant relationships found.

The life events scale developed for the study presented in this thesis relies on the self-report of events. A copy of the scale is to found in appendix Bii. The list of events on the scale was derived from items on the LES (Saracen, Johnson and Siegal, 1978). However, a number of specific addiction related events were added, e.g. overdose and specific addiction-related illnesses such as lung cancer, hepatits, etc. When one of these specific items was checked, the more general item of 'illness' or 'hospitalization' would not also be checked, unless of course a separate incident of illness had taken place.

Sub-sections of the scale.

(A) Subject of events (Column 1, appendix Bii)

Subjects were asked to report events which had occurred to either themselves or to any 'significant other' in their lives. A significant other was a parent, spouse, brother/sister, close friend or any individual identified by the subject as particularly significant in his/her life. The subject of the event occurred to was recorded in column one of the questionnaire.

(B) Timing of events (Column 2)

The timing of an event (within the previous three months) was also coded. The subject stated whether the event occurred in the last month, up to two months ago or between two and three months ago, although frequently when more detailed information concerning the timing of events was offered this was recorded.

(C) Life areas (Columns 3 to 8)

These six columns in the questionnaire were used to record the subject's perception of the effects of a particular event on different areas of his/her life. As for the Saracen, Johnson, & Siegal (1978) scale, subjects reported whether an event was perceived by them as negative, positive or neutral, but unlike this scale, subjects in the present study did so for each of the life areas mentioned below. The same event could have both negative and positive effects.The impact of each event on different aspects of life was reported. The specific life areas referred to were (1) Physical health (P), (2) Mood (M), (3) Social life (S), (4) financial situation (F), (5) legal situation (L) and (6) employment (E). These impacts were recorded in the columns headed P, M, L, S, F amd E. (see appemdix Bii). An example is shown below.

Event	Who	to	When	P	M	L	S	F	E
Moved house	Self	1 month ago	No effect	+	No effect	-	-	-	+

The first three columns indicate that the subject moved house within the last month. The next six columns show that the subject felt this had no effect on physical health, a positive effect on mood and employment, but a negative effect socially and financially and no legal implications. It could be, for instance, that this subject had a better job as a result of moving house, and that this enhanced his/her mood but at the same time, he/she lost contact with a lot of friends and had less money because of the new mortgage.

(D)Causal effect

The last three columns of the questionnaire remain to be explained. The first of these, marked C/U, refers to the subject's belief about whether or not a particular event was caused (C) by their drug use or whether he/she felt that event to be unrelated (U) to their drug use. The logic behind collecting this information is that, for example, a heavy drinker suffering from liver damage and who is hospitalized as a result is unlikely to perceive this event as a reason for giving up drinking unless he/she believes

the liver damage has resulted from, or was somehow related, to the drinking. Similarly there are many events which may not actually have been caused by drug use but which are believed by subjects to have resulted from use. A further reason for including this information in the questionnaire was to determine whether the consequences of substance use have a greater impact in bringing about behaviour change than do unrelated events. This concept of caused/unrelated events differs from the Brown and Harris (1978) classification of events into dependent/independent events. In the Brown and Harris classification referred to, events were considered independent if they were within the control of the subject. They were classified as dependent if the subject could have brought them about, whether or not they were related to the subsequent depression.

(E) Effect on Consumption

The last two columns on the questionnaire, marked E/N and - record the direction of the perceived effect on consumption, believed by the subject to have resulted from a particular event. Subjects were asked whether they felt events had affected their consumption or not. This was marked (E) for effect (yes) and (N) for none. The final column indicates whether they believed the event resulted in an increase or decrease in consumption. This was left blank if consumption was

not believed to have been affected by the event.

(3)MEASUREMENT OF INTENTION (appendix Biii)

Fishbein & Ajzen (1975) found that attitude relates to behaviour when attitude coincides with 'intention' to behave in a certain way. It was felt that subjects' attitudes towards their drug use would not predict behaviour change unless this coincided with their intention with respect to that behaviour. Consequently a measure of intention was included in the interview schedule. Fishbein and Ajzen (1975) note that the measurement of intention requires a clear definition of the behaviour towards which the intention is to be measured. In this study drug consumption at the next interview was the behaviour of interest. Consequently subjects were asked to rate their 'intention' with respect to consumption at the following interview, i.e. three months later. The following statement was given and subjects had to rate the extent to which they believed this to be true or false:

"I intend to give up alcohol (or cigarettes), (or heroin), within the next three months "-

moderately			moderately
extremely,	slightly	slightly	extremely
LIKELY	NEUTRAL		LIKELY

A distinction was made between 'wanting' to give up and the 'chances of succeeding'. Many subjects, for instance, stated that they 'wanted' to give up smoking but felt this was unlikely to happen. Subjects intention was defined therefore, as, the likelihood that a change in behaviour would occurr.

(4) and (5) RELAPSE AND PLEASURE (Appendix Biv)

Two final measures were included in the interview schedule and these will now be explained. The first related to the subjects' perceptions of relapse. The review of the literature in chapter four indicates that researchers, without stating so explicitly, often conceive of relapse as being a negative event occurring in negative surroundings. The focus of research is frequently on stress as a cause of relapse and a general negative assessment of the relapse precipitants is often presumed. This is possibly because subjects in these studies are often interviewed when they come into treatment, which may only result <u>because</u> they are now assessing their life circumstances in a negative way. This study attempted to determine how subjects perceived their drug use per se at the time of relapse. The distinction was made between perception of the drug use and perception of the circumstances surrounding relapse into drug use. Consequently subjects were asked to rate themselves on the following statement.

I enjoyed the first drink I had after my recent period of "being off". I enjoyed it more than the last drink I had before stopping.

AGREE DISAGREE

Moderately			Moderately	
Strongly	Slightly	Neither	Slightly	Strongly

(Parallel versions of this statement were used for the heroin and tobacco groups).

The final and related measure was of subjective awareness of pleasure in drug use. Again the thinking behind this was to distinguish between the social events and circumstances surrounding use (which are assessed by the life events questionnaire) and the more immediate effects of drug use. It is acknowledged that only a very crude measure was used and this was because the main focus of the research was on more major life events.

A number of questions were asked and these are shown in appendix Biv. Subjects rated each question as true, neutral or false. Because of the crudeness of this scale, pleasure was measured only as a dichotomous variable. Subjects at each interview were classified as currently 'enjoying' or 'not enjoying' drug use at the time.

This concludes the account of the measures used in

the interview schedule.

ANALYSIS OF LIFE EVENT DATA

Two methods can be used in the analysis of life event data. These are (1) analysis in which events are the basic unit and (2) analysis in which subjects are the basic unit. Each of these will be considered in turn.

(1) Analysis by events.

The basic hypothesis of life event research is that events occur independently of the subjects who report them. The techniques described in previous chapters, which have been devised to measure life stress, aim specifically to assess events by excluding the subjects response to those events (Brown and Harris 1978). The assumption is that events occur objectively and at random in an individuals life. So strong is this assumption that if there is any possibility that a subject has had control over an event it is often excluded from the analysis. Furthermore, in the literature reviewed, life stress is assessed by recording events from a given time period which varies in length. No account is taken of the possible impact that events happening outwith this time period may have on the occurrence of events within the time period. The assumption therefore, is that events are not just independent of the subjects reporting them but also independent of each other.

These assumptions lead to a number of problems in analysis of the data. The problem for the statistician

is that one of the most important assumptions for any analysis is that of the independence of cases. The selection of one case must not bias the selection of another. Clearly, if the occurrence of one type of event intluences the occurrence of another, then this assumption is violated. It is not a common sense view that events happen independently of each other. The occurrence of health events, tor example, may correlate with tinancial events if one frequently leads to the other. Nonetheless this is not a position that is adopted in the literature on the measurement of life stress (see chapters one, two and three). A second type of analysis will therefore be considered.

(2) Analysis by subject.

One way in which the statistical requirements for the analysis of this data could be fulfilled would be the calculation for each subject of a mean score and the subsequent analysis of these subject scores. This approach however, is not probllem free. Total life event scores for subjects, for example, are calculated by adding together total normative weights, total subjective respones or total raters assessments of events. These totals are made up of different numbers of events for different individuals and also from different types of events. The occurrence of one event may commonly co-occur with another event. Therefore the same type of error as exists with event type analysis may exist. Finally, it could be argued that subject

based means may not be independent of each other. It is possible that events happening to one individual may influence events happening to another, and this may occur even when individuals do not know each other. For example, in an epidemic of some illness the occurrence ot disease in one individual may influence the chances ot another individual in the same area getting the disease, or, if one big supplier of heroin is imprisoned this may reduce supplies for all users thereby setting in motion a chain of possible events such as hospitalization for withdrawal symptoms or toxic reaction resulting from cutting of the drug remaining in supply to a greater degree than usual.

Both available methods of data analysis have now been considered and it is obvious that no entirely satisfactory solution to the problem of event anaysis exists under the current conceptualization of life stress. Although problematic, the approach adopted in the present study is the one which is consistent with the existing literature i.e. that life events are independent of the subjects reporting them and independent of each other. analysis by events is the method used throughout the study. Consequently, in the chi-squares presented in chapter seven, types of events are assumed to occur at random. Furthermore, in the analyses presented in chapters nine and ten, the assumption is made that events occuring in a given time period are independent of events occurring at another time. In these chapters (nine and ten) therefore, cases

analysed are periods of time (i.e. interviews) and not individual subjects.

Before the results of the study are presented (chapters seven, eight, nine, ten and twelve), the issues of reliability and validity will be discussed in the next chapter.

CHAPTER SIX

RELIABILITY AND VALIDITY

The purpose of this chapter is, firstly, to outline general issues of reliability and validity, but secondly, and more importantly, to discuss the reliability and validity of measures which are based on self-report. The reason for this is the reliance of the current study on self-report data.

RELIABILITY AND VALIDITY GENERALLY

The degree to which a particular instrument or questionnaire will give the same results on different occasions is a measure of its reliability. The theory of reliability is that any result or score from an instrument is made up of two components. These are : (1) a true score (xt) and (2) an error score (xe). Generally speaking, the larger the error score, the less reliable that instrument will be. (However an instrument can still be reliable and have a large error component if the error is systematic).Reliability can be expressed in a number of ways, the most common being the coefficient of correlation between two sets of scores obtained from the same instrument.

Validity, on the other hand, is the extent to which what is intended to be measured, is actually measured. It is therefore a measure of the truthfulness of answers. In this study the initial concern is with

the truthfulness of subjects' answers about which drugs they use and in what quantities.It is possible to have a highly reliable and consistent method of data collection which does not measure what is intended, for example, if subjects consistently over- or under-estimate consumption. In social science research in particular, a number of biases and problems arise which increase the error component in data, leading to low reliability and reduced validity. It is important to take into account these types of bias when designing a study or constructing interview schedules.

Data was collected in the present study by means of semi-structured interviews. Three types of bias are associated with this method (although there are added difficulties with using either postal questionnaires or behavioural observation). These sources of bias are (1) the interview schedule itself, (2) the interviewer and (3) the subject.

(1) When the interview schedule contains a number of ambiguous items from which the subject has to choose one, both low reliability and poor validity will result. Kerlinger (1975) suggests that in order to minimize this problem, the number of items on a questionnaire should be increased and the questions made as unambiguous as possible. (2) When a high burden of interpretation is placed on the interviewer or when the interviewer is unfamiliar with the basic principles of interview technique, problems can result

with both validity and reliability. However, when interpretation of responses is required by the interviewer, if clear definitions delineating categories are laid down beforehand the impact of this source of bias can be reduced. A further reduction can be achieved by careful training of interviewers.

(3) A third source of bias exists in the subjects themselves. The problem is that subjects have a tendency to give socially desirable responses which do not necessarily reflect their true attitudes or do not relate to their behaviour. It is probably impossible to totally overcome this source of bias or at least impossible to <u>know</u> if it has been overcome. Nonetheless, training of interviewers, along with careful design of questions can go a long way towards this. Cannell and Kahns (1953) suggest the use of open-ended 'funnel' questions in questionnaires to eliminate the problem of obtaining only socially desirable responses. This is actually a set of open-ended questions which gradually narrows the respondents frame of reference and makes it clear that any response, rather than one in a particular direction only, is acceptable. A fictitious example of this type of question could be as follows :

"Everybody feels angry and aggressive at some times and quiet and subdued at other times. Some people report that alcohol makes them feel more aggressive

than usual, whereas other people report that alcohol calms and subdues them. We are interested in finding out how you believe alcohol affects you. The last time you had a drink, what effect did alcohol have on your mood ?"

This fictitious example lets the respondent know that answers are not expected in any one direction and so the bias resulting from social desirability should be reduced, thus at the same time improving validity. Reliability can be improved by what Kerlinger (1975) refers to as the "maxmincon principle", that is, to "maximize the variance of the individual and minimize the error variance"(p454).

In the study presented in the following chapters it was communicated to subjects that answers were not required in a particular direction. No attempt was made to get subjects to give-up or to increase their drug use (see interview procedure, appendix C and the information sheet, appendix D). The purpose of the study was to find out what happened to drug users over time. It was stressed that the study did not involve a treatment aimed at getting participants to give up drug use. Careful training was given to interviewers despite the fact that no interpretation of answers was required from them. They simply recorded exactly what the subjects reported. Interview training was aimed at ensuring familiarity with the interview technique. All data used in the study were obtained from self-report

and neither observational data nor collateral information were used. Nonetheless, special problems of validity do occur with information collected through self-report. Consequently, validity and reliability of self-report techniques of data collection are considered in the remaining part of this chapter.

SELF-REPORT DATA: DRUG CONSUMPTION

Self-report measures of drug consumption have a number of advantages, not least of which is the ease of data collection and the cheapness of the method. Self report measures will therefore continue to be used in research making it important to assess their reliability and validity.

Validity : Armour, Polich and Stambul (1976) point out that because of the difficulty in carrying out both reliability and validity studies on alcohol consumption, "data on individual validity - perhaps the most important issue of all - are virtually non existent" (p179). The reason for the absence of validity data is, according to these authors, that only two methods exist for establishing individual validity of self repoted drug consumption. These are "direct observation of respondents drinking behaviour over some period of time or the use of blood alcohol tests (BAC's) to validate self reports over the past 24 hours" (p184).

Some further ways of validating self report do however exist and were not referered to by the above

authors. These are the use of collateral information or official records (though the opportunity to validate drug consumption reports in the latter way may be extremely rare).

None of the above methods is without criticism. For instance, blood alcohol concentration is affected by a whole range of factors such as sex, weight, length of time since drinking and even differing individual rates of metabolising alcohol. The problem with using collateral information is that collaterals may be unaware of the true extent of consumption. Similarly, official records, although providing information about hospitalizations and imprisonments, may not provide sufficient information to validate self reports of consumption.

Nonetheless, in the absence of the ideal conditions for studying validity, a number of authors have used the above techniques and these will now be reviewed.

It is often assumed when studying socially deviant behaviours, such as criminality or drug use, that interviewees will distort information to give a more favourable impression of themselves.

A recent study by Davies and Baker (1987) shows, however, that distortion when it occurs, is not always in the expected direction. These authors found that report of heroin consumption varied with 'interviewer type'. Two interviewers (one a drug user himself, and one a 'straight' interviewer) were given different

reports of drug consumption by the same subjects. This study therefore unusually provides information on both validity and reliability. Although reports of consumption did not have high validity, because they varied with the interviewer, they did exhibit high reliability due to a systematic bias to report higher consumption to one type of interviewer.

Generally speaking, concern about validity of self-reported alcohol consumption has been with the possibility of under-reporting, although some authors refer to over-reporting. Roizen (1977) and Room (1978) discuss the possibility that criminal offenders over-report their alcohol consumption in order to reduce responsibility for their crime. A brief review of the literature in this area indicates however, that self-report of alcohol consumption is far less distorted than is often assumed. There are few comparable studies of self-reported heroin and tobacco consumption and so this section will concentrate on alcohol studies and will extrapolate conclusions to the heroin and tobacco groups.

Armour, Polich & Stombal (1976) refer to a number of studies which attempted to validate self-report measures of alcohol consumption. Generally speaking, validity was found to be satisfactory. Surprisingly, even a roadside breath-testing survey found a correlation of .61 comparing self-report measures of alcohol consumption to blood/alcohol concentration

(Harris Survey). The reason this result was surprising was because drinking and driving is illegal and it would have been expected that subjects would distort their answers to report even less consumption of alcohol. In fact in this survey a lot of the misclassification was from drivers who reported high consumption but showed low BAC. This result was most likely due to changes in metabolic rates following frequent heavy drinking, rather than to over-reporting of drinking.

Collaterals have been used to assess validity of self-report data in a number of studies. Maisto, Sobell and Sobell (1979) examined reports of drinking six months after hospitalization. Subjects and collaterals were interviewed separately and information collected about days abstinent, days of limited drinking, days drunk, days hospitalized, and days imprisonment. Correlations were satisfactory for all variables and are reproduced in the table below.

	r
Days abstinent	.81
Days limited drinking	.49
Days drunk	.82
Days hospitalized	.97
Days jailed	.46

Table 6.1. Reliability measures of subject report compared to collateral information. Maisto et al (1979).

Sobell & Sobell (1978) examined the variation in reliability and validity of subjects' answers with population type (i.e. outpatients, voluntary or court-referred, and voluntary inpatients). Although collaterals were not used in this study, answers were compared with official records. Three types of record were examined, namely, driving records, police records, and hospital records. All groups were found to have highly valid answers and no effect of population type was found. Nor was a difference found in the validity of alcohol versus non-alcohol related questions, although fewer invalid answers were given to demographic questions.

Holland, Datta, Izadi and Evenson (1979) found that although drinkers reliably reported information about current drinking patterns, low reliability occurred when asked about their main reasons for drinking and about psychological reasons for drinking. The authors concluded that this did not necessarily mean that invalid answers were given but that these variables possibly <u>did</u> change over time. For instance, a drinker in treatment may have re-assessed his/her life and consequently re-assessed their reasons for drinking. This is a theme that will be returned to later on in this thesis. It illustrates here, however, one of the difficulties in assessing the validity of life event type information. This is because subjects' interpretion of events <u>may</u> actually change, both with

the passage of time and as a result of intervening events.

Finally, this section will examine the validity of using the last week's drinking as a means of assessing a typical week's drinking. Chick, Kreitman and Plant (1981) compared self-report of previous week's drinking with gamma-GT levels and MCV (mean corpuscular volume) levels. Elevations on these physiological tests take between 2 and 6 weeks to return to normal once drinking has ceased in heavy drinkers. The authors were interested to find out if drinkers who reported their previous weeks heavy consumption was atypical and higher than normal would have lower Gamma-GT levels than when the heavy drinking was habitual. They also examined the reverse for drinkers who reported their weeks consumption to be less than usual. In both cases they found that Gamma-GT levels corresponded better when previous weeks drinking was considered typical of habitual drinking patterns than when it was considered to be atypical. They concluded that self-report of previous week's drinking is a good indicator of drinking level for the previous few weeks and may be an even more reliable indicator than subjects say it is. Any individual differences existing between previous weeks drinking and habitual drinking can therefore be discounted when interviewing large numbers of subjects.

Reliability: Unless a test-retest method is used, the reliability of self-reported alcohol consumption is best assessed by examining internal consistency of data. Armour, Polich and Stambul (1976) examined internal consistency by comparing scores on a quantity/frequency measure with answers to direct questions about numbers of days drinking in the past month. The reliability of .8 was considered by these authors to be "quite respectable for measures based on recall of fairly complex behaviours" (p182). A study, by Maisto, Sobell, Cooper and Sobell (1982), provides particularly strong evidence for the reliability of self-reported data relating to alcohol consumption. The strength of this study lies in the fact that it was not designed as a study of reliability, but, when it was discovered that two independent groups of researchers had asked similar questions of the same population sample, then reliability statistics were retrospectively calculated. With the exception of a question about years of problem drinking history, reliabilities were high. Alcohol-related questions showed the following reliabilities : (1) number of days abstinent, (2) number of drinking days (.79); (3) number of alcohol-related jail days (.97); (4) number of arrests due to driving under influence (.71); (5) history of seizures (.68), (6) history of hallucinations (.32). Non-alcohol-related questions concerning years of education and usual occupations, had reliabilities of .99 and .91

respectively. The low reliability for questions about 'how many years problem drinking' (i.e. r=.15) was hypothesized to be the result of differences in the wording of the question in the two studies.

Concluding this brief review of the reliability and validity of self-reported drug consumption, it was found that drinkers tend to give reliable and valid answers to questions about their drinking. This lends support to the use of a previous weeks drinking diary as a measure of typical consumption in the study presented in later chapters.

LIFE EVENT DATA :

Validity : Before the reliability of life event questionnaires is examined, some studies which have incidental findings relevant to validity of life event report will be considered. Cooper, Sobell, Sobell and Maisto (1981) studied the validity of reported number of days imprisonment and reported number of days hospitalized in a group of alcohol abusers. Self-report was compared to official records. Overall it was found that validity for both outpatient and inpatient alcohol abusers was high and significant for periods of hospitalization and periods of residential treatment. Periods of imprisonment for inpatients were less valid, though still significant. Significant figures were found for periods covering (1) the last month, (2) the last three months, (3) the last six months, and (4) the previous year. Other studies listed by Sobell and

Sobell (1978) "have found that, most verifiable, self-reported life history data by alcoholics are generally quite valid".

Reliability : Life event questionnaires

The reliability of instruments used in the measurement of life events will now be considered. Paykel (1983) reports inter-rater reliability data for his own 'Interview of Recent Life Events scale' (RLE), and results are impressive. He reports 95% inter-rater agreement about the occurrence of events. The lowest reliability reported was 76% and this was the reliability of raters' agreement about the negative impact of an event. As stated in the introduction to this chapter, when the burden of interpretation is placed upon the interviewer, lower reliability will result.

Holmes and Rahes' (1967) Social Readjustment Rating Scale has been subject to a number of test-retest reliability studies (Paykel 1983). Reliability for total stress score, covering a period of up to one year prior to interview varies from .48 to .78. Paykel (1983) reviews some of these reliability studies and concludes that methods of life event measurement which rely purely on a checklist approach are generally less reliable than more detailed interview methods, such as

that of the RLE or Brown & Harris' (1978) Schedule of Recent Experiences (SRE).

This again lends support to the method of data collection used in the study presented here. As outlined in the last chapter and in the interview procedure (appendix C), a detailed semi-structured interview approach is used where information about the the events is elicited prior to obtaining ratings of the events.

CONCLUSIONS

No entirely satisfactory method of measuring L.E.'s involving complete reliability and validity of answers has yet been developed. Nonetheless, the studies that have been conducted indicate that reliability and validity can be improved in a number of ways. For instance, a large number of questionnaire items, which are as unambiguous as possible and require minimal interpretation by either the subject or interviewer can be included. Furthermore the use of open-ended funnel questions can reduce the subjects' tendency to give socially desirable answers. All of the studies reported in this chapter are about the reliability and validity of alcohol consumption (as opposed to heroin or tobacco consumption).As there is an absence of studies on self-report of heroin or tobacco use, conclusions from the alcohol studies will necessarily be extrapolated to these other substances.

The use of collaterals or official records was not

found by other studies, to differ significantly from self-report and so no added advantage is thought to result from the use of this method. Self-report will therefore be used in the present study and the added expense and difficulty of obtaining either collateral information or checking official records will not be used.

The next chapter examines specifically the internal reliability of life event data in the present study.

CHAPTER SEVEN

THE RECALL OF LIFE EVENTS

One problem with life events research is the extent to which event recall, in particular events remote in time, is reliable. This chapter examines (1) fall-off in event reporting and (2) the extent to which subjects' reports of events reflect the actual occurrence of those events.

A number of studies (e.g. Brown and Harris 1978) have found a fall-off in reporting of events distant in time. Only a few studies however have examined this effect in a systematic way. Despite these, investigators continue to interpret results from life event studies as if they represent accurately the way in which the events occurred. Factors which alter the way in which events are reported are often not taken account of. Authors such as Funch and Marshall (1984) point out that differences found in the life stresses of different groups of people "may be due to reporting differences, rather than to actual differences in experience with events".

Funch and Marshall (1984) examined the types of events most likely to display 'fall-off'. They found that 'severe events' and events which happened specifically to the respondent, were least likely to fall-off. It is therefore possible that a spurious

relationship between life events and behaviour may be reported if the events which are hypothesized to cause the behaviour are the same events which are least likely to fall off. A study by Monck and Dobbs (1985), contradicts Funch and Marshalls' (1984) finding. Although they found that events reported to have occurred over a 12 month period were twice as likely to have been dated within the six months immediately prior to interview than in the six months before that, severity of events did not influence this pattern of reporting. In this study the reports of adolescent girls about events in their lives were compared with reports of those same events (in the girl's lives) by their mothers. Both types of respondent reported more events to have occurred in the six months prior to interview than in the six months before that. Both threatening and non-threatening events were just as likely to be reported in this way, and so the authors concluded that the pattern of reporting was the result of 'telescoping', i.e. reporting events as having occurred more recently in time than had actually been the case, rather than a failure to report events which occurred more distant in time.

Jenkins, Hurst & Rose (1979), tested the reliablity of events reported to have occurred over a six month period. In this study the 6 month period was re-examined 9 months after the first interview and between 54% and 65% of the original events were reported at this second interview.

The conclusion from these studies is that the reporting of life events cannot be taken as an accurate reflection of the way in which events occurred. Reporting will always be subject to interpretation by the reporter. There is probably no way of collecting uncontaminated information about the occurrence of life events and data should not therefore be treated as if it is an objective measure of life event incidence but a measure of subjects' perception of what has happened. The idea that events can occur and influence people's lives independently of their perceptions of these events may not even be a valid research topic as such data may be unobtainable. The study presented here will consider the data as representing what subjects <u>say</u> has happened to them rather than accurate reports of <u>actual</u> experiences. The extent of telescoping (or fall- off) in this type of event reporting will nonetheless be examined in the data.

METHOD

The method used was outlined in chapter five. Each event recorded was dated (to the nearest month) by the subject as occurring during "the last month", "between one and two months ago" or "between two and three months ago". The analyses presented here are concerned only with information on the dating of events and how this interacts with other variables.

The studies already referred to in this chapter reported fading or fall-off rates in the reporting of events distant in time, and referred to time periods of at least one year preceding interview. In the present study only a three month retrospective period was examined at each interview. Funch and Marshall (1984), in a study of reliability of event reporting, assumed that their baseline period of six months (to which they compared the frequency of events which were even more distant in time), would be free from fall-off or bias and would thereby give a reasonably accurate representation of the actual occurrence rate of events. (Although they did admit that fall-off could have occurred within this six months, they believed that it would not have been significant). It was therefore assumed at the outset of the present study that the time period between interviews i.e. three months, would be sufficiently short to overcome the problem of "faulty memory" or "telescoping" which had been reported by other studies. This is stated in the form of a hypothesis :

Hypothesis : (a) There will be no difference in the frequency of events reported in each of the three months prior to an interview, or, (b) if any differences do occur, these will apply only to the substance using groups who may 'telescope' the timing of stressful events in order to account for recent drug

use. In other words these groups may report that events occurred more recently than was actually the case in order to 'make sense' of their current drug use. No such telescoping would be necessary for the control groups.

Results (a) : The figures overleaf (figures 7.1 to 7.6) show the mean number of events reported in each group for each month of the study. Data were collected over an 18 month time period, with interviews being carried out at months 3, 6, 9, 12, 15 and 18. It can be seen clearly that most events were reported to have occurred within the month prior to interview, whereas least were commonly reported to have occurred in the month furthest from interview (although this latter pattern is not as consistent as the former). The pattern exists for all groups and occurs in all six interviews. Statistical analysis for the significance of these differences is not necessary to demonstrate the effect.

(a) Discussion : Part (a) of the hypothesis, i.e. that there would be no difference in the frequency of events reported in each of the months prior to interview, is rejected because frequency varied with the distance from interview. This and the evidence from the studies referred to earlier indicates that it is possible that events will always be reported in this pattern regardless of the time period covered i.e. with the highest number of events reported in the time period nearer the interview. The possibility remains

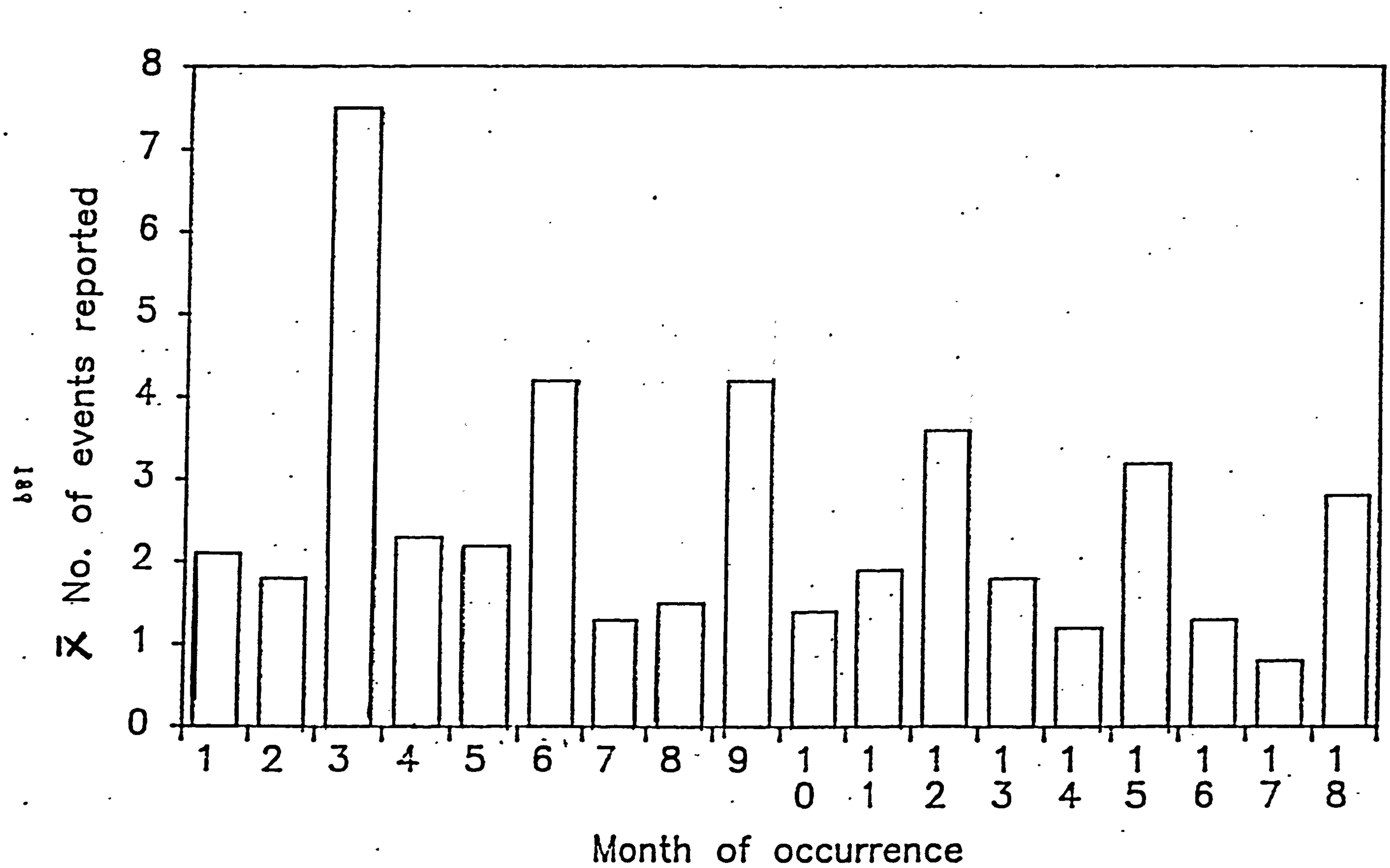


Fig 7.1. Mean number of events reported per month : Heroin group.

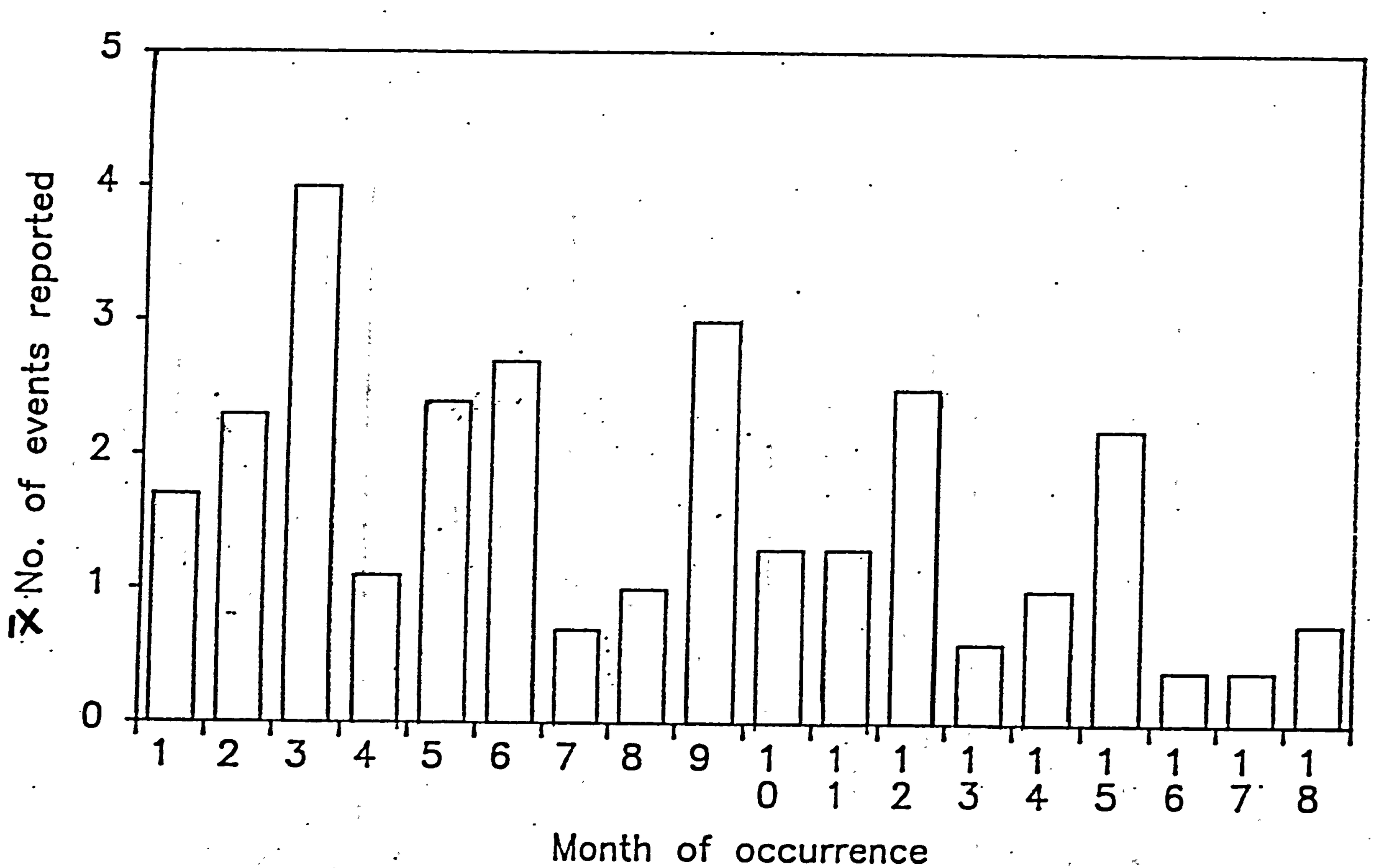


Fig 7.2. Mean number of events reported per month : Alcohol group.

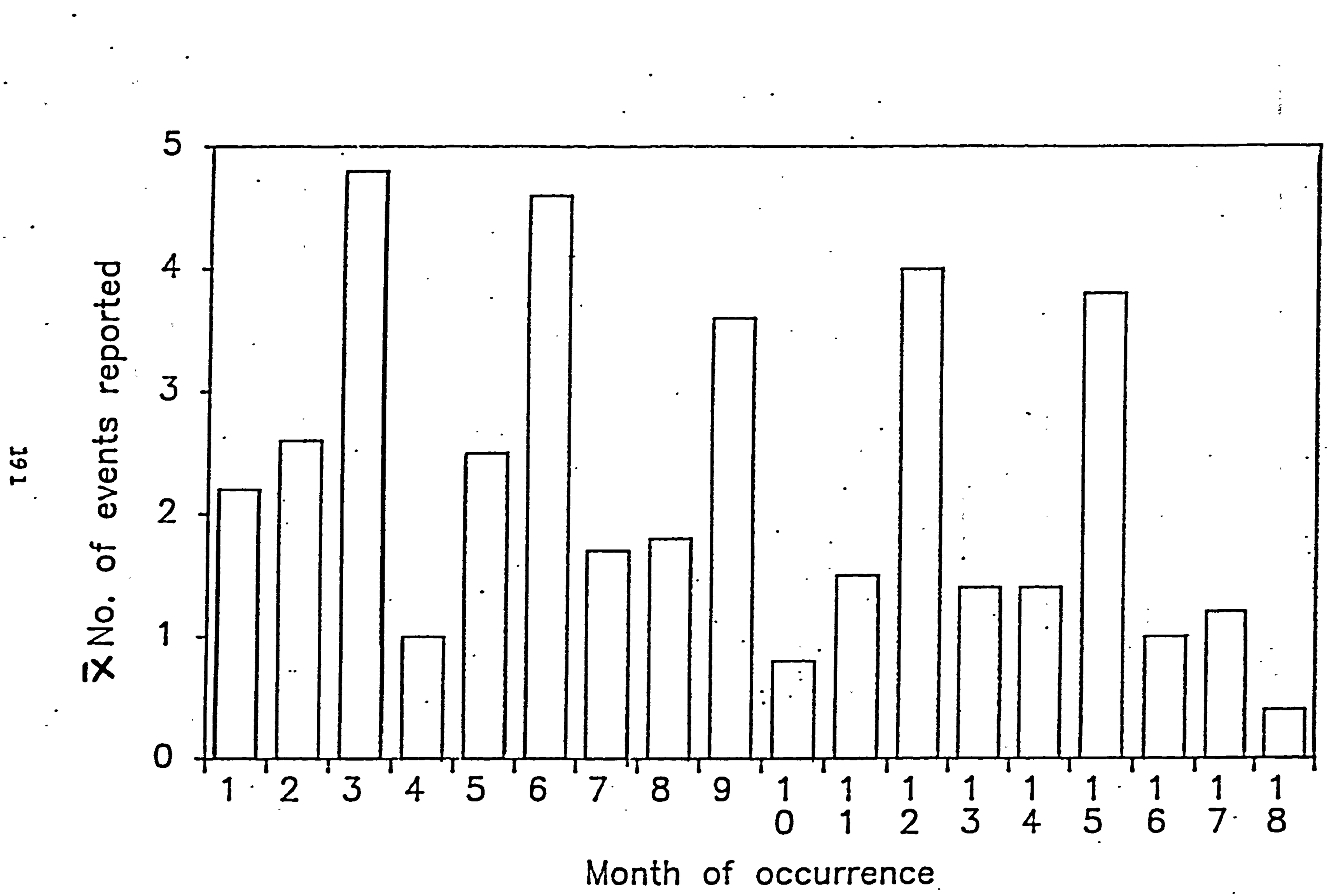


Fig 7.3. Mean number of events reported per month : Tobacco group.

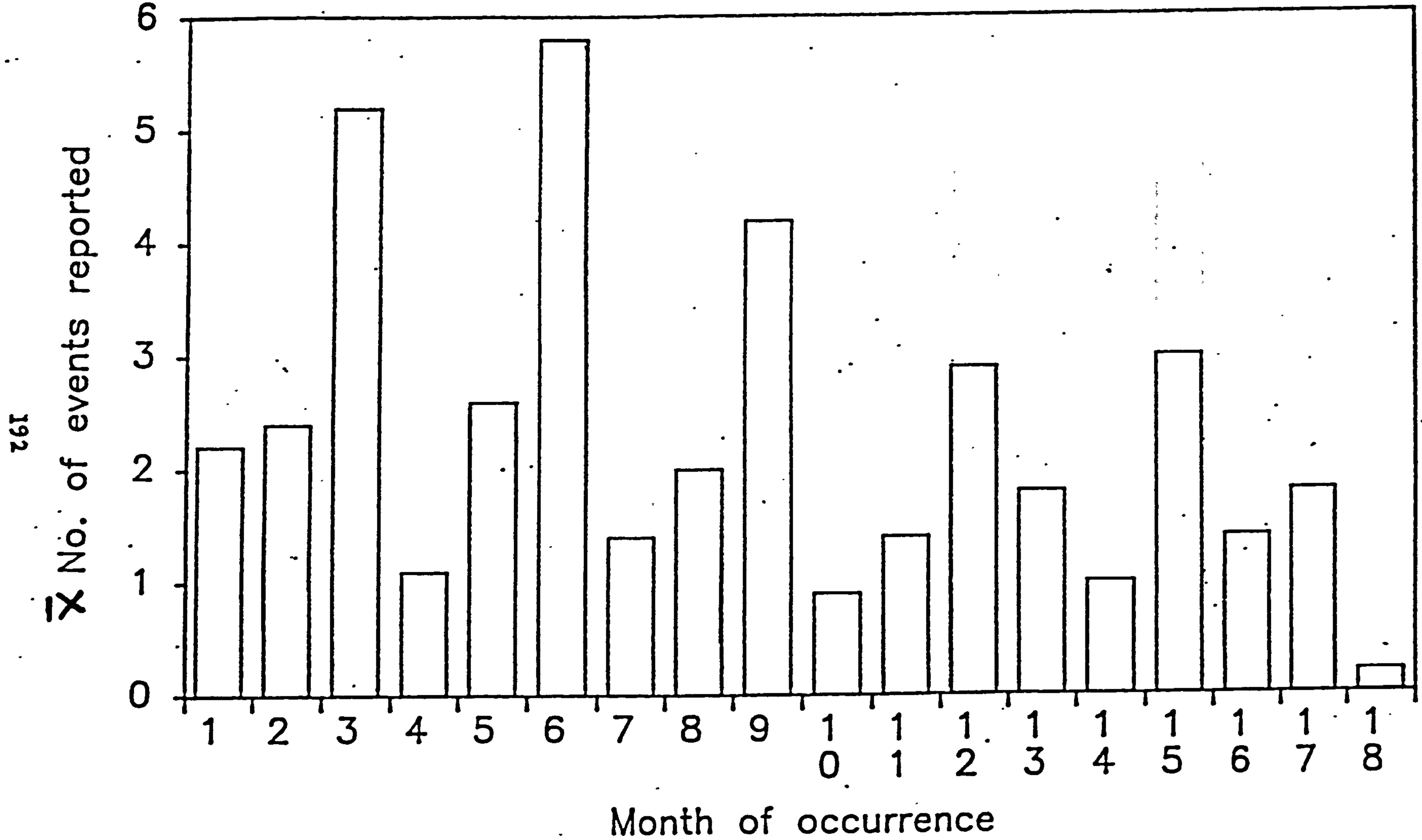


Fig 7.4. Mean number of events reported per month : Heroin Control group.

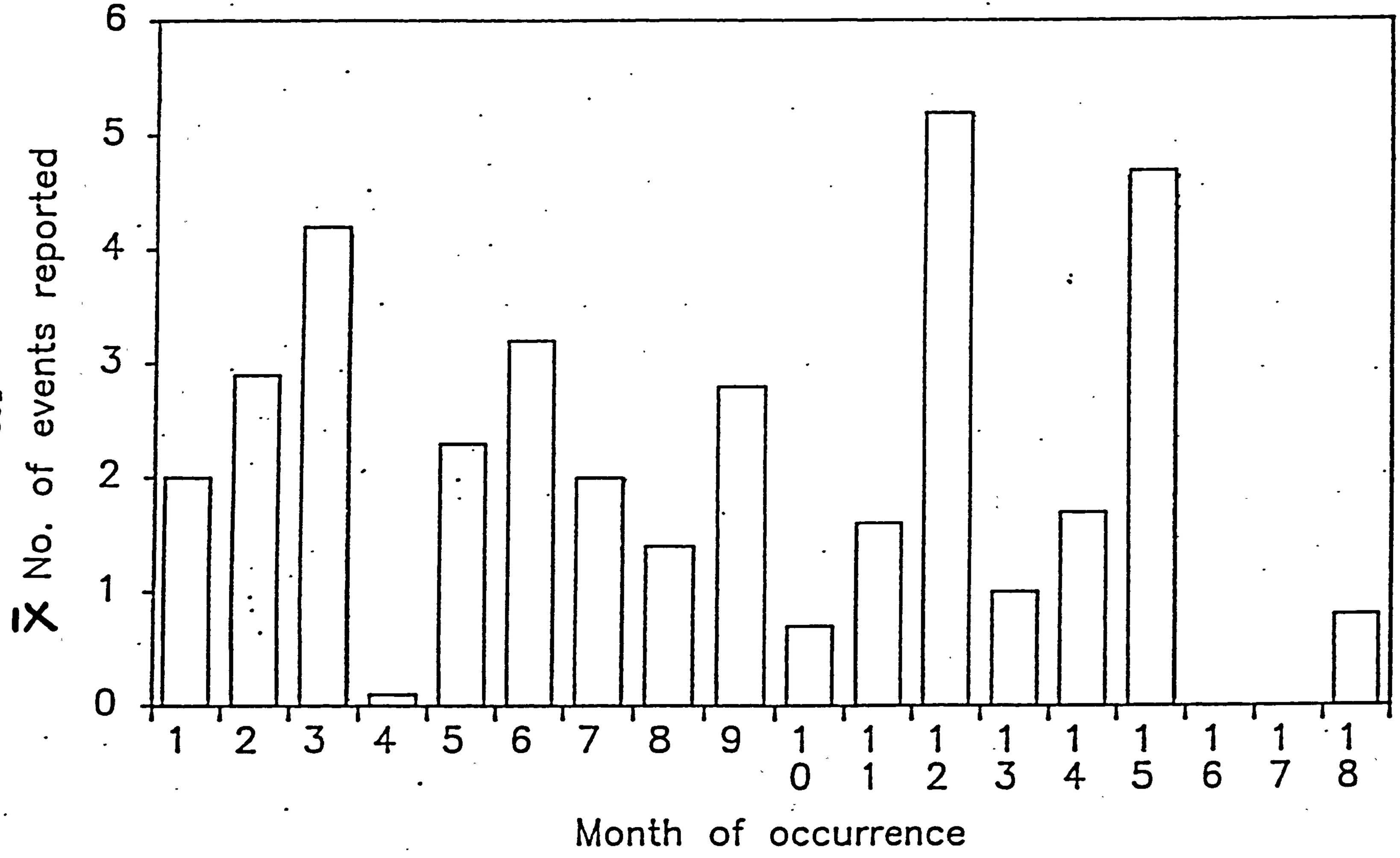


Fig 7.5. Mean number of events reported per month · : Alcohol Control group.

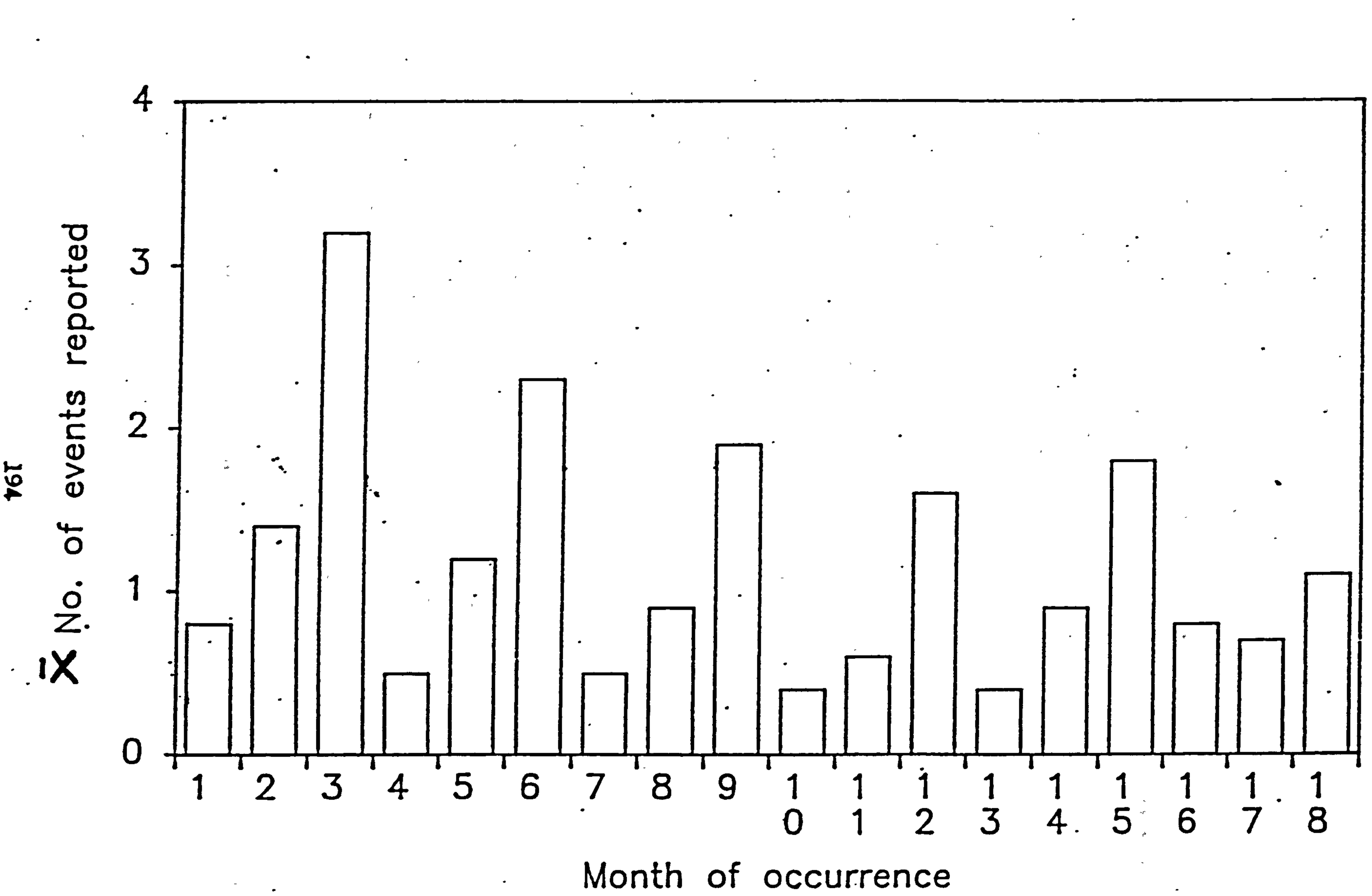


Fig 7.6. Mean number of events reported per month : Tobacco Control group.

however, that data from interviews relating to even shorter time periods may not show this effect.

Results (b) : The second part of the hypothesis was that differences in reporting pattern would apply only to the substance groups. This was because substance-using groups may 'make sense' of their substance use by interpreting it as a response to stressful events but no such 'making sense' would be necessary for the control groups. It can be seen from the graphs (figs 7.1 to 7.7) that both the substance and control groups reported the frequency of events in a similar way.

Discussion (b) : The pattern of event reporting found amongst the substance users can therefore not be attributed in full to 'making sense' of drug consumption as the same pattern was found in the non-drug users.

Although there may be some tendency towards retrospective interpretation of events, the effect, if it exists, is swamped by a general memory effect. A more generalized function relating to information processing must be the explanation.

A number of analyses are possible which might throw further light on the results just presented. The fall-off in event reporting may , for instance, be a factor of (1) the <u>type</u> of event or (2) the <u>subject</u> of the event. A further possibility is that fall-off may

be variously affected by (3) the perceived severity of the events. Each of these possibilities will be considered in turn.

(1) Event classification as a factor influencing recall

Events were classified according to five life areas. These classifications were, health, legal, financial, employment, social or family type events. A small number of events did not fit into these categories and were therefore classified as 'other'. Chi-square analyses were carried out to ascertain whether certain types of events were more likely to be reported more recently than other types. Results of these chi-squares can be seen in tables 7.1 to 7.6. Results were not significant for any of the substance using groups, however the chi-square for each of the control groups were significant. This means that fall-off in event reporting was determined, at least to some extent, by the type of event. There is no clear reason why this should be so and although this result was not predicted, it is possible to speculate about it. One hypothesis, which will be examined in greater detail in the next chapter, is that the nature of events experienced by drug and non-drug users is different. It is therefore possible that the severity or threatening nature of the events differed between the substance and control groups. The drug users may have experienced more stressful events in all life areas and might therefore be less likely to 'forget' or telescope the

	Within the last month	1-2 months ago	2-3 months ago
Health	173	63	55
Legal	71	28	38
Financial	34	14	22
Social	94	40	52
Employment	45	30	20
Other	6	1	2

Chi-square = 15.3 DF = 10

Significance = .11

TABLE 7.1. Event category by month of occurrence. Heroin group.

	Within the last month	1-2 months ago	2-3 months ago	Total
HEALTH	186	84	50	320
LEGAL	56	30	14	100
FINANCIAL	58	34	44	136
SOCIAL	186	92	70	348
EMPLOYMENT	128	54	52	234
OTHER	26	16	10	52

: Heroin controls

X2=22.1 for 10 D.F.

p .02

TABLE 7.2 : EVENT CATEGORY BY MONTH OF OCCURRENCE. CONTROL GROUP HEROIN.

	Within the last month	1-2 months ago	2-3 months ago
Health	135	56	41
Legal	38	30	14
Financial	24	15	11
Social	80	59	42
Employment	42	24	17
Other	2		

Chi-square = 12.7 DF = 10

Significance = .24

TABLE 7.3. Event category by month of occurrence.

Alcohol group.

	Within the last month	1-2 months ago	2-3 months ago	Total
HEALTH	142	54	46	242
LEGAL	32	16	6	54
FINANCIAL	44	36	20	100
SOCIAL	168	78	52	298
EMPLOYMENT	86	60	40	186
OTHER	36	10	6	52

: Alcohol controls
X2=19.9 for 10 D.F.
p .05

TABLE 7.4 : EVENT CATEGORY BY MONTH OF OCCURRENCE. CONTROL GROUP ALCOHOL.

	Within the last month	1-2 months ago	2-3 months ago
Health	116	46	32
Legal	29	14	10
Financial	39	22	7
Social	83	46	28
Employment	61	24	13
Other	5	5	

Chi-square = 10.9 DF = 10

Significance = .36

TABLE 7.5. Event category by month of occurrence.

Tobacco group.

	Within the last month	1-2 months ago	2-3 months ago	Total
HEALTH	328	138	96	562
LEGAL	88	46	20	154
FINANCIAL	102	70	64	236
SOCIAL	354	170	122	646
EMPLOYMENT	214	114	92	420
OTHER	62	26	16	104

: Tobacco controls

X2=25.7 for 10 D.F.

p .005

TABLE 7.6 : EVENT CATEGORY BY MONTH OF OCCURRENCE. CONTROL GROUP TOBACCO.

	Within the last month	1-2 months ago	2-3 months ago	Total
HEALTH	328	138	96	562
LEGAL	88	46	20	154
FINANCIAL	102	70	64	236
SOCIAL	354	170	122	646
EMPLOYMENT	214	114	92	420
OTHER	62	26	16	104

: Tobacco controls

X2=25.7 for 10 D.F.

p .005

TABLE 7.6 : EVENT CATEGORY BY MONTH OF OCCURRENCE. CONTROL GROUP TOBACCO.

timing of events. There may be, for instance, less likelihood of controls experiencing threatening legal or health events. The effect might arise therefore, as a result of the non-occurrence of events in certain categories for the control groups.

(2) Subject of event as a factor influencing event recall

A second possibility was that the substance and non-substance groups differed in the ratio of events in which they were the subject, (i.e 'self' events) to events in which other people were the subject, (i.e. 'others' events). Fading or fall-off could be influenced by 'who' the event occurred to. Chi-square analyses were again carried out to test the hypothesis, which stated specifically was as follows : Events occurring to 'self' would be less likely to fade than events about others. The 'self' events would therefore be more likely to be reported with similar frequency in each of the three months prior to interview than would be the case for the 'others' events.

Each group was examined individually and results of the chi-squares are shown in tables 7.7 to 7.12. (For purposes of clarity, all events reported about significant others had been collapsed into one group so that comparisons could be made between fall-off in reporting of 'self' events and fall-off of 'other' events).

	Within the last month	1-2 months ago	2-3 months ago	Total
SELF	247	95	137	479
	(257)	(107)	(114)	
OTHERS	176	81	51	308
	(165)	(69)	(73)	

x2=15.9 for 2D.F.
p .001

TABLE 7.7 : HEROIN GROUP. SUBJECT OF EVENT BY MONTH OF OCCURRENCE.

	Within the last month	1-2 months ago	2-3 months ago	Total
SELF	256	150	122	528
	(284)	(137)	(106)	
OTHERS	384	160	118	662
	(356)	(172)	(133)	

x2=11.04 for 2D.F.
p .005

TABLE 7.8 : HEROIN CONTROLS GROUP. SUBJECT OF EVENT BY MONTH OF OCCURRENCE.

	Within the last month	1-2 months ago	2-3 months ago	Total
SELF	170	79	77	326
	(166)	(95)	(64)	
OTHERS	151	105	47	303
	(154)	(88)	(59)	

x2=11.23 for 2D.F.
p .005

TABLE 7.9 : ALCOHOL GROUP. SUBJECT OF EVENT BY MONTH OF OCCURRENCE.

	Within the last month	1-2 months ago	2-3 months ago	Total
SELF	204	104	62	370
	(198)	(105)	(66)	
OTHERS	304	166	108	578
	(309)	(164)	(103)	

x2=.77 for 2D.F.
p .68 (n.s.)

TABLE 7.10 : ALCOHOL CONTROLS GROUP. SUBJECT OF EVENT BY MONTH OF OCCURRENCE.

	Within the last month	1-2 months ago	2-3 months ago	Total
SELF	137	66	31	234
	(135)	(63)	(36)	
OTHERS	196	90	59	345
	(198)	(93)	(53)	

x2=1.64 for 2D.F.
p .55 (n.s.)

TABLE 7.11 : TOBACCO GROUP. SUBJECT OF EVENT BY MONTH OF OCCURRENCE.

	Within the last month	1-2 months ago	2-3 months ago	Total
SELF	230	127	92	444
	(243)	(119)	(87)	
OTHERS	344	155	113	612
	(331)	(162)	(118)	

x2=2.59 for 2D.F.
p .27 (n.s.)

TABLE 7.12 : TOBACCO CONTROLS GROUP. SUBJECT OF EVENT BY MONTH OF OCCURRENCE.

Both the alcohol and heroin groups showed significant interaction between 'who' an event occurred to and how recently that event was reported as occurring. This was not true for the tobacco group or the control groups for tobacco and alcohol. However, the control group for the heroin users did show a significant interaction between who the event occurred to and the reported timing of that event. Table 7.13 overleaf shows the frequencies in tables 7.7 to 7.12 converted to row percentages. Thus, row 1, column 1, shows that 52% of 'self' events experienced by the heroin users, were reported to have occurred within one month of the interviews. This table (7.13) shows clearly that for interactions between self and recency of reporting which were significant (in tables 7.7 to 7.12), there is far less fall-off of 'self' events than there is of 'others' events. A minimum of 23% of 'self' events were reported by the heroin, alcohol and heroin control groups to have occurred in the three months before interview. For those interactions which were not significant (the tobacco, alcohol control and tobacco control groups) the highest percentage of events about self reported to have occurred three months before interview, was 20%.

Returning now to the hypothesis, it seems that the subject of an event is not always important in determining fall-off in reporting. When it does have an effect, differences are due to <u>less</u> fall-off in

GROUP	SUBJECT OF EVENT	MONTH OF OCCURRENCE		
		Within 1 month prior to interview	Between 1 + 2 months before interview	Between 2 + 3 months before interview
HEROIN *	SELF	52	20	29
	OTHERS	57	26	16
ALCOHOL *	SELF	52	24	23
	OTHERS	49	34	15
TOBACCO	SELF	58	28	13
	OTHERS	56	26	17
CONTROL * (HEROIN)	SELF	48	28	23
	OTHERS	58	24	17
CONTROL (ALCOHOL)	SELF	55	28	16
	OTHERS	53	28	18
CONTROL (TOBACCO)	SELF	52	28	20
	OTHERS	56	25	18

TABLE 7.13 : PERCENTAGES OF EVENTS BY MONTH OF OCCURRENCE

* Groups for which chi-squares in Tables 7.7 - 7.12 were significant

reporting events about self. The reasons why some groups should show this pattern of reporting and not others is examined in the next chapter. The third possibility to explain differential rates of fall-off in event reporting is that this may be affected by the severity of the event.

(3) Severity of events as a factor influencing event recall Two alternative hypothesis are now considered in this investigation into life event reports. The first is that the most severe events may be less likely to fall-off than other events as was reported by Funch & Marshall (1984). If fall-off is due to faulty memory, then it would seem likely that individuals would be less likely to forget more severe events. The second possibility is that if fading is due to 'telescoping' rather than faulty memory, then the most severe events would be reported with greater frequency in the month prior to interview compared with other events. Overleaf figures 7.7 to 7.12 show the pattern of fall-off for the most severe events when compared to all remaining events. Chi-square analyses were carried out on the data from these figures and results are shown in the tables following i.e. tables 7.14 to 7.19.

With the exception of the alcohol group, there was no difference between the fall-off pattern of the most severe when compared to other events reported. Neither of the two alternative hypotheses were strongly supported, with the exception of the data from the alcohol

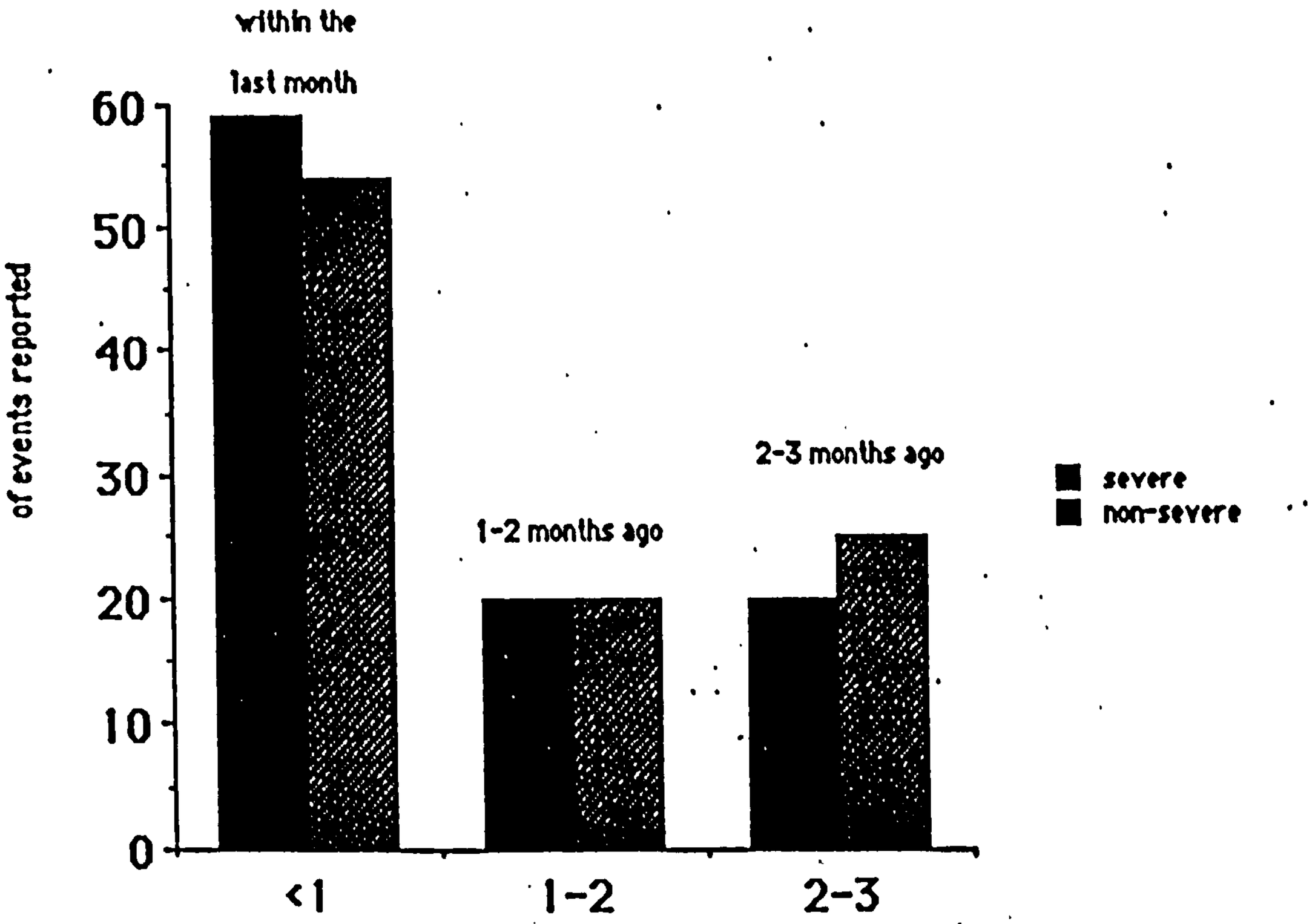


Fig. 7.7 Severity of event by month of occurrence heroin group

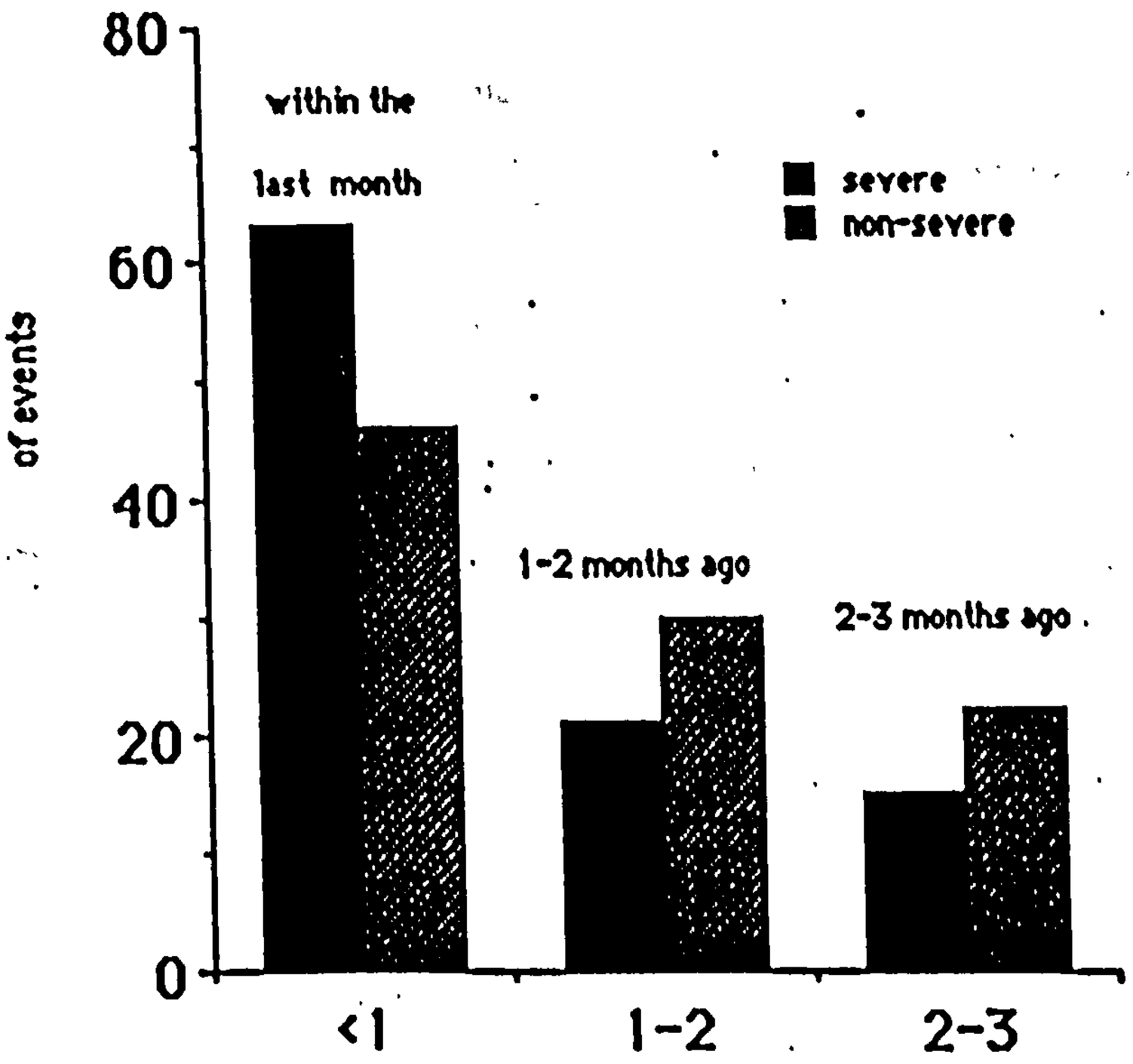


Fig 7.8 Severity of event by month of occurrence. Control group (heroin)

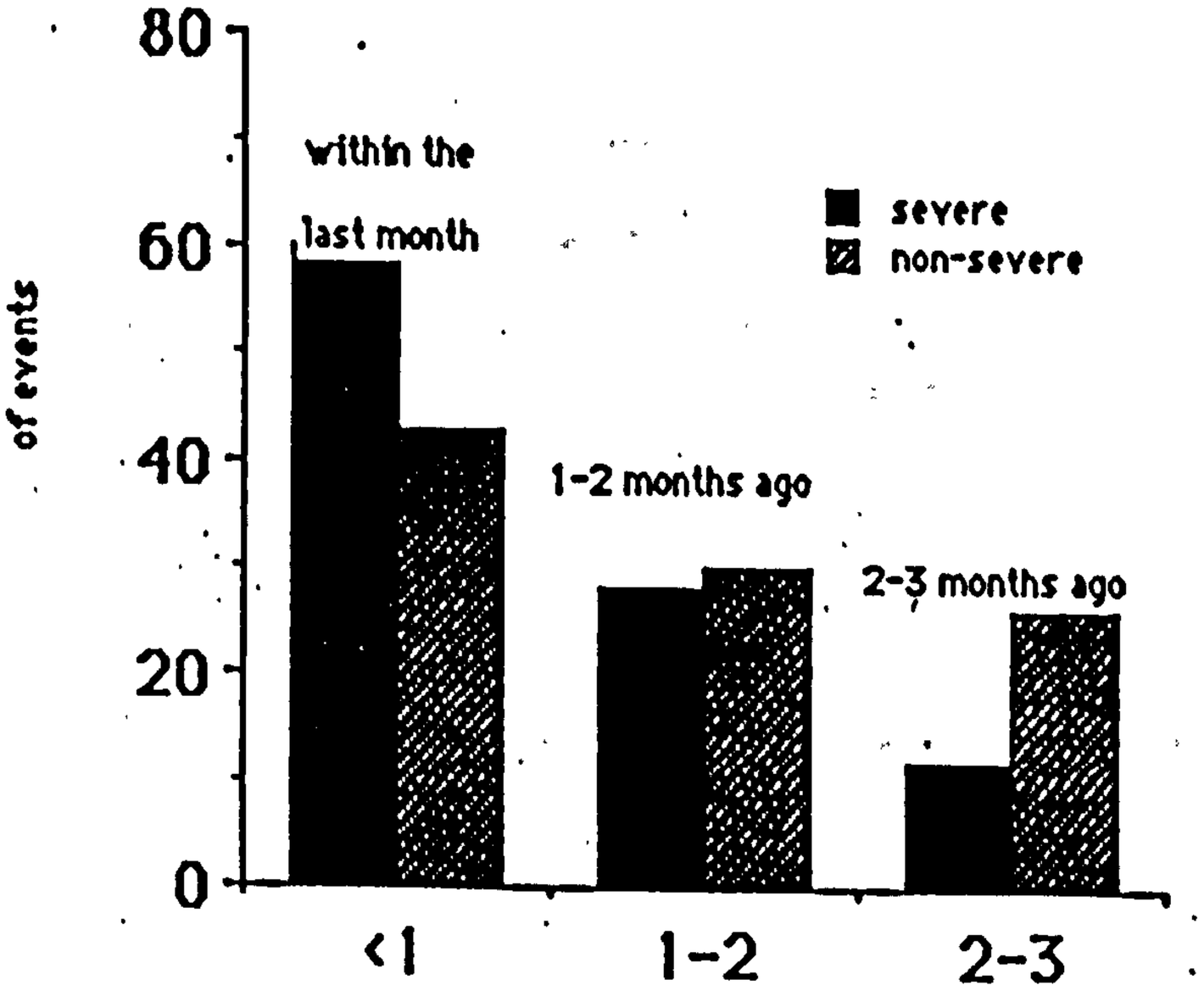


Fig 7.9. Severity of event by month of occurrence. Alcohol group.

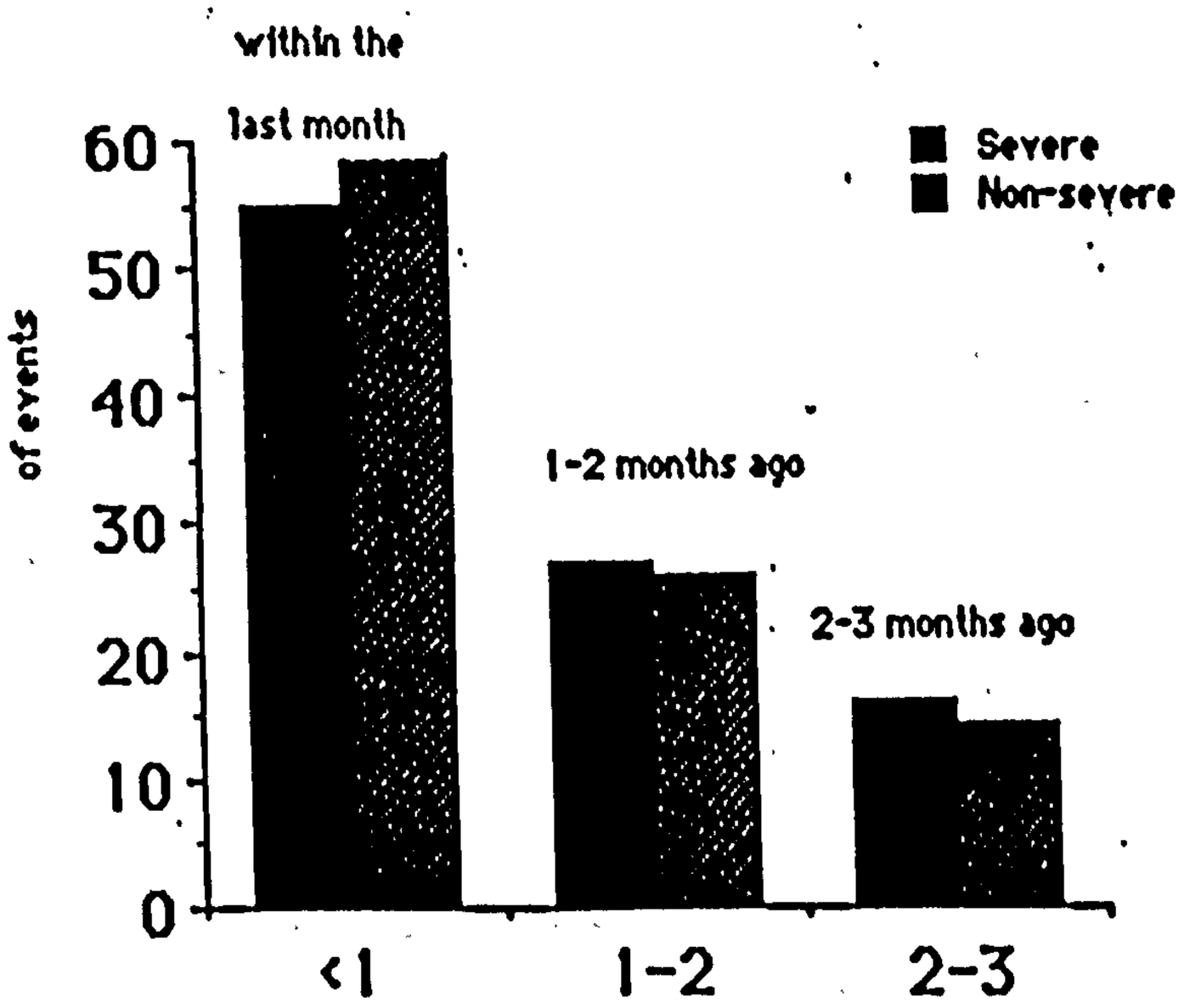


Fig. 7.10. Severity of event by month of occurrence. Control group (Alcohol).

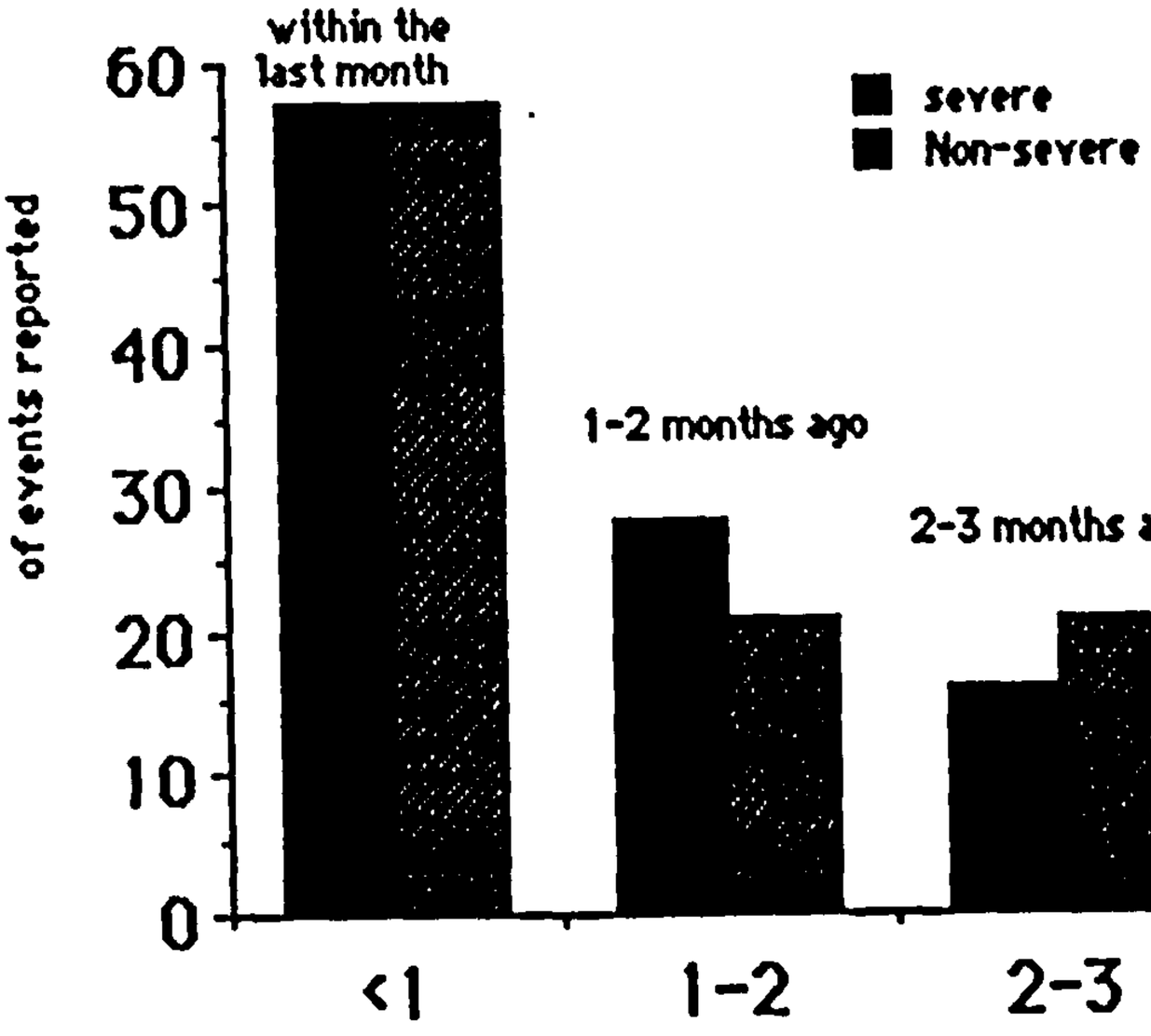
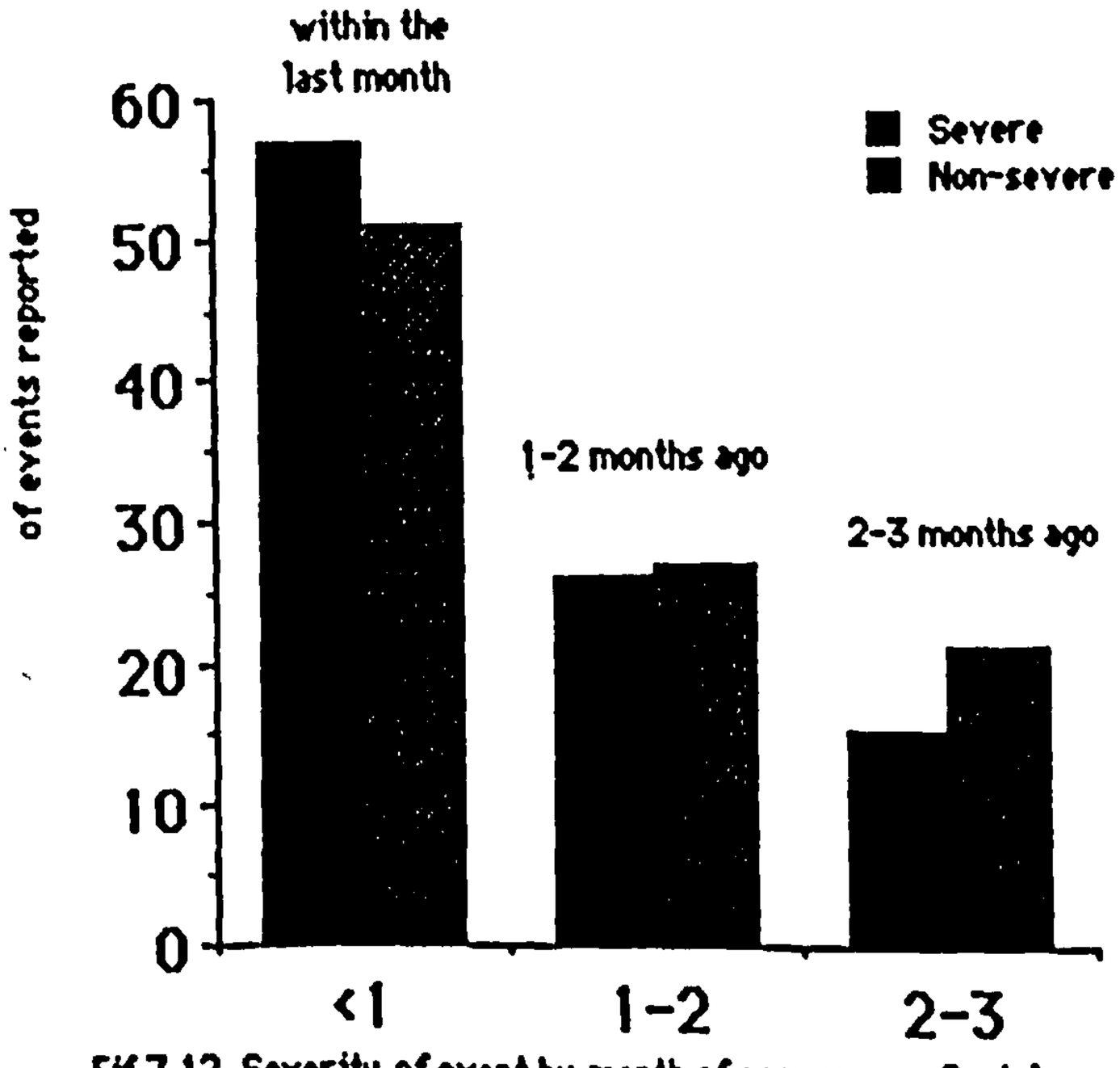


Fig. 7.11 Severity of event by month of occurrence. Tobacco group



Fif 7.12. Severity of event by month of occurrence. Contol group (Tobacco).

TYPE OF EVENT	MONTH OF OCCURRENCE		
	Within the last month	1-2 months ago	2-3 months ago
Severe	169	57	57
Other	300	124	126

Chi-square = 2.04 p = .36ns

TABLE 7.14 : HEROIN GROUP. SEVERITY OF EVENT BY MONTH OF OCCURRENCE

TYPE OF EVENT	MONTH OF OCCURRENCE		
	Within the last month	1-2 months ago	2-3 months ago
Severe	187	66	50
Other	640	310	240

Chi-square = 6.1 p < .05

TABLE 7.15 : CONTROL (HEROIN) GROUPS. SEVERITY OF EVENT BY MONTH OF OCCURRENCE.

TYPE OF EVENT	MONTH OF OCCURRENCE		
	Within the last month	1-2 months ago	2-3 months ago
Severe	172	85	37
Other	321	184	124

Chi-square = 7.9 p < .05

TABLE 7.16 : ALCOHOL GROUP. SEVERITY OF EVENT BY MONTH OF OCCURRENCE.

TYPE OF EVENT	MONTH OF OCCURRENCE		
	Within the last month	1-2 months ago	2-3 months ago
Severe	138	72	37
Other	508	254	170

Chi-square = 1.5 p = .52 ns

TABLE 7.17 : CONTROL GROUP (ALCOHOL). SEVERITY OF EVENT BY MONTH OF OCCURRENCE.

TYPE OF EVENT	MONTH OF OCCURRENCE		
	Within the last month	1-2 months ago	2-3 months ago
Severe	188	86	54
Other	338	158	90

Chi-square = .2 p = .9 ns

TABLE 7.18 : TOBACCO GROUP. SEVERITY OF EVENT BY MONTH OF OCCURRENCE.

TYPE OF EVENT	MONTH OF OCCURRENCE		
	Within the last month	1-2 months ago	2-3 months ago
Severe	326	158	87
Other	1148	564	410

Chi-square = 5 p = .08 ns

TABLE 7.19 : CONTROL GROUP (TOBACCO). SEVERITY OF EVENT BY MONTH OF OCCURRENCE.

group, who were more likely to report the most severe events as occurring more recently.

SUMMARY OF RESULTS

The results presented above are summarized below :

(1) Fall-off in the reporting of events is not determined by the length of time over which events are recalled. The phenomenon of 'fall-off' or 'telescoping' has been demonstrated to occur when interviews are concerned with long time periods such as the past one or five years, or with short time periods such as the past three months.

(2) Fall-off in event reporting did not selectively affect substance and control groups.

(3) Whereas the type of event reported affected fall-off in in the control groups, this was not the case for the drug using groups.

(4) The subject of an event (i.e. 'self' or 'other') did not affect all groups in a similar way. Whereas each of the heroin, alcohol and heroin control groups did not show a reduction in reporting of distant 'self' events, (i.e. those which were reported as occurring furthest away from the interview), this was not the case for the remaining groups. The heroin, alcohol and heroin control groups tended to report events as occurring with more even distribution over time than was the case for the other groups.

(5) Finally, the severity of events (i.e. in terms of the life areas affected) did not influence the rate of fall-off for any group except the alcohol group.

DISCUSSION

Two alternative explanations for these findings will be discussed. These are (1) that differences in the frequency of reported events for different time periods is the result of faulty memory about events more distant in time and (2) that these differences are the result of telescoping (i.e. reporting events as occurring more recently than had actually been the case). Given the short time period over which subjects were expected to recall events in the present study (i.e 12 to 13 weeks), faulty memory is not a credible explanation. Furthermore, given the fact that the most severe events showed a similar pattern of reporting to all remaining events and that this was consistent with the results of Monck and Dobbs (1983), 'telescoping' is more likely to be the appropriate explanation for the pattern of reporting.

The main conclusion, however, from these findings is that reporting of life events cannot be taken as an accurate representation of the way in which events have been experienced. This in itself is not a new conclusion and many researchers have attempted to overcome this type of difficulty in life event

research. The point is made by Funch et al (1984), that new measurement techniques often become accepted and utilized in research before the reliability and validity of those techniques had been adequately assessed. Comments such as these, along with the type of result just reported, have led to a number of investigators devising elaborate methods of data collection to improve the validity of their life event measures. The use of independent raters to assess the impact of events is one such recent development. The assumption is that the 'true' relationship between life events and behaviour can only be assessed by using 'interpretation-free' life event data. But what is meant by 'true relationship'? In this context 'true' refers to the relationship which gives the best prediction about future behaviour. The flaw in this is that any influence events might have on behaviour is likely to be related to the interpretation given to those events by the individual experiencing them. Despite this, the method known as 'contextual rating' has been devised specifically to try and produce 'interpretation-free' data. This method, already described in chapter two, substitutes the rater's assessment of the subjects life events taking into account the context in which the event occurred, for the subjects interpretation of their own life event. This method leads however to something akin to the philosophers old puzzle, i.e. does a tree falling in a

forest make a noise if no-one is there to hear it? In other words, can a stressful event affect voluntary behaviour if the subject is not aware of the event. Is it possible to obtain 'interpretation-free' events? In principle it might not be. Events can only be reported and perhaps can only occur, insofar as they are experienced by the individual. Experience implies interpretation. Therefore, it is argued, that to attempt to deal with events in the absence of the individual's interpretation of those events is meaningless.

Given the implied importance of the individual's interpretation of his/her own life experiences and the importance of that interpretation in determining behaviour change, this study justifies collecting that information in a more direct way, i.e. from the subjects themselves.

In conclusion then, although events are not apparently reported in the way in which they actually occur, life event research does not ultimately have to be abandoned because of this difficulty in obtaining 'valid' information on the subject matter of the research. Nor does it mean that more complicated methods of data collection involving observation, collateral assessment and independent rating have to be devised. As has alredy been argued in chapter two, the subjective impact of events is more important in influencing behaviour than is the objective impact. It

is therefore not necessary to know exactly when events took place, so long as it is known that they occurred within a given time period and before the occurrence of the dependent variable. In the present study it seems safe to assume that events reported had at least taken place since the last interview i.e. within three months (with the possible exception of the events reported at the first interview). Consequently, although it is acknowledged that within this three month period, the reporting of events does not accurately reflect the time at which they took place, it is still valid to use this data to examine the impact of life events on drug consumption which occurred after the events. In the following chapters therefore, this comparison will be made.

CHAPTER EIGHT

CONSUMPTION OF HEROIN, ALCOHOL AND TOBACCO

The purpose of this chapter is to provide basic information about the levels and patterns of drug consumption of subjects in this study. All subjects described in chapter five were interviewed at 3 month intervals. At each interview and for every subject in the study, consumption of heroin, alcohol, tobacco and other psychotropic drugs (including both prescribed and non-prescribed drugs) was recorded for the previous week. A detailed description of the methodology involved was given in chapter five. However, for each subject there was a measure of the 'target' substance, (i.e. use of the substance for which they were recruited to the study) and also measures of consumption of all other drugs.

LEVELS OF CONSUMPTION (TARGET SUBSTANCES)

The mean consumption of target substances is shown for each interview overleaf in Table 8.1. Heroin consumption is shown in units of heroin, (the derivation of which has already been explained in chapter five), alcohol consumption is shown in standard units of alcohol and cigarette consumption as the number of cigarettes smoked. Two sets of figures are shown. These are (1) the average consumption of the target drug by the whole group and (2) average

		INTERVIEW					
		1	2	3	4	5	6
HEROIN	*1 Group Mean	21	17	27	12	6	24
	*2 Actual Consumption Mean	36	29	28	28	15	43
ALCOHOL	Group Mean	88	82	63	81	57	92
	Actual Consumption Mean	138	111	126	104	78	92
TOBACCO	Group Mean	146	132	133	144	145	140
	Actual Consumption Mean	146	140	139	144	145	140

*1 refers to mean consumption of all subjects in group
*2 refers to mean consumption of subjects actually using at time of interview i.e. abstinent interview not included

TABLE 8.1 : MEAN CONSUMPTION OF TARGET SUBSTANCE
(in units per drug)

consumption of those subjects who were actually using in the week prior to interview i.e. subjects who were 'off' for this week are not included in this second figure.

Heroin group Mean consumption of heroin (shown in table 8.1) ranged from 15 to 43 units per week, or 5 to 27 units per week depending on whether abstinent subjects were included. The maximum consumption for any subject in the week prior to any one interview was 122 units of heroin. This represents just over 5 grammes of heroin per week, an average of less than 1 gramme per day. Although many users reported that in the past they had taken a lot more heroin than this, had habits of using one or two grammes per day, in the course of this study no subject took this quantity every day for a week. Subjects who occasionaly used larger quantities did so for only a few days at a time and then reduced consumption. Reports have sometimes appeared in the media stating that drug users consume much larger quantities of heroin than was found to be the case in this study. It is likely that these reports are either (1) exaggerated, (2)focus on a small number of exceptional individuals, (3) focus on limited or exceptional short periods of heavy use, or (4) a combination of these.

Alcohol group (TABLE 8.1) Mean consumption of alcohol by the alcohol group ranged from 57 to 92 units per

week, or 78 units to 138 units when those who were alcohol free were not included. The maximum consumed in the week prior to any one interview and by any one individual was 714 units. This represents consumption of the equivalent of 3 bottles of whisky per/day.

Tobacco group : (TABLE 8.1) Mean cigarette use in the tobacco group ranged from 146 cigarettes per week to 132 per week, showing less variation than either heroin or alcohol consumption. As there were only three interviews for which a subject reported not smoking during the previous week, their inclusion did not alter the reported means significantly. The average consumption of cigarettes was about 20 per day. The smoker with highest consumption had 420 cigarettes in a week i.e. 60 cigarettes per day.

PERIODS OF ABSTINENCE

Both the heroin and alcohol groups had frequent periods of abstinence throughout the study, but this was not true for the tobacco users. Periods of abstinence were defined as total abstinence from the target substance for one week prior to interview. Tables 8.2 (overleaf) shows the percentage of subjects in each group who were interviewed and were drug free at each of the six interviews. Amongst the heroin users, this figure ranged from 10% to 42%. The highest percentage abstinent for this group occurred at interview one,

	HEROIN GROUP	ALCOHOL GROUP	TOBACCO GROUP
Number of subjects	26	33	2
Percentage of Total Group	84%	69%	5%

TABLE 8.2 : NUMBER AND PERCENTAGE OF SUBJECTS WHO ATTENDED FOR AT LEAST ONE DRUG-FREE INTERVIEW

with little variation between interviews two and five. This is likely to be because many subjects were recruited to the study from clinics or hospitals. Attendance at these centres is likely to coincide with periods of abstinence.

Amongst the alcohol group the percentage not drinking at any interview ranged from 15% to 36%. The highest percentage occurs for interviews one and three. The smoking group differ from the other two groups in that it was extremenly rare for the smokers to be "off" tobacco. However, Table 8.2 also shows the corresponding figures for the tobacco group. In four out of six sets of interviews, no smokers were off tobacco. At the remaining two interviews one subject was 'off' at one interview and two subjects at the other. This means that the percentage drug-free in this group ranged from 3% to 5%.

Table 8.3 (overleaf) shows the total number of interviews carried out with each substance group. Table 8.3i gives the corresponding figure for the control groups. Table 8.3 also gives the percentage of interviews carried out with the substance groups at which they were abstinent and this figure is further broken down in Table 8.3ii (overleaf). Subjects with at least one abstinent interview were shown as a percentage of the total group in table 8.2. Figures for individual groups are discussed below.

	HEROIN GROUP	ALCOHOL GROUP	TOBACCO GROUP
Total Number of Interviews	97	131	161
Drug-free interviews as a percentage of total number of interviews	51%	31%	2%

TABLE 8.3 : NUMBER OF INTERVIEWS AND DRUG-FREE PERCENTAGE

CONTROL GROUP HEROIN	CONTROL GROUP ALCOHOL	CONTROL GROUP TOBACCO
131	106	237

TABLE 8.31 : NUMBER OF INTERVIEWS CARRIED OUT ON CONTROL GROUPS

INTERVIEW						
GROUP	1	2	3	4	5	6
HEROIN	42%	29%	36%	23%	26%	10%
ALCOHOL	36%	21%	36%	15%	15%	
TOBACCO	0	5%	3%	0	0	

TABLE 8.3ii : PERCENTAGE OF DRUG-FREE SUBJECTS AT EACH INTERVIEW

Heroin group :(Table 8.3.) A total of 97 interviews were conducted on the heroin group. 51 of these (or 53%), were conducted at times of zero consumption. These 51 interviews were shared between 26 of the 31 subjects in the heroin group. This means that 84% of this group were abstinent on at least one occas. during the study.

Alcohol group : (Table 8.3) 131 interviews were conducted with the 33 subjects in the alcohol group. These subjects were found to be abstinent on 40 of these occasions or for 30% of the interviews. 23 of the 33 subjects in this group, or 69%, were off alcohol for at least one interview.

Tobacco group : This group was found to differ from both the alcohol and heroin groups. Amongst the smokers only two people achieved abstinence from the total group of 39 individuals. This represents 5% of the total group. These two individuals between them, were abstinent for three interviews (i.e. 2% of 161 interviews conducted with the tobacco group).

Conclusion: Subjects often reported that they had been abstinent and relapsed between interviews. No measures of consumption were possible, however, for these periods. The week prior to interview was taken as a

guide to consumption for the three month period between interviews. The data used in the analyses, therefore, fails to take into account these occasional relapses. The method used is, however, justified on the basis of studies referred to in chapter six, which show that a one-week retrospective diary can be taken as a reliable indicator of current drinking level. If this assumption is valid , it can be said that the heroin users were drug free at least half the duration of the study period, the drinkers were 'off' alcohol almost a third of the time and the smokers were only 'off' tobacco one fiftieth of the time.

RATES OF FOLLOW-UP AND RELAPSE

Follow-up: The difference in the number of interviews carried out with each group is a function of the difference in (a) the number of subjects per group and (b) the follow up rate for each group. It was more common, for instance, to lose heroin subjects for one or two interviews in the middle of the study, than was the case for the alcohol or tobacco subjects. Follow-up rates for each group are shown overleaf in table 8.4. Differences in rates of abstinence between groups (shown in table 8.3), could possibly be explained by differences in follow up rates. Although if every missed interviews in the heroin and alcohol group had been at a time of heavy drug use, the relative differences in rates of abstinence between the groups

GROUP	INTERVIEW NUMBER					
	1	2	3	4	5	6
HEROIN	31	21	18	11	11	12
ALCOHOL	33	27	25	20	18	8
TOBACCO	39	35	26	25	20	11
CONTROL H	36	35	30	29	22	4
CONTROL A	27	25	24	23	20	4
CONTROL T	63	60	54	52	42	8

TABLE 8.4 FOLLOW UP RATES : (Number of interviews administered ...) at each interview wave)

would still have been maintained. Follow-up rates of 100% would only exaggerate the differences between the groups and not reduce it. The heroin and alcohol groups would still have a far higher percentage of periods of abstinence than the smokers. It is concluded therefore that differences in follow-up rates could not account for the differences in abstinence rates between the groups.

Relapse: Relapse was defined in this study as a return to drug use at one interview, following a previous abstinent interview. Rates of relapse were calculated for each substance group. As no measure of consumption between interviews was available, brief relapses between interviews followed by a return to abstinence by the time of next interview could not be taken into account. It is known for instance, that this did happen with two of the heroin addicts each of whom had a 'slip' between interviews). Relapse data for the individual groups are considered seperately below.

Heroin group : (Fig 8.1) Twenty-six of the 31 heroin users had at least one interview at which they had been drug free for the entire previous week. For 7 of these 26 subjects, no follow up information was available after this abstinent interview. This was for one of two reasons. (1) The interview at which they first became abstinent was the last of their six interviews in the study and no follow up interview was planned.

This was the case for three of the seven subjects. (2) The second reason for lack of follow-up was when contact was lost after the abstinent interview. This was true for four of the 7 subjects. Nothing further is known of these four subjects. Three of these four subjects had been seen only once and were recruited for this first interview when they were 'off' heroin and in hospital. Information concerning the remaining 19 subjects, who had both a period of abstinence and a follow up interview is shown in fig. 8.1. overleaf. Of these 19 subjects, 8 relapsed into heavy use and a further 2 relapsed; using less than 5 units of heroin per week. This means that 52% of subjects who became abstinent, also relapsed within the course of the study. A surprisingly high number of subjects (9 i.e. 48%) continued drug free for the remainder of the study period, although it is assumed that at least some of these would relapse given a longer follow up period. Furthermore, as already mentioned, 2 of these 9 subjects reported relapsing between interviews but were 'off' again by the subsequent interview.

Of these 9 subjects, 4 had at least one interview after their abstinent interview and so were abstinent for at least 3 months by the time the data collection ended. One other subject had 2 further interviews and was therefore abstinent for at least 6 months at the end of the data collection. The remaining 4 subjects had 3 interviews after their first abstinent interview

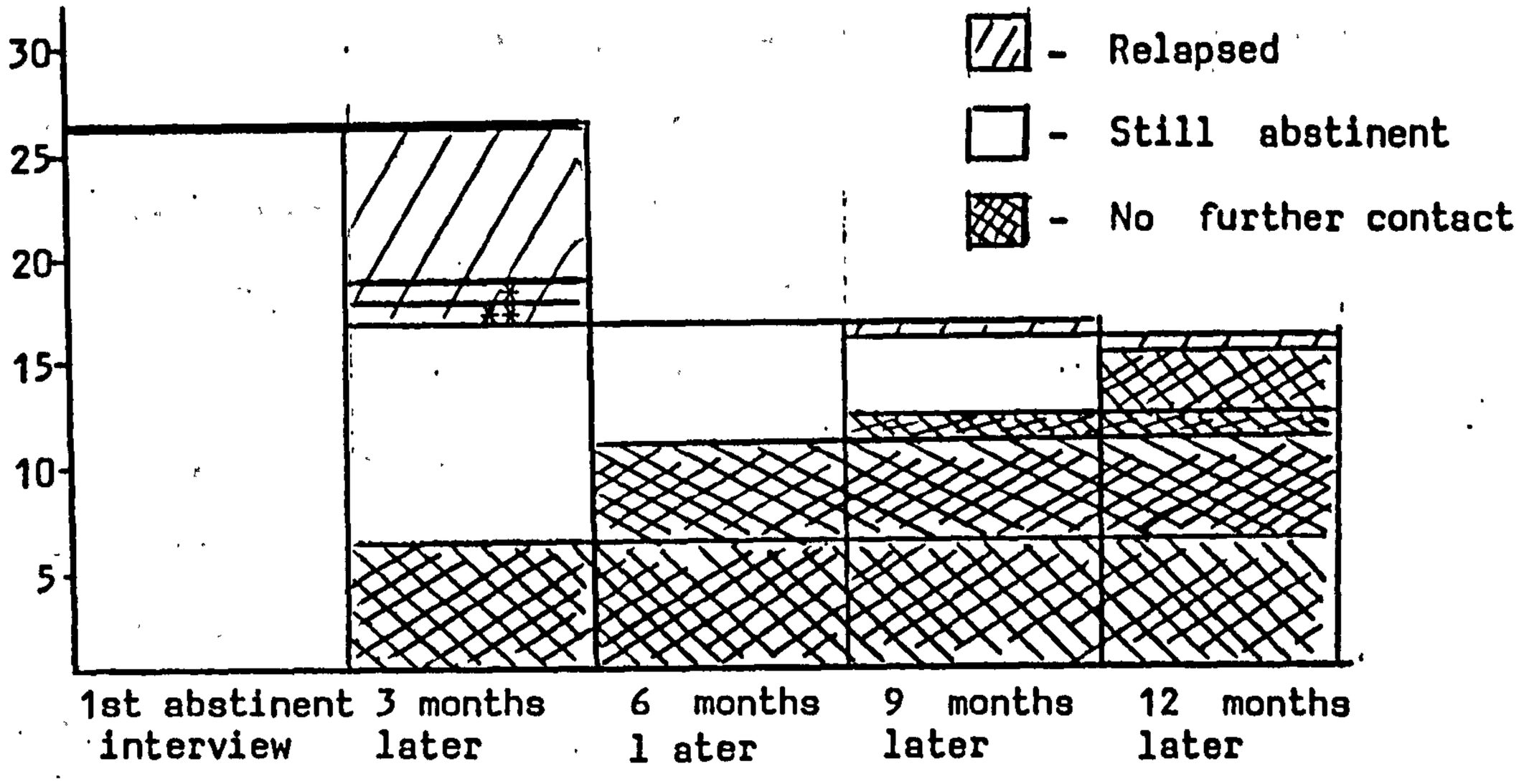


Fig 8.1 Rates of relapse. Heroin Group.

* Using only 1 unit per week

** Using only 4 units per week

and were therefore abstinent for 9 months of the study.

Alcohol group (Fig. 8.2 overleaf): Amongst the drinkers there were 23 subjects who had at least one abstinent interview. No follow up data was available for 7 of these subjects. As with the heroin group, five of the seven subjects were interviewed on only one occasion and this was while in hospital. It is assumed that at least some of these would have relapsed. The remaining 2 subjects had their abstinent interview at the end of the study. Follow up data, after abstinence, was therefore available for 16 of the 23 abstinent heavy drinkers. Of these 16 subjects, 8 relapsed into heavy drinking and a further 4 returned to drinking, but were consuming less than 8 units of alcohol per week. This means that either 50% or 75% (depending on whether the low consumption group were counted as relapsers or not) relapsed in the course of the study. Four subjects remained abstinent until the data collection stopped. One of these was abstinent at 3 subsequent interviews i.e. a period of 9 months follow up. The remaining 3 subjects had one further interview before the data collection ended and were therefore abstinent for at least 3 months follow-up.

Tobacco group : As already stated only two subjects came "off" tobacco in the course of the study. One of these subjects had one follow up interview at which

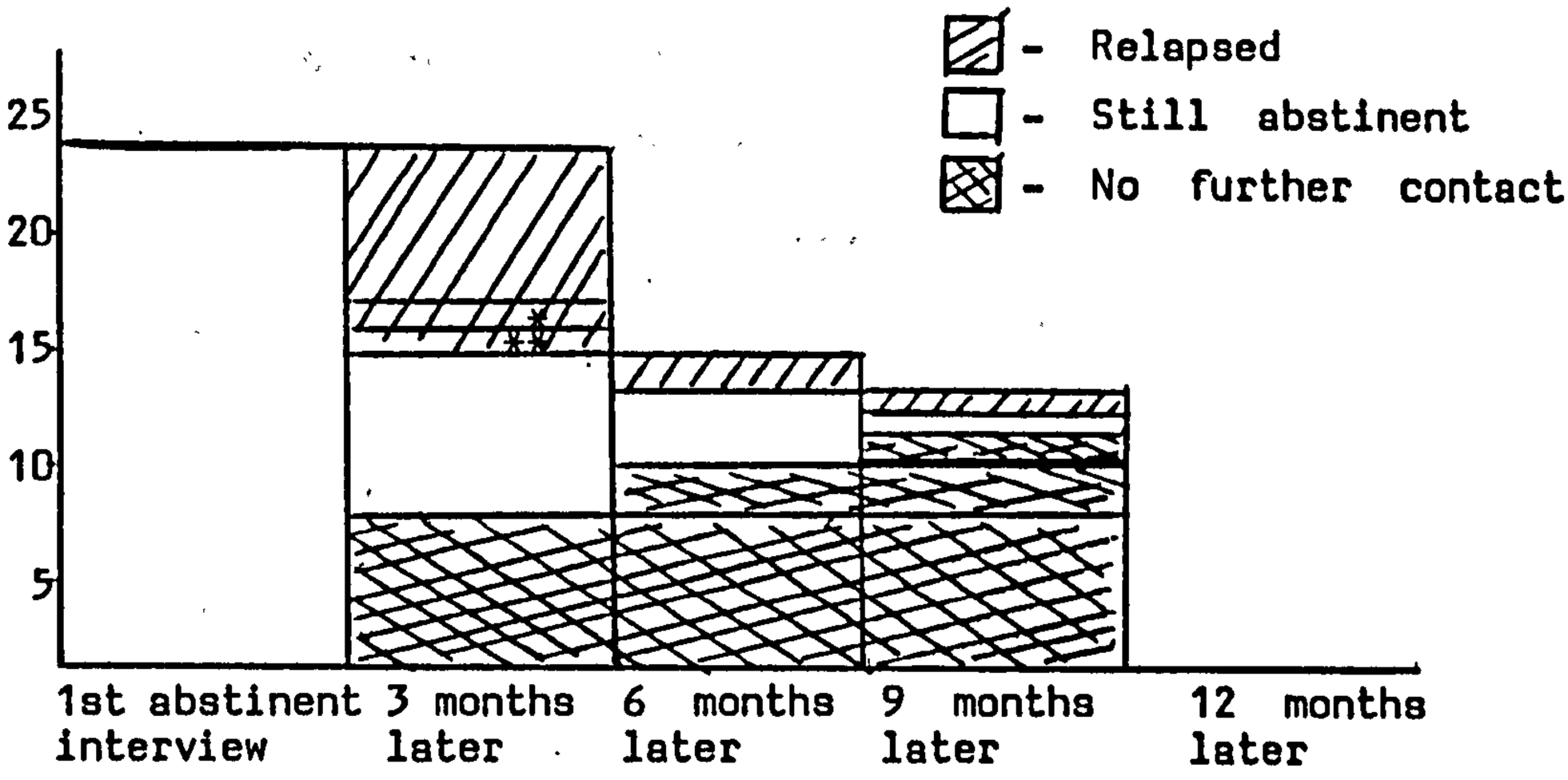


Fig 8.2 Rates of relapse . Alcohol Group.

* Using onl y 4 units per week

** Using onl y 8 units per week

they were still abstinent i.e. 3 months later and the other had relapsed by the time of their next interview.

Relapse rates differed substantially between substance groups; it is not possible, at this point in time, to attribute these differences to differences in the substances themselves. This is because in this study the groups were not homogenous for other relevant variables. For instance, age discriminated between the groups; the drinkers tended to be older than the heroin users.

CONSUMPTION OF NON-TARGET SUBSTANCES:

A one weeks retrospective diary, was completed by each subject at each interview. This diary contained information about consumption of all drugs in the previous week and was not confined to information about the target substance Although the control groups were non-smokers and non-heroin users, they did consume a small amount of alcohol. Thus, alcohol diaries were completed by these subjects. They were also found to use a certain amount of non-prescribed drugs. This section presents information on the use of non-target substances by all groups.

Consumption of alcohol: The alcohol consumption of all six groups (i.e. three substance groups and three control groups), is shown in the graph in fig 8.3.

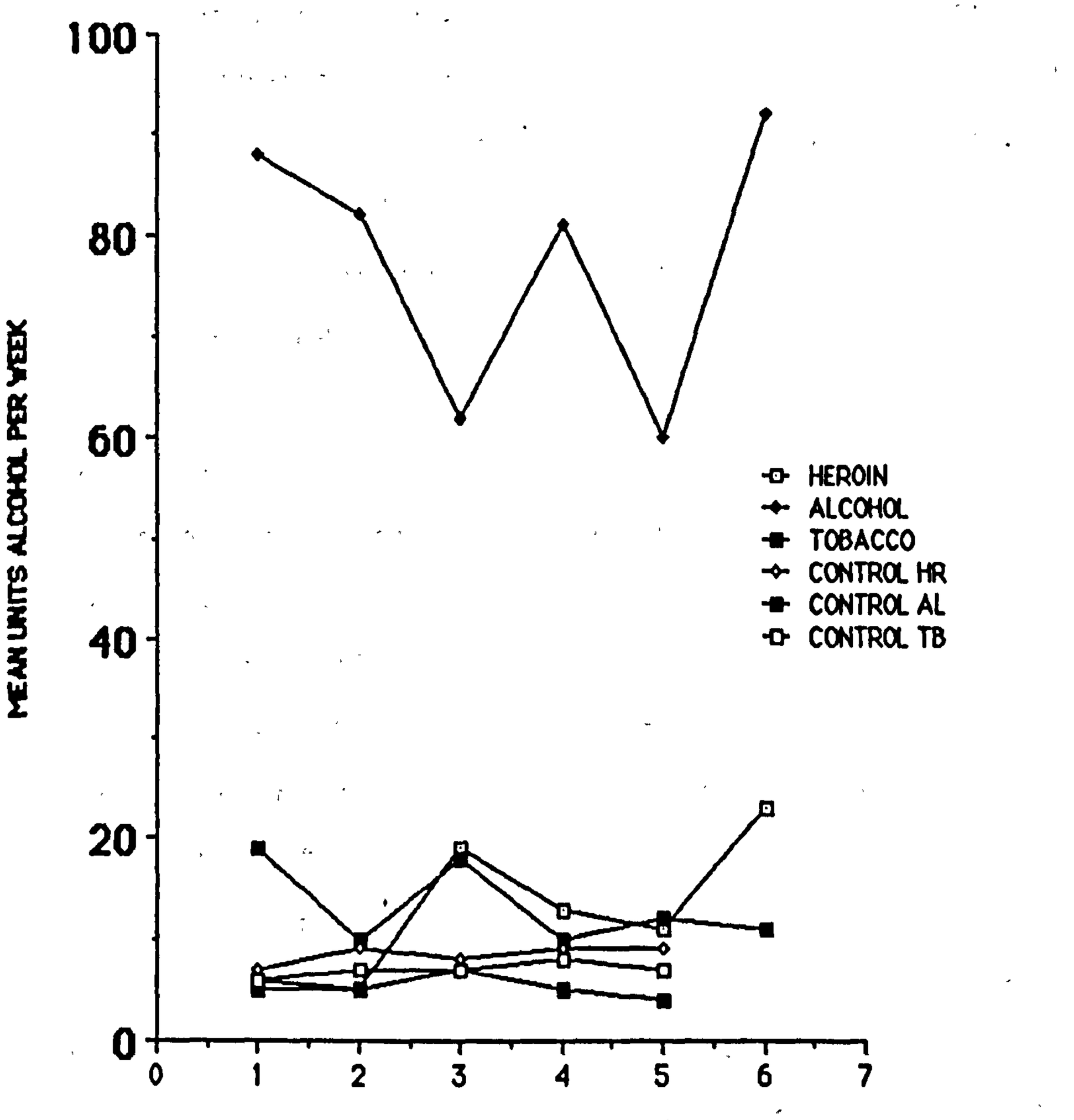


Fig 8.3. Mean Consumption of Alcohol per Interview

The alcohol consumption of the alcohol group is obviously greater than that of all other groups. Mean consumption of alcohol by control groups at any one set of interviews was never higher than 8 units of alcohol per week. This is well within the acceptable range of light social drinking. The maximum alcohol consumption for the other non-alcohol groups was 23 units for the heroin users and 20 units per week for the smokers. Overall the alcohol consumption of the non-alcohol groups, i.e. heroin, tobacco and control groups is similar to each other (see Table 8.5).

Consumption of tobacco : The control groups were all non- smokers and are therefore not included in the this graph (i.e. Fig. 8.4 overleaf). The average cigarette use for the heroin group, at any one set of interviews, ranged from 119 to 180 cigarettes per week. For the alcohol group the corresponding range of means was from 176 per week to 225 per week. Surprisingly, subjects in these groups were found to be smoking more than the subjects in the tobacco group (see table 8.5 over). This difference was not statistically significant for the heroin group but the alcohol group were smoking significantly more that the tobacco group themselves. This contrasts with the consumption of alcohol where the target group, the alcohol group, consumed significantly more alcohol than any of the other groups.

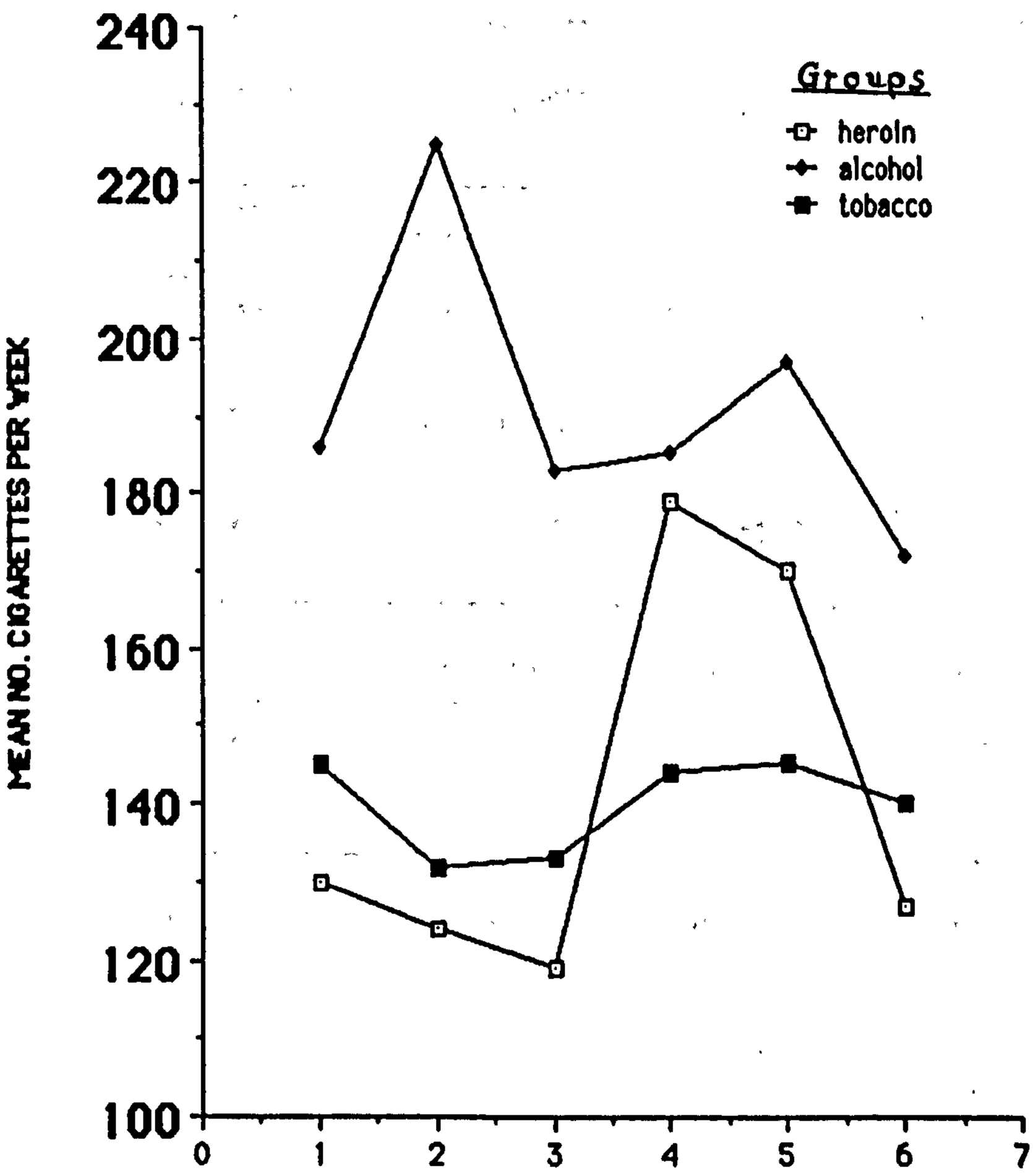


FIG 8.4 . MEAN CONSUMPTION OF TOBACCO PER INTERVIEW

GROUP					
SUBSTANCE	HEROIN $\bar{X}$	TOBACCO $\bar{X}$	T	DF	Prob.
TOBACCO	138 (n=86)	140(n=160)	-.22	151	.82
OTHER DRUGS	11 (n=87)	1.3 (n=136)	2.81	220	.005**
	ALCOHOL $\bar{X}$	TOBACCO $\bar{X}$	T	DF	Prob.
TOBACCO	194(n=114)	140(n=160)	4.4	183	.001**
OTHER DRUGS	4.7 (n=118)	1.3 (n=136)	1	223	.277
ALCOHOL	75 (n=131)	13(n=148)	5.8	136	.001**
	ALCOHOL $\bar{X}$	HEROIN $\bar{X}$	T	DF	Prob.
ALCOHOL	75(n=131)	11(n=88)	-4.8	217	.001**

TABLE 8.5 DIFFERENCES BETWEEN GROUPS ON USE OF ALCOHOL AND TOBACCO

Consumption of heroin: No incidences of heroin use were recorded for the alcohol, tobacco or control groups.

VARIATION IN THE TARGET SUBSTANCE WITH USE OF OTHER DRUGS? (Table 8.6 overleaf)

Heroin group : In many cases, regular users of heroin claim to be either non drinkers or very light drinkers. Although they were not found to drink heavily, they did not drink any less than their matched control group or any less than subjects in the smoking group. Furthermore, the heroin users often said they didn't drink because alcohol and heroin don't mix. It was therefore expected that the more heroin used the less alcohol would be consumed. In fact the very opposite was found and a significant positive correlation of $r=.57$ ($p < .001$) between consumption of heroin and consumption of alcohol by subjects in the heroin group was found. If the myth of heroin users not drinking had been correct, then a significant negative correlation would have been found. It was hypothesized that the correlation may differ for heavy and light users, and this would be a possible explanation for the discrepancy between expected and actual findings. A cut off point of 14 units per week was chosen to distinguish light and heavy heroin users. This cut off point was chosen because it divided the sample almost

GROUP	SUBSTANCE		
	ALCOHOL	TOBACCO	OTHER DRUGS
HEROIN	.57 (.001)	-.03 (.37)	.219 (.02)
ALCOHOL		.116 (.15)	-.19 (.016)**
TOBACCO			-.14 (.04)*

TABLE 8.6. CORRELATION MATRIX. CONSUMPTION OF NON-TARGET SUBSTANCES WITH TARGET SUBSTANCE.

in halt with 57% of the group falling below this level. A habit of 14 units a week is equivalent to using a £10.00 bag of heroin per day. When the correlation between alcohol and heroin consumption was calculated for subjects using above this level, it was found to be significant and positive, and was in fact increased to r=.72 (p<.001). However amongst the light users, the correlation, although not significant, was actually negative r=-.07 (p=.280) (see Table 8.7 overleat)

Perhaps it is only these light users who drink more when they are not using heroin. Consumption of alcohol at periods of abstinence (from heroin) was therefore compared to consumption at times of heroin use. No significant differences in consumption of alcohol at these different levels of heroin consumption was found for either the heavy or light users. Table 8.8 (see pg 246) shows consumption of alcohol and tobacco at different levels of heroin consumption.

Alcohol group : Although the alcohol group were heavier smokers than the smoking group itself, the level of smoking, amongst the alcohol subjects did not correlate significantly with alcohol consumption (see Table 8.6). The higher level of smoking amongst the drinkers is unlikely therefore to be due to increased alcohol consumption, but must result from some third and unmeasured variable. For instance, people who are

SUBSTANCE	HEAVY USERS (>13 Units per week)	LIGHT USERS (<14 Units per wek)
ALCOHOL	.72 (.001)	-.07 (.28)
TOBACCO	N.S	N.S

TABLE 8_7 CORRELATION OF ALCOHOL AND TOBACCO USE WITH USE OF HEROIN AT DIFFERENT CONSUMPTION LEVELS

SUBSTANCE	ABSTINENT X	USING X	T	DF	Prob.
ALCOHOL	8.4	15	.93	53	.35
TOBACCO	131	149	.94	83	.35
OTHER DRUGS	8	14	1.2	58	.23

TABLE 8.8 CONSUMPTION OF ALCOHOL, TOBACCO AND OTHER DRUGS BY HEROIN GROUP. COMPARISON OF ABSTINENT AND USING INTERVIEWS

heavy drinkers may be more likely to show all sorts of risk taking behaviour such as gambling. Smoking may be just one more such risk. Alcohol consumption in the alcohol group did, however, correlate significantly but negatively (r= -.198, p = .016) with use of drugs apart from heroin and tobacco. This included both prescribed and unprescribed psychotropics such as anxiolitics, anti- depressants and sleeping pills.

Consumption of cigarettes and other drugs by the alcohol group was compared at times of abstinence and times of drinking. At times of abstinence from alcohol, problem drinkers used significantly more psychotropic medication than when drinking heavily (p = .010). However there was no change in cigarette consumption which remained at high levels, despite variation in alcohol consumption. Table 8.9 overleaf shows consumption of tobacco by this group at different levels of alcohol use.

Tobacco group : Amongst the smokers (the tobacco group) number of cigarettes did correlate significantly with alcohol consumption. This correlation was positive (r= .231, p=.005). It appears therefore that at low levels of alcohol consumption there is a correlation with smoking. At high levels of drinking (as in the alcohol group), this relationship does not exist. It is possible that this is because some sort of upper

SUBSTANCE	ABSTINENT	USING	T	DF	Prob.
TOBACCO	183	199	.71	112	.47
OTHER DRUGS	11.8	1.2	-2.5	48	.010*

TABLE 8.9 CONSUMPTION OF TOBACCO AND OTHER DRUGS BY ALCOHOL GROUP. COMPARISON OF ABSTINENT AND USING INTERVIEWS

limit exists which most smokers do not exceed.

A significant negative correlation was also found in the tobacco group between number ot cigarettes smoked and amount of psychotropic medication used.

It was not possible to divide data in the smoking group into consumption while abstinent and consumption while using because, as already stated, there were only 3 interviews at which subjects were abstinent from tobacco in this group.

DISCUSSION

This chapter has shown that the rates of remission and relapse from drug use vary with the substance used. Whereas heroin users and heavy drinkers gave up their drug use frequently during the study , this was not true of the smokers who tended to maintain their drug habit and showed little variation in level of consumption. These differences will be related in the next chapter to differences in the life event reports of the groups.

Unlike the consumption of target substances by either the heroin or alcohol groups, the smokers actually smoked less tobacco than did the heroin or alcohol subjects. This poses a difficulty for interpretation of the life event data, because it is actually possible that differences between the groups could theoretically be attributed to differences in levels of tobacco consumption rather than differences

in the target substances of groups. For this reason, substance groups will be compared only to their matched control groups and no statistical comparisons between the substance groups will be made.

The data on variation of target substances with use of non-target substances is relevant to the hypothesis to be discussed in greater detail in the next chapter. This hypothesis is that drug use provides a means of stress buffering. Neff and Hussaini (1982) referred to this possibility and their study was reviewed in chapter three. The hypothesis implies that the more stress experienced the more alcohol will be consumed. It follows therefore that the more one drinks, the less one needs other stress reducing drugs. This was found to be the case. Furthermore, the stress buffering hypothesis predicts that at times of abstinence from alcohol, use of other psychotropic medication should increase. Both consumption of alcohol and tobacco were found to correlate negatively with use of other psychotropic drugs, which included anxiolitics, anti-depressants and sleeping pills.

When subjects in the alcohol group were abstinent, consumption of psychotropic medication increased, but there was no change in tobacco consumption. In the tobacco group a significant negative correlation between level of smoking and use of psychotropic medication was found. This confirms many smokers reports that they smoke more when feeling anxious or

depressed. Tobacco may thus be used as a substitute for anxiolitic and anti-depressant drugs.

The next two chapters examine in greater detail this hypothesis that drug use is a response to stress, and that life stresses vary with levels of drug consumption.

CHAPTER NINE

IS DRUG USE A RESPONSE TO STRESS?

The hypothesis that drug use is a response to stress arose frequently in the literature reviewed in chapter three. The following question will therefore be addressed in this chapter :- Can the lives of substance users be differentiated from non-users on the basis of life events?. The underlying assumptions in considering this question are (a) that drug users of all sorts experience more life stress than do non-drug users and (b) that increased life stress is a factor leading to drug use. The first of the two assumptions leads to the hypothesis presented below and the second assumption is examined in hypothesis 2 which is presented later in this chapter.

Hypothesis One : The substance using groups will experience more life stress than matched control groups.

METHOD

Holmes & Rahe (1967) calculated total life stress for an individual by adding together the weights of stressfulness for each event checked on the SRRS. Later work however, (Rahe & Arthur, 1978) showed that such weighted scores correlate highly with the simple number of events reported. In fact the weighted scores were found to give no better prediction of illness than the

simple total number of events reported. This initial analysis, examines therefore the total number of events reported at each interview.

Each substance group was compared to its matched control group on a number of variables. These were as follows: (i) the average number of events reported by subjects in each group for any three month period; (ii) the number of those events which involved the subject; referred to as 'self' events; (iii) the number of those events reported to have happened to family members or friends; referred to as 'other' events. Both 'self' events and 'others' events are broken down into (iv) events 'caused' by the drug use and (v) those which were reported to be 'unrelated to' or independent of the drug use

RESULTS

The results of these comparisons are shown in Tables 9.1, 9.2 and 9.3, for the heroin, alcohol and tobacco groups respectively.

Heroin Users

The results in Table 9.1 overleaf, show that the heroin users reported significantly different experiences to those of their control group for most of the variables listed. Examination of the means for each cell shows however that the direction of these

	N = 94 HEROIN GROUP X	N = 131 HEROIN CONTROL GROUP X	T-VALUE	2 TAIL PROBABILITY
TOTAL NUMBER OF EVENTS	7.64	4.77	5.44	.000 *
NUMBER OF SELF EVENTS	4.9	2.0	8.05	.000 *
NUMBER OF OTHERS EVENTS	2.7	2.7	.08	.93
NUMBER OF CAUSED SELF EVENTS	3.6	.06	11.6	.000 *
NUMBER OF UNRELATED SELF EVENTS	1.2	1.9	-3.41	.001 *
NUMBER OF CAUSED OTHERS EVENTS	1.2	.4	5.3	.000 *
NUMBER OF UNRELATED OTHERS EVENTS	1.5	2.3	-2.9	.002 *

TABLE 9.1 : RESULTS OF T-TESTS ON DIFFERENCES BETWEEN HEROIN AND CONTROL GROUPS FOR DIFFERENT CLASSIFICATIONS OF LIFE EVENT

(mean number of events per interview)

differences was not consistent. Although the total number of events reported by the heroin users did exceed significantly the total number of events reported by the control group, an excess of events by heroin users did not occur for all the comparisons. Significantly more events about <u>self</u> were reported by the heroin users than by the control group. But, there was no overall difference in the number of events reported about <u>other</u> people. A breakdown of these results (reported in the same table) shows that the heroin users reported significantly more ($p < .001$) events occurring to themselves which were <u>caused</u> by heroin use than did the control group. But interestingly, they reported significantly <u>less</u> events about themselves which were <u>unrelated</u> to heroin use than did the control group.

A similar pattern emerges when the events reported about other people are analyzed. The heroin users reported about other people, significantly <u>more</u> 'caused' events than the control group. By contrast they significantly <u>less</u> unrelated events about other people than reported by the control group.

<u>Alcohol Group</u>

Table 9.2 overleaf shows these comparisons for the alcohol group. When compared to their matched control group, the drinkers reported significantly more events overall. The pattern of event reporting was almost

	N = 122 ALCOHOL GROUP X	N = 106 ALCOHOL CONTROL GROUP X	T-VALUE	2 TAIL PROBABILITY
TOTAL NUMBER OF EVENTS	6.86	4.6	4.8	.000 *
NUMBER OF SELF EVENTS	3.6	1.9	5.26	.001 *
NUMBER OF OTHERS EVENTS	3.2	2.6	1.78	.076
NUMBER OF CAUSED SELF EVENTS	2.3	.01	9.8	.000 *
NUMBER OF UNRELATED SELF EVENTS	1.3	1.9	-2.94	.004 *
NUMBER OF CAUSED OTHERS EVENTS	.6	.16	3.48	.001 *
NUMBER OF UNRELATED OTHERS EVENTS	2.5	2.5	.33	.73

TABLE 9.2 : RESULTS OF T-TESTS ON DIFFERENCES BETWEEN ALCOHOL AND CONTROL GROUPS FOR DIFFERENT CLASSIFICATIONS OF LIFE EVENTS

(mean number of events per interview)

identical to that of the heroin users in Table 9.1. The drinkers, although reporting more events about themselves than their control group reported a similar number of events about other people when compared to the control group.When events reported about 'self' are examined in greater detail, it can be seen that the alcohol group report significantly more events caused by their drinking than the control group. Again in contrast they reported significantly less events about themselves unrelated to drinking than the control group. Similarly, when events about 'others' are examined, the drinkers report significantly more events 'caused' by drinking than the control group. However, there was no difference between the drinkers and the controls in the number of events reported about other people which were unrelated to drinking.

Tobacco Group

Table 9.3 overleaf shows the results of these comparisons for the tobacco group. A very different pattern emerged to that of the other two substance using groups. The smokers were almost identical to their control group in the way in which events were reported. When compared to their control group, there was almost no difference in the overall number of events reported There was no significant difference between events occurring to 'self' or between events reported about other people. The only significant

	N = 146 TOBACCO GROUP $\bar{X}$	N = 236 TOBACCO CONTROL GROUP $\bar{X}$	T-VALUE	2 TAIL PROBABILITY
TOTAL NUMBER OF EVENTS	4.8	4.7	.38	.70
NUMBER OF SELF EVENTS	1.9	2.0	-.43	.67
NUMBER OF OTHERS EVENTS	2.9	2.6	.91	.36
NUMBER OF CAUSED SELF EVENTS	.16	.04	2.73	.007 *
NUMBER OF UNRELATED SELF EVENTS	1.7	1.9	-1.0	.29
NUMBER OF CAUSED OTHERS EVENTS	.29	.29	-.01	.99
NUMBER OF UNRELATED OTHERS EVENTS	2.6	2.3	1.0	.30

TABLE 9.3 : RESULTS OF T-TESTS ON DIFFERENCES BETWEEN TOBACCO AND CONTROL GROUPS FOR DIFFERENT CLASSIFICATIONS OF LIFE EVENTSS

(mean number of events per interview)

difference between the groups (i.e. the tobacco and control group) was, not surprisingly, that the smokers reported significantly more events (p=.007) occurring to themselves which were caused by smoking than did the control group. As the control group was made up of non-smokers, this difference was expected. Even though the difference was significant, the actual number of events which were reported as caused by smoking was extremely small when compared to those caused by alcohol or heroin use. However, unlike the alcohol or heroin using groups, there was no significant difference between the smokers and controls in the number of events reported about themselves which were unrelated to smoking. There was no signficant difference either, between the smokers and controls for the number of events reported about other people which were unrelated to smoking.

Discussion of hypothesis 1

The results presented above can be summarized in this way. Both heroin and alcohol groups reported experiencing more stressful events than their respective control groups, but this excess of stressful events consisted of consequences of the drug use itself. In other words, increased life stress in the lives of these drug users was, by their own report, the result of the drug use itself rather than a cause of

it. (This point will be considered further after examining the other results.) If anything, it might appear that these two groups, i.e. the alcohol users and the heroin users, experienced less life stress than did their respective control groups. This is because when the stressful events unrelated to drug use are separated, both of the above groups reported less events than their matched controls. The smokers on the other hand, showed an almost identical pattern of event reporting to that of their control group. There were almost no differences in the reporting of stressful events by these two groups.

A number of explanations for these findings are possible. Firstly, events may have been experienced by all of these groups in the way they have been reported. Certainly it is highly likely that heroin users and drinkers experienced significantly more stressful events caused by heroin and alcohol use than the groups of light or non-drinkers, and non-heroin users. This is likely because both heroin and alcohol, when taken frequently in large doses, lead to negative consequences for health, even if this is not directly caused by the substance itself. For instance, people who drink heavily are statistically more likely to become involved in accidents which therefore increase the chances of being hospitalized. People who regularly use large doses of heroin have a greater

chance of overdosing or developing abscesses as a result of the dealer's practise of diluting heroin with other substances. Similarly negative legal consequences are associated with heroin and heavy alcohol use. The possession of heroin increases one's chances of imprisonment or at the least, arrest. Similarly in certain circumstances such as drunk driving, the heavy use of alcohol increases the chances of stressful legal events occurring in one's life. Financial problems and employment problems can also be shown to be associated with alcohol and heroin use. These types of events may have accounted for the greater number of stressful events (when all reported events are considered) reported by the alcohol and heroin users than by their control groups.

Negative consequences of smoking, in terms of the types of events just outlined, are probably less common. Tobacco is not illegal (except the sale of cigarettes to those under 16 years of age). Although attitudes may be changing, it is also more socially acceptable than either heroin or heavy use of alcohol. It is therefore less likely to lead to social or family problems. Also, even for a heavy smoker, the financial outlay necessary to maintain the habit is less than that for an alcohol or heroin habit. Smoking therefore, is less likely to lead to negative financial consequences than is use of either of the other drugs. As far as negative health consequences are concerned,

although the long term prolonged use of tobacco may lead to worse consequences than alcohol or heroin use, in fact the short term consequences are likely to be relatively minor and less likely to be reported as life events. It therefore seems logical that there would be little difference in the overall amount of stressful events reported by smokers and a matched control group.

The findings for the alcohol and heroin users therefore support the hypothesis that drug users experience more life stress than do non-users. The findings for the smokers were not, however, consistent with the hypothesis. Smokers, on the whole, do not seem to experience more life stress than non-smokers.

The picture may not be quite as simple as it seems however. When the findings relating to events which are unconnected with drug use are considered, both the heroin and alcohol groups reported themselves as experiencing less events of this type, than did their matched control groups. The assumption that increased life stress is a factor leading to drug use is not supported by these findings. If the increased life stress of drug users is the result of events which themselves are <u>caused</u> by the drug use, then these same events cannot be implicated as initiators of the drug use although they may be a factor in maintaining drug use. This hypothesis will be examined in the next section. Meanwhile, the alcohol and heroin using groups reported experiencing less events which were

unconnected with drug use than did matched control groups. This has yet to be explained. Furthermore, an explanation is required for why the friends and families of the heroin group were reported to have experienced less events unrelated to drug use than the friends and families of non-users. A second possible interpretation of these findings must therefore be considered. It is possible that both the alcohol and the heroin users became overly involved with their drug use. One of the seven elements of the alcohol dependence syndrome (Edwards and Gross, 1976) is the "narrowing of the drinking repertoire". The suggestion here, is that the alcohol and heroin users experience a narrowing of the <u>perceptual</u> reperetoire. Although their life experiences may not actually be altered, it is possible that their <u>awareness</u> or perception of those experiences is narrowed so that they become more focussed on drug related events. It is unlikely to be the case that the people around heroin users actually experience less life stress and in particular less events unrelated to drug use, than the friends and families of the control groups. However, as the user becomes more and more involved in a drug habit (whether it is alcohol or heroin), and in order to maintain that habit, it is necessary to adopt a lifestyle in which the drug use is a dominant and central component. The business of being a 'junky', for instance, can be a full time and absorbing occupation, leaving little time for consideration of other areas of one's life. It is

a possibility, therefore, that the findings reported could be explained by differences in the perception of events rather than differences in experience. It seems possible that they become less aware of what is happening to other people in their lives and become more focussed on events which are related to drug use in their own lives.

The fact that this pattern did not emerge for the tobacco group is not surprising. As already pointed out, tobacco use has less immediate consequences for one's life. Maintaining a habit does not, therefore, involve major changes in lifestyle and it is also less disruptive of lifestyle than heavy use of either alcohol or heroin. It is possible to smoke in most situations (although increasing restrictions are being introduced). For instance, smoking is rarely disallowed in the workplace, or in places of socializing, and even on public transport, where areas are sometimes set aside to allow smoking. As procurement of the drug presents no problems, it does not pre-occupy the smoker unless he/she runs short, when it will soon dominate the consciousness. No narrowing of the smoking repertoire, either in practice or perception, would therefore normally be expected.

Conclusion from hypothesis one

Support for the hypothesis at this stage is unclear. Undoubtedly heroin and alcohol users report more stressful events than do matched control groups.

It seems that many of the events reported are those which are actually caused by the drug per se. It is not however clear, whether this reporting of events reflects accurately the experience of the subjects. Studies referred to in chapter four, for example, Duncan (1977), which have concluded that life stress is a factor leading to drug use, did not separate events which were dependent on the drug use from those which were independent of it. The conclusions of such studies must therefore be discounted.

The possibility that drug use is functional in "stress - buffering" was raised by Neff & Hussaini (1983) (see chapter 3), that is, drug use may seem to reduce one's awareness of life stress. The findings of the above analysis lend some support to this position, in that both heroin and alcohol users reported less 'self' events which were 'unrelated' to their drug use. However, it appears that if drug use is a means of stress reduction, it is not a particularly efficient method. Although it may reduce awareness of one type of life stress, it introduces many new stresses into life.

The second assumption referred to at the start of this chapter was that increased life stress is a factor leading to drug use. The hypothesis to be considered in this section, concerns therefore stress which arises from the consequences of drug use. The possibility has

already been raised that whereas stress may not be a factor in initiating drug use, it may be important in maintaining use. However, if drug use actually creates life stress, then the life stress thus created, should motivate a decrease in drug use in order to reduce that stress. The second hypothesis is therefore as follows.

Hypothesis two : Stressful events which are 'unrelated' to drug use will lead to increased use and stressful events which are 'caused' by a drug will lead to reduced consumption of that drug.

Method

As explained in chapter five, subjects were asked to classify events as having caused increased consumption (I), decreased consumption (D) or as having no effect (N) on consumption. The interactions of the latter categories with caused (C) and unrelated (U) categories are shown in tables 9.4. to 9.9, for heroin, alcohol and tobacco groups respectively.

It is acknowledged that the data analysis presented here is a weak test of the above hypothesis because this specific hypothesis was only developed once the results related to hypothesis one above had been obtained. Nonetheless, it is worthwhile to present these results as a preliminary test of the hypothesis.

RESULTS OF HYPOTHESIS2

Heroin users : (Table 9.4 overleaf) Firstly, the majority of events, regardless of category, were not believed by subjects to have any effect on consumption. The chi-square results in the table show this to be significant and Cramers' V has a value of .264. Table 9.5 shows the chi-square analysis repeated when events which had 'no effect' on consumption were removed. The chi-square is no longer significant and the correlation has been reduced (phi coefficient=.08). This means that both 'caused' and 'unrelated' events lead to both increases and decreases in consumption. Examination of the tables shows that 'caused' events were equally likely to lead to increases as to lead to decreases in consumption. A smaller proportion of 'unrelated' events lead to increases in use than lead to decreases.

Events which subjects thought had led to increases in consumption were more likely to be caused by the substance use itself than to be unrelated to its use. The same was also true for decreases in consumption however i.e. caused events were said to produce more increases than unrelated events.

Alcohol users : (See over Table 9.6) The events of this group were examined in a similar way. As with heroin users most events were said to have had 'no effect' on consumption. Table 9.6 compares caused/unrelated categories with increase/decrease/no effect consumption

	INCREASE	DECREASE	NO EFFECT	
CAUSED	77	85	260	422 (62%)
UNRELATED	13	23	223	259 (38%)
	90	108	483	681

CHI-SQUARE	DF	PROB.
47.6	2	.000

CRAMERS' V =.264

TABLE 9.4. EFFECT ON CONSUMPTION BY CAUSE OF EVENT. HEROIN GROUP.

	INCREASE	DECREASE	
CAUSED	77	85	162
UNRELATED	13	23	36
	90	108	198

CHI-SQUARE	DF	PROB.
1.12	1	.28

PHI COEFFICIENT= .08

TABLE 9.5. EFFECT ON CONSUMPTION BY CAUSE OF EVENT (EXCLUDING EVENTS WHICH HAVE HAD NO EFFECT). HEROIN GROUP.

	INCREASE	DECREASE	NO EFFECT	
CAUSED	93	60	203	356
UNRELATED	47	23	296	366
	140	83	488	722

CHI-SQUARE	DF	PROB.
48.8	2	.000

CRAMERS' V =.26

TABLE 9.6. EFFECT ON CONSUMPTION BY CAUSE OF EVENT. ALCOHOL GROUP.

	INCREASE	DECREASE	
CAUSED	93	60	153
UNRELATED	47	23	70
	140	83	223

CHI-SQUARE	DF	PROB.
.58	1	.44

PHI COEFFICIENT= .06

TABLE 9.7. EFFECT ON CONSUMPTION BY CAUSE OF EVENT (EXCLUDING EVENTS WHICH HAVE HAD NO EFFECT). ALCOHOL GROUP.

patterns. A significant difference emerges. In this case the correlation was Cramers' V and equal to .26. As with the heroin group, the analysis was repeated leaving out the events which had 'no effect' on consumption. In table 9.7. the chi square is seen to be no longer significant. Again this means that increases in consumption could result from either 'caused' or 'unrelated'events and the same was true for decreases in consumption. In this second analysis the phi-coefficient is only .06. Table 9.7 also shows that a greater proportion of events lead to increased drinking than lead to decreased consumption; and more reported increases in consumption were said to be due to caused than to unrelated events.

TOBACCO USERS : (Table 9.8 overleaf) A different pattern of results was found in the smoking group. On the whole, very few reported events were caused by smoking. As already stated, tobacco's effects may occur only in the long term and not in the short term.

Most reported events caused by smoking had 'no effect' on consumption. Only a very small proportion of events were reported to be due to smoking and to lead to an increase in smoking. Unlike the other two groups increases in smoking were attributed more to unrelated than to caused events. This is possibly because very few consequences of smoking were actually reported. It is possible therefore that different

	INCREASE	DECREASE	NO EFFECT	
CAUSED	10	9	30	49
UNRELATED	117	27	448	590
	127	36	476	639

CHI-SQUARE	DF	PROB.
16.5	2	.000

CRAMERS' V =.16

TABLE 9.8. EFFECT ON CONSUMPTION BY CAUSE OF EVENT, TOBACCO GROUP.

	INCREASE	DECREASE	
CAUSED	10	9	19
UNRELATED	117	27	144
	127	36	163

CHI-SQUARE	DF	PROB.
6.4	1	.01

PHI COEFFICIENT= .22

TABLE 9.9. EFFECT ON CONSUMPTION BY CAUSE OF EVENT (EXCLUDING EVENTS WHICH HAVE HAD NO EFFECT), TOBACCO GROUP.

factors are responsible for the maintenance of smoking than for the maintenance of drinking or heroin use. Table 9.8 repeats for the smoking group similar comparisons to those made with the drinkers and heroin users. Again there was a significant interaction between event category and change in consumption. The analysis was repeated leaving out events having 'no effect' on smoking. This time the interaction remained significant, unlike the other two groups of substance users. Caused events produced both increases and decreases in smoking, while unrelated events produced many more increases than decreases.

Discussion of hypothesis 2

In the case of all three groups, the bulk of events (both 'caused' by the substance use and those unrelated to it), had 'no effect' on consumption. Amongst the heroin users there was a greater chance of 'caused' events leading to decreased as opposed to increased consumption. This was not true for the alcohol group where 'caused' events were more likely to result in increased consumption. What is most interesting from the point of view of the hypothesis, however, is that increases in consumption for both the heroin and alcohol group were more likely to result from stressful events which were 'caused' by the drug use than by 'unrelated' stressful events. This was not true of the smókers, possibly because very few events were actually 'caused' by smoking. The best that can be said so far,

in terms of hypothesis two, is that events 'caused' by drug use sometimes reduce consumption, that they are most likely to have no effect, but sometimes they may even lead to increased consumption.

This last possibility is of most interest. Negative consequences of drug use or the occurrence of stressful events while using drugs, do not necessarily lead to decreased drug consumption. It is known from the test of hypothesis one, that stress unrelated to drug use does not seem to be a cause of that drug use. It now appears however that stressful events (whether they result from the drug use or not) may sometimes play a role in maintaining drug use. It is the task of the next chapter to ascertain how and under what conditions stressful events contribute to drug use. The possibility must be considered that drug use is maintained by these events only in so far as it leads to reduced awareness of the events.

This possible reduction in the perceived impact of events will be considered.

CHAPTER TEN

THE PERCEIVED IMPACT OF LIFE STRESS

The conclusion of the last chapter was that the relationship between life events and drug use cannot be explained in terms of the simple occurrence of events. The subjects perception of and beliefs about the events must play an important role. In order to explain why subjects move from remission to relapse the following question will be addressed : can periods of drug use be differentiated from periods of abstinence on the basis of life stresses ? The possibility arises that drug use reduces awareness of life stress and conversely that awareness of life stress is enhanced at times of abstinence. Can drug use therefore be effective in reducing the negative impact of life events so that they are interpreted in a more positive way? If this were the case, then this reduction in the perceived impact of events could explain the results just reported in the last chapter. The stressful consequences of drug use, along with stresses unrelated to the drug use, were sometimes found to maintain or increase drug use. Furthermore if drug use influences awareness of life stress, then awareness of life stress should fluctuate with the drug consumption.

This leads to the following hypothesis .

Hypothesis : The substance groups will interpret life events differently during a period of drug use compared to their interpretation of events during a time of abstinence.If drug use acts as a means of stress reduction or of reducing awareness of the impact of stressful events, then at times of drug consumption, users will be less aware of the negative impacts of stressful events.

Method

The general method is that outlined in chapter five. In order to address the hypothesis, the drug users are used as their own controls and compared at times of use with times of abstinence from drug use.

These analyses were only possible with the heroin and alcohol groups. The tobacco group, as explained in chapter eight, were rarely off tobacco, whereas the heroin and alcohol groups both had frequent periods of abstinence. It was not possible therefore to carry out valid statistical analysis on the tobacco group, as this would have involved using only three interviews for which the tobacco group were drug free. Reasons why the tobacco group were so rarely drug free will be considered later.

(1) **Analysis one :** The intention here is to examine initially whether the reported <u>incidence</u> of life events varies with level of consumption. Consequently, as in chapter nine, total numbers of stressful events, events happening to 'self' versus events happening to 'others', and 'caused' versus 'unrelated' events were compared at times of use and times of abstinence. Abstinence was operationally defined in chapter eight as total abstinence from the target substance for the time period covered by the consumption diary, i.e. one week prior to interview. Table 10.1 shows the comparisons of these variables in the heroin group at the different levels of consumption. Table 10.2 shows the corresponding results for the alcohol group.

<u>Results</u>

The heroin users (see table 10.1 overleaf) do report less events overall when they are drug free which is accounted for by less events occurring to themselves which are caused by heroin use. There is no difference, however, in the number of events unrelated to drug use which they report experiencing. Furthermore, whether they are using or are drug-free, there is no differnce in any of the variables which include events about other people.Table 10.2 (see over) shows that whether the drinkers are in a heavy drinking binge or abstinent from all alcohol, there is no difference in the way total stress scores are reported.

	USING X (N=45)	ABSTINENT X (N=42)	T-VALUE	2 TAIL PROB
'SELF' EVENTS	5.9	4.0	-3.01	.003*
'OTHERS' EVENTS	2.6	2.7	.18	.85
'SELF CAUSED' EVENTS	4.8	2.7	-3.38	.001*
'SELF UNRELATED' EVENTS	1.0	1.2	.75	.45
'OTHERS CAUSED' EVENTS	1.2	1.2	.19	.84
'OTHERS UNRELATED' EVENTS	1.4	1.4	.12	.90

TABLE 10.1. FREQUENCY OF EVENTS COMPARING TIMES OF DRUG USE WITH TIMES OF ABSTINENCE. HEROIN GROUP.

(mean number of events reported per interview)

	USING X (N=29)	ABSTINENT X (N=81)	T-VALUE	2 TAIL PROB
'SELF' EVENTS	4.0	3.6	-.74	.46
'OTHERS' EVENTS	2.8	2.7	-.27	.78
'SELF CAUSED' EVENTS	2.7	2.2	-.83	.41
'SELF UNRELATED' EVENTS	1.3	1.3	.11	.91
'OTHERS CAUSED' EVENTS	.6	.5	-.08	.83
'OTHERS UNRELATED' EVENTS	2.3	2.2	-.28	.78

TABLE 10.2. FREQUENCY OF EVENTS COMPARING TIMES OF DRUG USE WITH TIMES OF ABSTINENCE. ALCOHOL GROUP.

(mean number of events reported per interview)

This applies to events happening to themselves and events reported about other people (whether they are caused by drinking or are unconnected with it).

Discussion

A possible explanation for the findings in the alcohol group is that the periods of abstinence referred to, were too short to reduce the occurrence of alcohol related events (also, most of these events would have occurred in the recent past and still be the focus of the subjects attention). Similarly, neither heroin users or drinkers may have had sufficient time to become more aware of events in other peoples lives or of events, unrelated to drug use, which might have occurred in their own lives. Heroin users, on the other hand, did become aware of a reduction of events caused by drug use once they were abstinent.

Returning to the hypothesis, it was predicted that at times of heavy use, subjects should be less aware of stressful events. In fact the only difference in awareness of the occurrence of events was amongst the heroin using group who were more aware of stressful events at times of heavy use. This difference applied only to events caused by heroin use. Secondly there was no increase, at times of abstinence, in events unrelated to drug use for either group. The hypothesis therefore is clearly not supported by this analysis.

Analysis two : Although no differences in the predicted direction were detected for total stress scores at different consumption levels, the possibility remains that qualitative differences existed in the types of stress reported at times of drug consumption versus times of abstinence. The hypothesis could still be supported if differences in awareness of events were characterized by selective awareness of different types of events.

Results

Mean frequencies for each event category at the two levels of consumption are shown in tables 10.3 and 10.4 (overleaf) for the heroin and alcohol groups respectively. (As with all analyses in the previous chapter, no figures are available for the tobacco group). In order to carry out any statistical analysis, it was necessary to collapse the actual events reported into event categories. (This was because of the large number of empty or low frequency cells). Results of both the Walshe test and Randomization test for matched pairs are shown on the tables. No difference was found for any of the event categories between the types of event reported at periods of use and the type of event reported while not using.

Discussion

The hypothesis that at times of drug use one is aware of different types of life stress than when one is

HEROIN USERS

EVENT CATEGORY	$\bar{X}$ USING	$\bar{X}$ ABSTINENT	d	rank
HEALTH	4.47	3.38	1.09	5
LEGAL	1.88	1.17	.71	4
FINANCIAL	2.60	1.94	.66	3
SOCIAL	1.34	1.40	-.05	-1
EMPLOYMENT	1.85	1.54	.31	2

Randomisation Test $\leq d_i = 2.71$
Rejection region : if $\leq d < 2.83$ reject H_0 at p = .05

Walshe Test for N = 5
Accept H_0 if either $d_5 > 0$ or $d_1 < 0$ p = .062 two-tailed test

TABLE 10.3 COMPARISON OF NUMBER OF EVENTS PER EVENT CATEGORY, TIMES OF USE WITH TIMES OF ABSTINENCE. HEROIN GROUP.

EVENT CATEGORY	ALCOHOL USERS' CONSUMPTION LEVEL			
	$\bar{X}$ USING	$\bar{X}$ ABSTINENT	d	rank
HEALTH	3.42	3.85	-.43	-2
LEGAL	1.73	3.6	-1.77	-1
FINANCIAL	2.24	2.31	-.06	-3
SOCIAL	1.29	1.0	.29	5
EMPLOYMENT	1.41	1.40	.01	4

Randomisation Test di = -1.96
Rejection region : if d 2.56 reject at p = .05

Walshe Test for N = 5
Accept if either d5 0 or d1 0 p = .062 two-tailed test

TABLE 10.4: COMPARISON OF NUMBER OF EVENTS PER EVENT CATEGORY. TIME OF USE WITH TIMES OF ABSTINENCE. ALCOHOL GROUP.

abstinent was not supported. This finding was unexpected however as both drinkers and heroin users commonly report at times of abstinence, that particular life events or life changes have caused them to become abstinent. Research into spontaneous remission of alcohol problems which was referred to in chapter three has, for example, found that drinkers commonly report the occurrence of life events as being the cause of their remission (e.g., Saunders and Kershaw 1979, Tuchfeld 1981 and Smart 1978). People who relapse into drug use also commonly report life events and life change to have caused that relapse (e.g. Litman et al, 1979). It was expected therefore, that certain types of events would have occurred more frequently prior to abstinence and that other types of events would have occurred more frequently prior to heavy use. It seemed important, therefore, to examine in this study the beliefs of substance users about what had led to them becoming drug free.

Analysis three : The reasons given by subjects in the course of their 'drug free' interviews as explanations for their current abstinence have been categorized and are shown in tables 10.5 and 10.6 (see over). Subjects were not always able to provide an explanation and so there are less reported reasons than there are 'drug free' interviews. Table 10.6 shows for comparative purposes, the results of a study by Tuchfeld (1981), in

HEROIN GROUP	
TYPE OF EXPLANATION	NUMBER OF OCCURRENCES
(i) Family reasons	9
(ii) Imprisonment	8
(iii) Health	5
(iv) Availability of drug	3
(v) Boredom	3
(vi) Financial	1
(vii) Change in social circumstances	1

TABLE 10.5 : CLASSIFICATION OF EXPLANATIONS GIVEN FOR DRUG FREE INTERVIEWS. HEROIN GROUP.

ALCOHOL GROUP

Type of Explanation	Present Study Number of Occurrences	Tuchfeld (1981)
Family and social reason	11	9
Health	10	17
Financial	7	11
Legal	1	4
Employment	1	
Availability reduced	1	
Health Education		6
Death or illness of another		7
Religion		13

TABLE 10.6: CLASSIFICATION OF EXPLANATIONS GIVEN FOR DRUG FREE INTERVIEWS. ALCOHOL GROUP.

which individuals who had recovered from problem drinking were asked to give reasons to explain the change.

Results

Although the rank orders are not identical, there is an interesting similarity in the types off explanation given in the two studies. The similarity is further increased if the same method of classifying answers is used. For instance, in the current study, 'death' or 'illness of another' is classified as a family or health event, whereas Tuchfeld gave this a separate category. It can be seen from tables 10.5 and 10.6 that although (as indicated by tables 10.3 and 10.4) there are no overall significant differences in the frequency with which health, legal, financial, social and employment events are reported at times when drug free compared to times of heavy use, these latter tables indicate that substance users <u>believe</u> that these types of event lead to their abstinence. They imply that these types of stressful event have become more frequent and that the change in their behaviour is in response to the increase or appearance of these events. This is not supported by the actual data of the present study. In fact it was noted, though it was unfortunately not possible to examine in a systematic way, that the same types of reason were often given to explain relapse as to explain abstinence. At least two subjects have been identified who cited the <u>same</u> event

to explain first their becoming abstinent, and at a later interview to explain a subsequent relapse. These subjects were, " one female heroin user who gave 'death of her father' as an explanation for her abstinence and later cited her fathers death as as explanation for her relapse. Similarly, one male drinker who gave marital/sexual difficulties as an explanation for abstinence, later gave the same reason to explain his relapse.

Discussion

There appear to be two possibilities here which will be considered in subsequent analyses. These possibilities are (1) that subjects may actually interpret the same events or same type of events in a different way at different times of their life or (2) that they may simply be trying to make sense of their behaviour (substance use) and attribute meaning to events which the events did not have when they actually occurred. These two possibilities will be examined in the following analyses.

Analysis four : The stress buffering hypothesis of drug use outlined earlier (Neff and Hussaini 1982), provides one possible explanation as to why the same events may be given a different interpretation at different times.

If it is the case that drug use reduces one's awareness of the negative impact of life events, then one should interpret events differently when using

heavily compared to times of abstinence. If this was found to be the case, then some support would exist for the original hypothesis at the start of this chapter.

The frequency with which events were perceived to have affected physical health, mood, legal, financial, social and employment aspects of subjects' lives was examined, comparing periods of abstinence to periods of drug use. Again as for the last three analyses, it was not possible to carry out this analysis on the tobacco group. However, Tables 10.7 and 10.8 show the results of these comparisons for the heroin and alcohol groups.

Results

Heroin Users

In testing the main hypothesis, analysis one in this section found that events unrelated to drug use and all events about 'others' were reported with the same frequency whether subjects used heavily or remained abstinent. Table 10.7 (see over) shows, however, that the events reported at these different times were likely to be perceived differently. They were significantly more likely to be perceived as having some effect on subjects lives when using heroin than when abstinent. These perceived effects were significantly greater on social and financial aspects of subjects lives. Table 10.9 (see over) shows that these effects were more likely to be negative than positive at times of drug use. Although the other

	USING X (N=45)	ABSTINENT X (N=42)	T-VALUE	2 TAIL PROB
OVERALL	11.27	7.0	-2.21	.030*
PHYSICAL HEALTH	1.4	1.3	-.21	.818
MOOD	5.2	3.5	-1.7	.083
LEGAL SITUATION	.4	.2	-1.66	.104
SOCIAL LIFE	1.75	.75	-2.10	.04*
FINANCIAL CIRCUMSTANCES	1.73	.75	-2.11	.04*
EMPLOYMENT	.62	.37	.86	.42

TABLE 10.7. FREQUENCY OF EFFECTS ON DIFFERENT LIFE AREAS FOR THREE MONTHS PRECEDING INTERVIEW.

COMPARISON OF TIMES OF DRUG USE WITH TIMES OF ABSTINENCE. HEROIN GROUP.

	$\bar{X}$ POSITIVE EFFECTS	$\bar{X}$ NEGATIVE EFFECTS	T	DF	Prob.
USING HEROIN	.120	.380	-2.3	5	.05*
ABSTINENT	.115	.278	-2.2	5	.05*

TABLE 10.9 HEROIN GROUP.MEAN POSITIVE VERSUS NEGATIVE EFFECTS

categories
significantly different, all event categories were more frequently reported as having negative than positive effects , when using heavily compared to abstinent times.

Alcohol Group

Table 10.8 overleaf shows the results of these comparisons for the alcohol group. Although there is no significant difference in the overall effect, that is, when all categories are included, there is a greater likelihood of events being perceived as affecting subjects legally, socially and financially at times of heavy use. As with the heroin users, in all cases these effects were more likely to be negative than positive (Table 10.10 see over).

Discussion

The results reported on Tables 10.7 and 10.8 indicate, therefore, that heroin and alcohol use are not effective in reducing awareness of the negative impact of life events. In fact, the only differences found indicate that the negative impact of events is enhanced at times of heavy drug use.

A final possibility remains, and that is that people who were using heavily at the time of interview might simply have been 'making sense' of their lives with the benefit of hindsight. They may have

	USING X (N=29)	ABSTINENT X (N=61)	T-VALUE	2 TAIL PROB
OVERALL	8.45	6.9	-1.17	.245
PHYSICAL HEALTH	1.3	1.5	.52	.601
MOOD	4.16	3.8	.46	.644
LEGAL SITUATION	.32	.03	-2.03	.04*
SOCIAL LIFE	1.06	.60	-1.94	.05*
FINANCIAL CIRCUMSTANCES	1.06	.60	-1.9	.05*
EMPLOYMENT	.28	.49	-1.03	.30

TABLE 10.8. FREQUENCY OF EFFECTS ON DIFFERENT LIFE AREAS FOR THREE MONTHS PRECEDING INTERVIEW.

COMPARISON OF TIMES OF DRUG USE WITH TIMES OF ABSTINENCE. ALCOHOL GROUP.

	X POSITIVE EFFECTS	X NEGATIVE EFFECTS	T	DF	Prob.
USING ALCOHOL	.138	.318	-2.5	5	.05*
ABSTINENT	.148	.278	-2.0	5	.05*

TABLE 10.10 ALCOHOL GROUP.MEAN POSITIVE VERSUS NEGATIVE EFFECTS

interpreted events in a more negative way to explain the fact that they were now using heavily. On the other hand, if a real change in the way events were perceived had taken place while using heavily, this would still have some impact on events which occur subsequent to the interview (assuming they remain at a similar level of consumption). The next analysis examines this possibility.

Analysis five : The design of this study was such that interviews were carried out on the same individuals every three months. It was possible therefore to examine the perception of events which had occurred <u>after</u> each interview (but which were reported at a subsequent interview). Several possible criticisms do exist about interpreting this data in this way. Some subjects, who were abstinent at the first interview, may have relapsed at the second interview and some who were using heavily at the first interview, may have subsequently become abstinent. Nonetheless, some consistency in the way events were reported was expected.

<u>Results</u>

Tables 10.11 and 10.12 (see over) show the results of these comparisons for the heroin and alcohol groups. For both groups, events which occurred after abstinent interviews were significantly less likely to be

	USING X (N=45)	ABSTINENT X (N=42)	T-VALUE	2 TAIL PROB
OVERALL	11.6	7.7	-1.71	.094
PHYSICAL HEALTH	1.4	1.3	-.23	.818
MOOD	5.2	3.5	-1.7	.083
LEGAL SITUATION	.5	.2	-1.66	.104
SOCIAL LIFE	2.13	1.48	-1.02	.31
FINANCIAL CIRCUMSTANCES	1.73	.75	-2.10	.04*
EMPLOYMENT	.62	.37	-.80	.42

TABLE 10.11. FREQUENCY OF EFFECTS ON DIFFERENT LIFE AREAS FOR THREE MONTHS AFTER INTERVIEW, COMPARISON OF TIMES OF DRUG USE WITH TIMES OF ABSTINENCE. HEROIN GROUP.

	USING X (N=29)	ABSTINENT X (N=61)	T-VALUE	2 TAIL PROB
OVERALL	7.7	7.3	-.25	.801
PHYSICAL HEALTH	1.13	1.33	.56	.878
MOOD	3.88	4.18	.23	.818
LEGAL SITUATION	.17	.01	-1.65	.103
SOCIAL LIFE	1.24	1.23	.01	.989
FINANCIAL CIRCUMSTANCES	.88	.42	-2.47	.016*
EMPLOYMENT	.35	.19	-1.14	.259

TABLE 10.12. FREQUENCY OF EFFECTS ON DIFFERENT LIFE AREAS FOR THREE MONTHS AFTER INTERVIEW.

COMPARISON OF TIMES OF DRUG USE WITH TIMES OF ABSTINENCE. ALCOHOL GROUP.

perceived as affecting subjects financially than after "using" interviews. As with the last analysis, for both groups, this effect was more likely to be negative than positive.

Discussion (This analysis will be discussed in the overview at the end of this chapter).

The results of the above five analyses and those which were presented in the last chapter are now summarized below.

(1) Although the lives of heroin and alcohol abusers differed from those of controls in terms of stressful life events, these differences were fully accounted for by events consequential on the drug use itself. There was no evidence of an overall increase in stressful events in the lives of smokers.

(2) The experience of stressful events, which were recognized by the subjects to be consequences of their drug use, did not necessarily lead to a reduction in use. Such events were frequently interpreted as reasons for continuing or even increasing use.

(3) Whereas both the heroin and alcohol groups were frequently abstinent from their drug of choice, this was not true for the smokers, who tended to maintain a steady habit throughout the study period.

(4) Such periods of abstinence were explained, by both the heroin and alcohol groups, as resulting from problems or events associated with health, family,

social, legal or financial aspects of their lives (though not necessarily in that order of priority). These types of problems were found, however, to exist with similar frequency at times of continued heavy drug use. Furthermore, the same sort of problems were also often cited as explanations for relapse.

(5) The difference between subject's lives at times of abstinence and times of heavy use, was characterized by a change in their interpretation of their lives. That is, they interpreted the same type of events in a different way depending on whether they were using or abstinent at the time. Both the heroin and alcohol groups showed heightened awareness of events when they were using heavily. At times of heavy use, these groups were more likely to perceive events as affecting them both socially and financially and the alcohol group was also more likely to perceive a legal impact of events.

All of these events were more likely to be negative than positive. Unfortunately, due to the very infrequent abstinences of the tobacco users, this type of analysis was not possible with this group.

(6) Finally, some evidence was found showing that the change in interpretation was not fully explained by subjects 'making sense' of their heavy consumption, that is, they were not simply retrospectively interpreting events more negatively because they were using heavily. It seems that a real shift in the way events were perceived at the time of heavy drug use,

did take place.

OVERVIEW

The evidence from the last five analyses indicates that drug use (at least heroin and alcohol abuse) alters the way in which events are perceived. The hypothesis outlined is however, rejected in that no reduction in awareness of the negative impact of events was found at times of drug use. If anything, awareness of negative impacts is greater when using heavily, although this would appear to be a function of a more general heightened awareness of the impact of events. The reason for arguing this is that the number of positive effects of events also increased when using (though this increase was not statistically significant), for four out of five comparisons shown in tables 10. 3 and 10. 4. What is still unclear is the extent to which people report events and their impact differently in order to make sense of their behaviour.

What can be said of the results is that the reasons people <u>believe</u> to be important in producing change are given possibly because they seem the most plausiblle to the subjects themselves at the time. An indication as to why the reasons given for change should not simply be taken at face value is, for example, illustrated by the case of the heroin users who cited prison as the explanation for their abstinence. In all of these cases subjects were

actually in prison at the time. It might therefore, seem logical and plausible to assume that lack of availability was the main reason for abstinence. Undoubtedly imprisonment would reduce both frequency and quantity of use. On the other hand, it is known and confirmed by these same subjects that many drugs are available in prison. It may not be possible to maintain a heavy daily habit, but it is certainly possible to continue using, if infrequently. In fact, amongst the eight individuals who reported their abstinence to be the result of imprisonment, four of them also reported that they had been offered heroin in the prison but had refused. They were taking the opportunity to have a period of abstinence. So imprisonment itself could not be the real key to change. It is hypothesized that some sort of change of attitude or change in the costs/benefits of use must account for the abstinence and it is not enough to take the reasons given at face value. The ability to refuse heroin in the prison setting would be unthinkable if offered a fix 'outside'. A number of factors such as absence of cues for use in the prison make it easy to refuse when in prison but not outside. This type of explanation forms the basis of the social learning models of drug use outlined in chapter three. Nonetheless, differences in the cues cannot explain all of the other reasons given by subjects to explain their behaviour change.

Drug users do not appear to experience more 'unrelated' stresses than other individuals and drug

use does not seem to reduce the impact of life stresses. Yet the repeated testimony of countless heroin, alcohol and tobacco users to the effect that this is why they use, is impressive.

The final chapters in this thesis present a hypothetical model which has emerged fom the results already summarized and also include discussion of the ideal way to test the validity of this type of model. It is possible that it is the way in which subjects interpret stressful events and not the events themselves that lead to change. Unfortunately this hypothesis cannot fully be explored by the data presented here, though an elaboration of this hypothesis is made in the theoretical model outlined in the following chapters.

PART IV : CONCLUSIONS

CHAPTER ELEVEN

A CYCLICAL MODEL OF DRUG USE

The relationship between stressful events and drug use is obviously a complex one. The simple hypothesis that an increased incidence of life events relates to an increase in drug use has been shown to be inadequate both by the present study and by the literature reviewed in chapter three. The results presented in the last two chapters have shown that stressful events are not always interpreted in the same way, either by the same individual at different times or by different individuals. The same life events cannot always be expected, therefore, to influence behaviour in a uniform way. The link between life events and drug use would best be expressed by a relationship in which interpretation of events and changes in that interpretation over time rather than the simple occurrence of the events per se, would act as the independent variable. This chapter therefore, presents a hypothetical model which was developed to indicate how such a relationship might operate. The model is based on the findings of the present study which were summarized at the end of the last chapter. Although no difference was found between the incidence of life events at times of drug use and times of abstinence, subjects believed that increased life stress was the

explanation for their abstinence. Consequently, they interpreted these events differently at times of heavy use and times of abstinence.

The model illustrates the hypothesis that it is this shift in interpretation of events which brings about the change in consumption from use to abstinence. In order however, for the model to be useful, it must also provide an explanation for why change in interpretation of events takes place at all. To answer this, it is necessary first to introduce a new concept (new only in terms of this thesis), and that is the concept of tolerance. In the model to be outlined, tolerance is one of the key elements. It is necessary therefore to exclude a number of it's common interpretations and the next section attempts to clarify and elaborate on the particular meaning of toleeance used in the context of this model.

THE CONCEPT OF TOLERANCE

Tolerance, can be defined, in the most general terms, as the process whereby frequent experience of the same event, results in a reduction in response to that experience or event. Tolerance is not a purely pharmacological process but one which can be applied to a wide range of human experience. Tolerance which develops to drug substances cannot be regarded as a merely physiological or pharmacological process. For instance, two aspects of tolerance are distinguished by Kalant et al (1971a), namely, acquired and innate

tolerance. The former refers to the tolerance acquired through repeated administration of a drug, whereas 'innate' tolerance, is the organism's level of tolerance that exists on the first administration of a drug. Factors such as weight, sex and genetic factors, predispose different individuals to different levels of 'innate' tolerance to a drug. On the other hand, Hinson & Siegel (1980) list several other types of tolerance which may be psychological in nature. Examples of these are, 'behavioural tolerance' and 'behaviourally augmented tolerance'. 'Behavioural tolerance' is the ability to compensate for drug induced impairments, such as staggering gait. It has been argued by some authors such as Dews (1962), that this ability is not the result of lessened pharmacological effects of a drug, but of the user's acquired behavioural strategy to cope with the effect. This ability results from practise of the behaviour while in a drug induced state. However, it has also been argued, that tolerance acquired in this way actually results from the central cellular effects of the drug being enhanced by the demands of the task. Whatever the case, it is undoubtedly true that every drug is experienced in a number of different ways and every drug has a number of different effects. Amongst these effects are thermic, analgesic, lethal and euphoric effects. Tolerance can develop to any or all of these (though not necessarily simultaneously). The variety of effects means that a number of different types of explanation are necessary

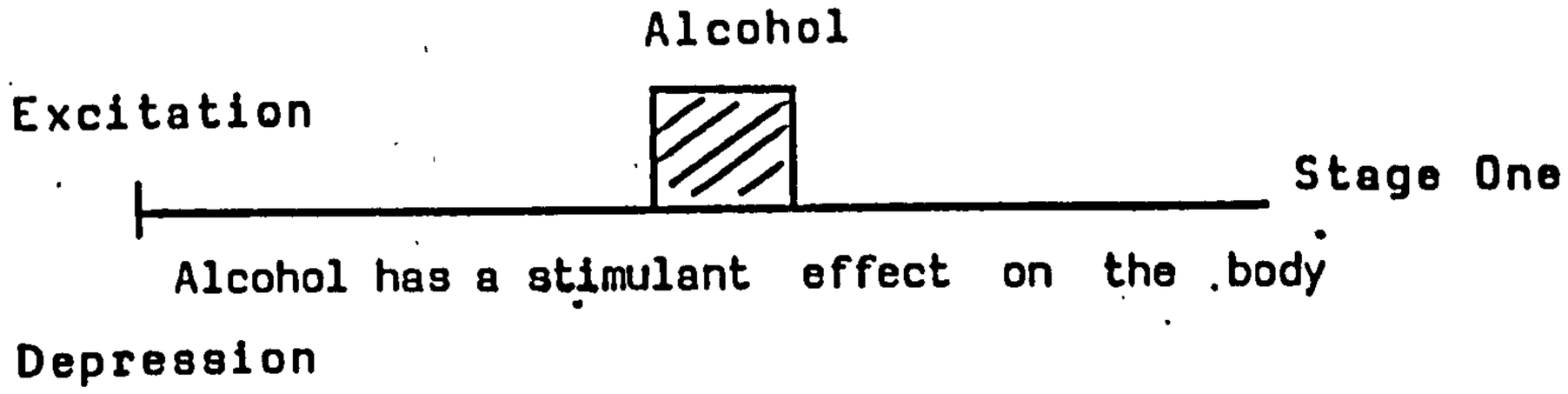
to explain the development of tolerance. These explanations range from physiological to purely psychological explanations. Physiological type explanations are applied to those effects in which the development of tolerance involves neurological changes occurring following administration of a drug.It is not possible for this thesis to outline in detail the physiological mechanism that leads to the development of this type of tolerance. However, Kalant (1971b) explains that mere repetition of pharmacological stimulation is sufficient for the development of tolerance through either neurological change or alterations in the metabolism of the drug.

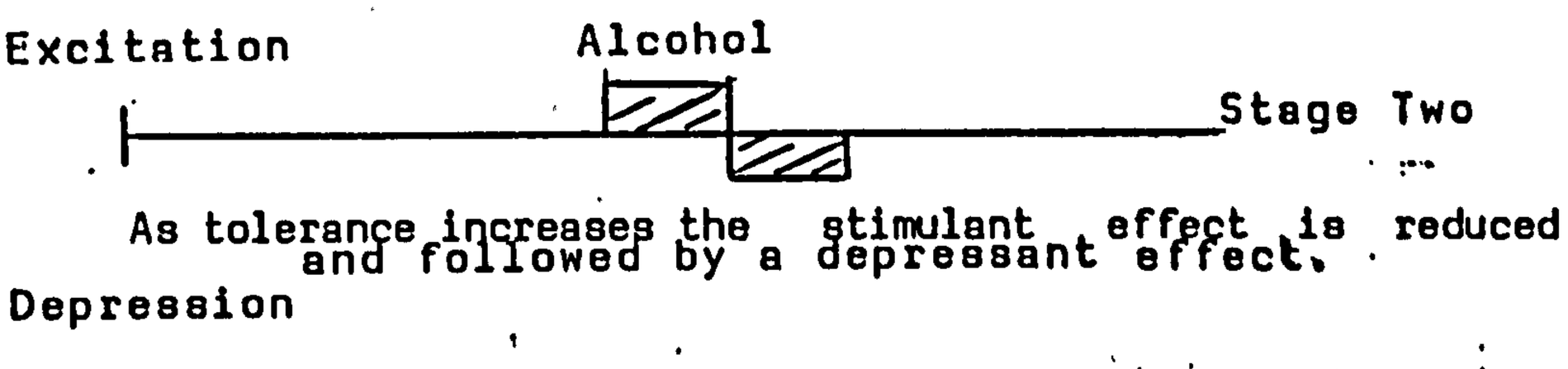
The opponent process model of tolerance contains both physiological and psychological elements. This is as follows. Wherever a drug is introduced to the body, a disturbance occurs. With alcohol, this disturbance is characterized by the initial depressant effect on the nervous system. 'Homeostasis' is the adaptive mechanism by which the body tries to return itself to normal after any disturbance. Repeated administrations of a drug lead to the body learning to react with a process which is opposite or 'opponent' to the effects of the drug. Once high tolerance has developed, for instance with alcohol, the body activates the nervous system to a state of excitement so that the natural depressant effect of this drug serve only to neutralize and return the body to a state

of normality, i.e. the drug appears to have no effect. This opponent process model of tolerance is illustrated in fig 11.1 (see over). The learning mechanism involved in this model implies a psychological dimension in the development of tolerance.

Purely psychological explanations of tolerance are those such as has been put forward by Seigal et al (1978) who argue that the pre-drug environmental cues, which exist at the time of administration of a drug, act initially as unconditional stimuli (UCS) to the effect of the drug. For instance, the drinker who always drinks in a particular pub eventually becomes conditioned to those surroundings as a stimulus to drink, i.e. the UCS (pub) becomes a conditioned stimulus (CS). This Pavlovian model of conditioned tolerance assumes that it is the environmental cues (i.e. CS) which initiate the opponent processes referred to above, so that the body eventually produces the opponent process even before the drug is administered, but when the environmental cues are present.

A second psychological type explanation for the development of tolerance, is one where the drug <u>effect</u> is central and seen as a reinforcer of use. The strength of any reinforcer is determined by a number of factors such as (i) consistency of receiving the reinforcer (ii) immediacy of receiving the reinforcer and (iii) cognitive factors related to perceived pleasureableness of the reinforcer.





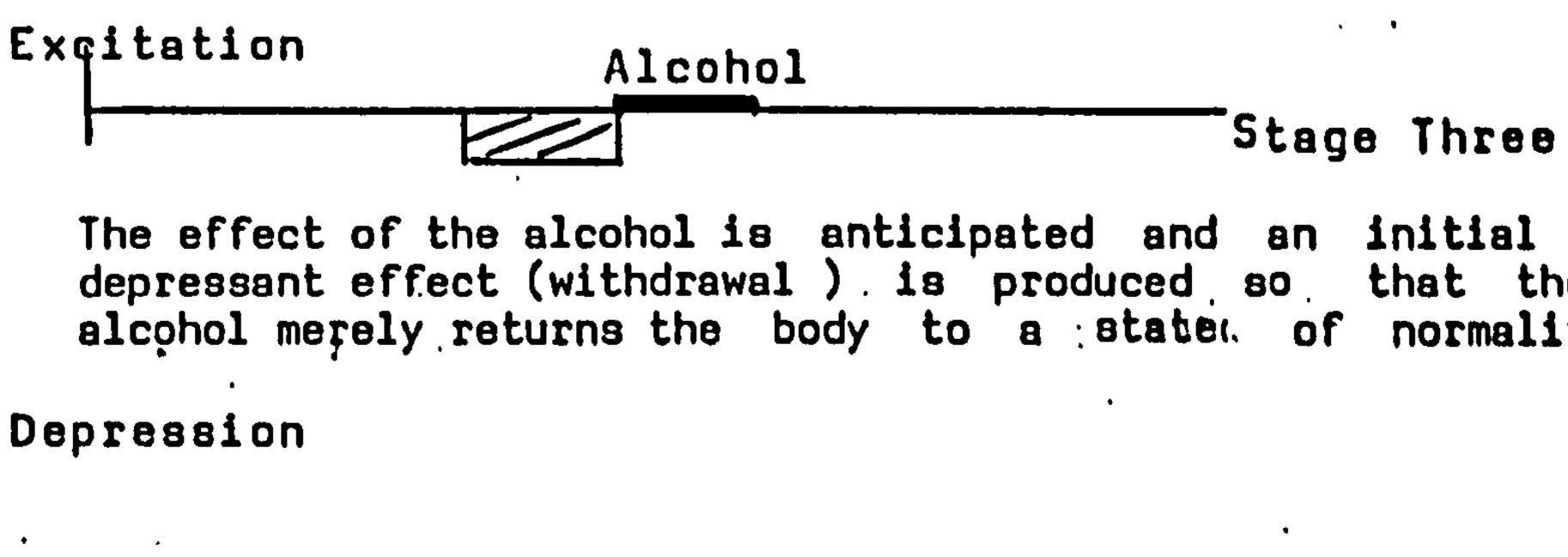


Fig. 11.1. The Opponent Process Model of Tolerance.

The consistency with which reinforcement is applied is important in establishing a behaviour. However, after a time, repeated and consistent administration of a reinforcer serves to reduce the strength of that reinforcer.This is because a process of habituation occurs when any consequence becomes highly predictable. However habituation does not develop as quickly when the reinforcement interval is varied or where it is less predictable.

The operant conditioning model explains tolerance as the development of habituation to the effects of the drug itself and suggests that the drug becomes less reinforcing with time.

Some further important aspects of tolerance are relevant to the proposed model. Although Maisto et al (1978), state that "current knowledge of tolerance to alcohol is primarily derived from animal research and extrapolations to human behaviour must be tempered accordingly", some aspects of tolerance referred to by these authors <u>are</u> incorporated into the proposed model. These are (1) <u>The Reversibility of Tolerance</u>. Maisto et al (1978) found that this process is well documented in the animal literature and state that "during a cycle of exposure and nonexposure to alcohol, tolerance develops and then dissipates to baseline levels". (2) A second aspect of tolerance outlined by Maisto et al (1978), is the <u>Maintenance of tolerance</u>. Repeated cycles of exposure and nonexposure to alcohol, i.e. drinking and abstinence, have been shown in

animals to increase the rate at which tolerance develops and to decrease the rate at which it is extinguished. If applied to humans, this would imply that for each subsequent period of abstinence a longer time is required before high tolerance is extinguished. With alcohol, for instance, if drinking recommences too soon after abstinence has started, then tolerance will not have been reversed during that period of abstinence. Furthermore, the speed with which tolerance is reinstated in a chronic alcohol abuser who has experienced many periods of abstinence, may make it appear that tolerance has remained stable throughout the abstinent period.

What evidence is there that these phenomena occur in humans ? Jellineck (1960), postulated that the development of anxiety in a drinker is the result of failing to achieve the desired 'euphoric effect' of alcohol, which has previously been experienced on ingestion of the drug. He recognized that this 'euphoric' effect occurs for a short time only and that with increased tolerance it disappears. In a study of 50 successive admissions to an in-patient alcohol treatment unit, O'Doherty & Eunson (1987) found that 80% of these drinkers reported that a period of abstinence restored this lost effect. They agreed with the statement that "the first drink after a period of abstinence is more enjoyable and has a better 'effect' than the last drink prior to abstinence".

It seems then, that problem drinkers are themselves aware of this reversibility of tolerance. Similar results were found in the present study when the same question was asked of both heroin users and smokers. In both cases, (80% and 50% respectively) the majority of users reported experiencing an enhanced 'euphoric effect' after a period of abstinence.

The present model is concerned only with the development of tolerance to this 'euphoric effect'. No assumptions are made about the physiological aspects of tolerance, although, it is possible, though not necessary, that development to any of the other effects of a drug may occur coincidentally with tolerance to the 'euphoric effect'.

A Cyclical Model of Drug Use

The model and the stages through which it is proposed the user passes, is illustrated in figure 11.2. overleaf. Increasing tolerance occurs when more of a drug is required to produce the same 'effects'. When consumption continues to increase, a point is reached where increasing amounts of the drug do not bring about increasing "highs" and the user no longer experiences enjoyement of the substance. A plateau in enhanced experience occurs. and use of the substance does not bring about the desired euphoric effect. (It is at this point that Jellineck (1960) believes anxiety develops in the drinker). This seems to happen to all problem drinkers, heroin users and smokers who continue

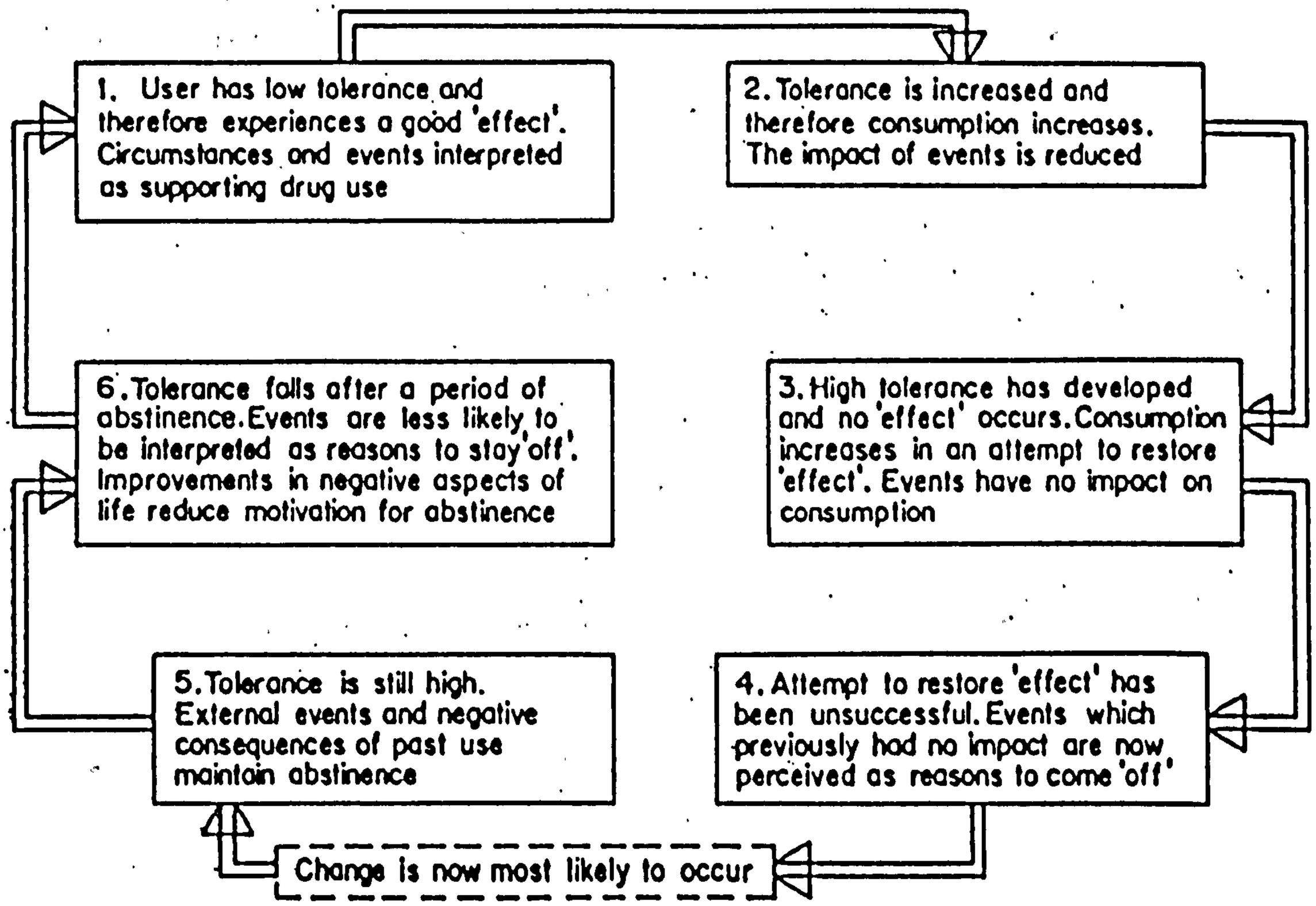


Fig. 11.2. A Cyclical Model of Drug Use

increasing consumption long enough. The drinker or heroin user often feels at this point in the cycle that they are "using only to keep straight" or "normal". This is indeed the case as the avoidance of withdrawal effects may be the only potent reinforcers of use at this time. Nonetheless, drinking or heroin use may actually increase in an attempt to restore the lost effect, because past increases in consumption did succeeed in restoring the effect. If a drinker or drug user comes into contact with treatment services at this point, their behaviour seems difficult to understand and it is as if that behaviour can only be explained by some external factor compelling the individual to increase or carry on using. No reinforcers are obvious to an observer. The individual is indeed behaving as if she/he has a disease. It is only by observing the earlier phases in the cycle (prior to treatment), that increasing use of the substance can be understood.

It may appear that the emphasis of this thesis has shifted from an examination of the role of life events in drug consumption to an unrelated topic, namely, tolerance. It has been necessary, however, to provide this brief outline of tolerance, as only now can the role of life events in this cycle of consumption be explained.

LIFE EVENTS AND TOLERANCE

At the time of initial use of a substance, environmental events and cues act as stimuli for

substance use. Drinking or heroin use is initially an unconditioned response to events and circumstances. The individual interprets his life circumstances as reinforcing use, whether or not these circumstances are negative or positive. For example, an impending divorce or winning the pools could both be interpreted as reasons for starting drinking or using other drugs as can peer group approval of drug taking. The drug use is followed by the effects of the drug, which include the 'euphoric effect'. After a time, therefore, the necessity for events to stimulate the drug use subsides, as the drug use itself (which started out as the unconditioned response to social and environmental cues), has become a conditioned stimulus to the 'euphoric effect'. Similarly the original reinforcers of use (such as peer group approval and other external influences and events) are replaced as reinforcers of use by the conditioned reinforcer of the 'euphoric' effect. The euphoric effect of the substance has been 'paired' over time with the original external reinforcers and it now reinforces substance use, even without these supporting circumstances and events. As a result, events and circumstances which might previously have led to a reduction in substance use, no longer have an impact on consumption as this is now reinforced by the euphoric effect.

Consistent experience of this euphoric effect however, eventually reduces its strength as a

reinforcer. The 'plateau' referred to earlier, where use of the substance does not bring about the desired effect, now results. Increasing tolerance to the 'euphoric' effect is developing. Once the user is no longer experiencing the effect, they report that they are using the drug " only to keep normal" and avoid withdrawals. Life events now start again to have an influence on drug use. Stressful events may now be given a meaning that would not have been attributed to them had they occurred at an earlier part of the cycle. Events occurring while the 'euphoric effect' is experienced do not have the same effect on consumption as they have once high tolerance to this effect has developed. For example, a health event such as 'hepatitis' would not be interpreted as a reason to 'come off' at a stage when a heroin user is experiencing a euphoric 'effect'. In the absence of the 'effect' this would be interpreted as a reason to give up.

It is proposed that changes in tolerance to the euphoric effects of a drug, interact with the occurrence of life events to bring about changes in how life events are interpreted. The costs and benefits of continued use are different when a user is experiencing the 'plateau' than when they are experiencing the 'effect'. The costs may appear greater because negative events are occuring in the absence of the euphoric effect and consumption may therefore be more likely to cease.

A similar, but opposite, shift in the way events are interpreted takes place when a user is abstinent. A period of abstinence (often while in treatment), generally leads to some improvement in the drug user's life situation. The problems cited as reasons for giving up drug use generally show some improvement as a result of abstinence. For example , 'threat of losing one's job' or an impending family split-up, may prompt a period of abstinence. After some time however, if abstinence is maintained, the threat of such events or the consequences of other events are often reduced. With the resulting improvement in life circumstances, some of the motivation for abstinence may be dissipated. Simultaneously, the high tolerance to the euphoric effect, which existed at the start of the abstinent period, will have been reduced. In learning terms, the euphoric response has been extinguished. This reduction in tolerence comes about due to the reversibility of tolerance referred to earlier. A second shift in the cost/benefit balance of abstinence takes place and substance use may now resume in response to life events which would not have caused a relapse at an earlier time in the abstinent phase. Events which occur now, are more likely to be interpreted as reasons to resume substance use than if they had occurred earlier. Also events which actually occurred earlier, may be re-interpretd as reasons to relapse.

The model put forward tentatively here, proposes that a cycle of substance abuse involves a progression through a number of stages, during which the interpretation of life events will differ as the cost/benefit balance varies with changes in tolerance. It must be stressed that neither changes in tolerance alone, or life events alone, are sufficient to produce change in this cyclical pattern of consumption. The interaction of both variables is necessary. The absence of this interaction is a possible explanation for the maintenance of smoking by the smokers in this study. Despite the fact that many smokers report no longer 'enjoying' smoking, they still continue to smoke. In the present study, there was little variation in smokers consumption throughout the study. Yet, they also commonly reported that they were no longer experiencing the 'euphoric' effects of smoking. However they were not experiencing many consequences of smoking in terms of life events, nor were they experiencing different life stresses to the non-smokers. They were not therefore, experiencing events which could logically be interpreted as reasons to stop smoking. The low number of stressful events caused by smoking, would explain why smokers remain for long periods of time at stage three of the cycle (see fig 11.2), where the behaviour continues in spite of the fact that they are no longer 'enjoying' the effect.

It is further hypothesized the the speed of

progress through the cycle varies with the substance used, and varies with the life events occurring at the time and with the user's 'cycle' history. Research from animal studies, referred to earlier, would predict that the more often an individual has been through the cycle, the faster will be the reinstatement of tolerance and therefore the faster the abstinence/relapse interchange. Whereas heroin users (who come "off" frequently) appear to go through the cycle many times, smokers may do so only once or twice in an entire smoking career. On the other hand, many individuals such as social drinkers may never advance past stage two of the cycle. It is theoretically possible for any user, even if they have been through the whole cycle, to arrest their progress at an earlier stage of any subsequent cycle and remain, for example, a social user. However, a common occurence is that users may even speed up the rate at which they pass through the cycle. Current treatments for problem users are typically initiated and terminated in stage 5. However it is implicit in this model that relapse is more likely to occurr when the user is at stage 6 and least likely to relapse when at stage 5, (although the occurrence of certain salient events, for a particular user, could alter this probability).

The model outlined in this chapter, although still at the level of hypothesis, is basically the conclusion of this thesis. The aim of the model is to explain both the apparently conflicting findings of past research

and the results of the present study. Ideally this model should now be tested using a procedure such as path analysis which would assess the strength of the various links between the variables. However, only a new set of data could validly be used to test the proposed model in this way. Nonetheless, it would be useful to discuss the rationale for carrying out such a procedure as any further research on such a model should use this type of technique. The next chapter therefore will discuss the technique of path analysis and its application to life event research.

CHAPTER TWELVE

PATH ANALYSIS AND LIFE EVENT DATA

The purpose of this chapter is (a) to explain the rationale behind path analytic procedure and (b) to indicate why this type of procedure should be used to disentangle the complicated relationship between life events and drug use and finally, (c) to explain the difficulty of carrying out such an analysis with the existing data.

Rationale for path analysis

The most desirable outcome of research in the social sciences is to find support for a theory which makes statements about the 'causes' and 'effects' of various actions or variables on each other. The search for meaning involves a search for causal explanations.

The purpose of statistical procedures such as regression, multiple regression or any procedure using regression as a base, is to measure the extent to which one variable or a set of variables can predict the value of a dependent variable. The degree to which variables in the set predict changes in the dependent variable can also be estimated from the regression coefficients. Fig.12.1 overleaf illustrates schematically a typical multiple regression.

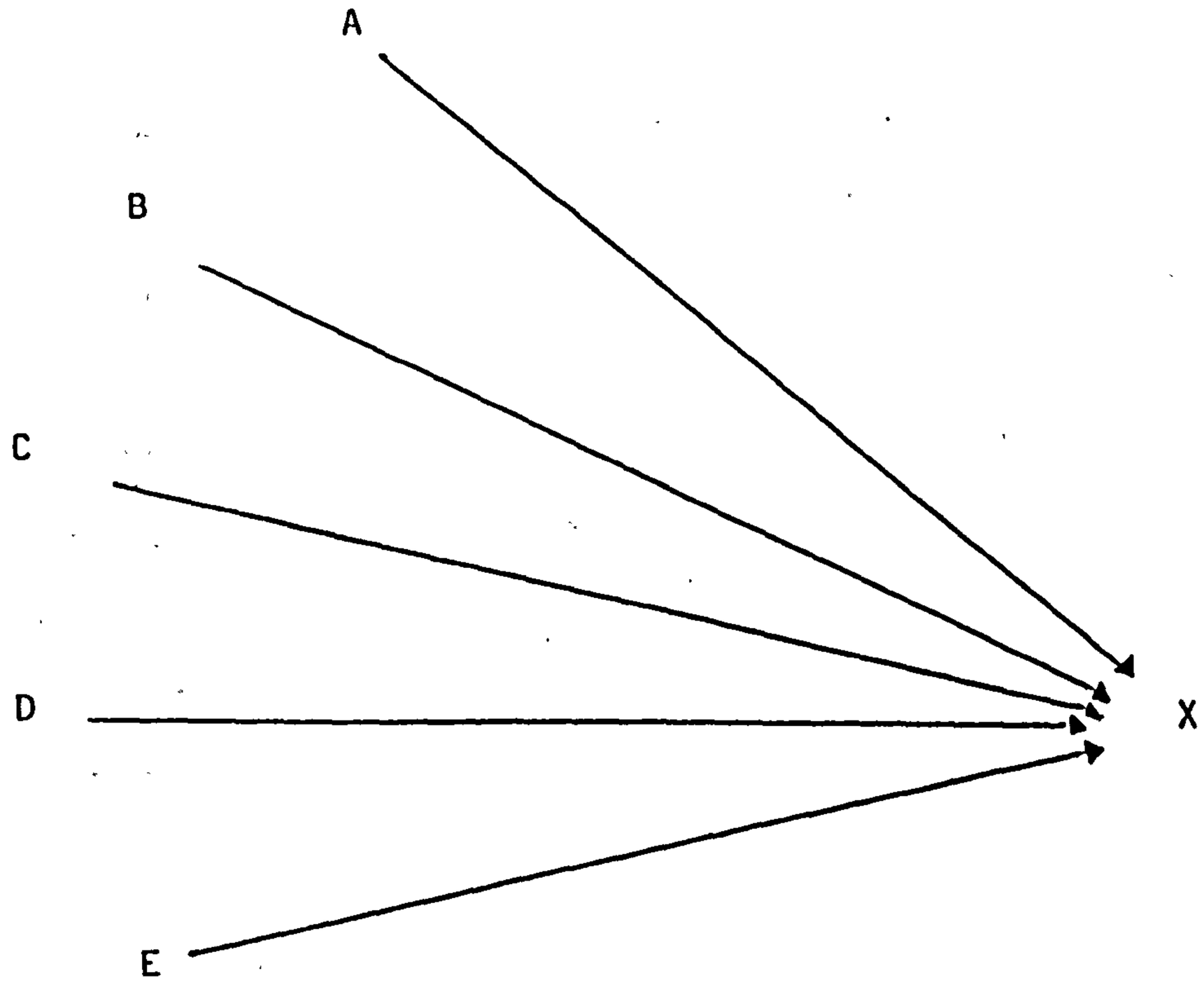


Fig. 12.1. A typical multiple regression, showing A,B,C,D and E as predictors of X

In this model all of the regressors are assumed to be at the same 'level', consequently the amount of information obtainable from the predictive model is minimal because there is no way of knowing just <u>how</u> or <u>why</u> the predictors 'work'. Despite this, regression techniques are extremely useful and have been used widely in the social sciences. When prediction alone is the main goal, regression is the appropriate technique. Indeed in the absence of a theory stating how or why different regressors should be predictive, or how they relate to each other, then regression is the only suitable technique.

In social science research however, it is often necessary or desirable to disentangle some of the ways in which variables relate to each other in order to make statements about 'causality'. When this is desired, some sort of analytic model in which a causal process is assumed to be operating must be proposed. 'Confirmatory analysis' or 'causal modelling' is then an appropriate way in which to examine data.

Causal modelling or path analysis makes use of statistical techniques such as analysis of variance and multiple regression, but is not in itself a statistical procedure. Rather, it is a way of looking at the consequences of a particular theory which proposes how different variables relate to each other. It is also

used to look at the predictive value of a particular theory. It must be said at this early stage that it should not be used either to generate theory or as a 'dredging data' exercise in the hunt for significant results. Indeed, any attempt at causal modelling in the absence of a theory can lead to extremely misleading results. A theory stating which variables should be controlled for, in which particular analysis and under which conditions, is a pre-requisite of any path analysis. Before outlining the other necessary conditions and assumptions a brief discussion of the nature of causality may be of value.

The Nature of 'Causality'

It is not within the scope of this thesis to cover in detail a topic with which philosophers have battled for centuries. It is, however, necessary to point out how erroneous conclusions can be reached by researchers who have inferred causality in dubious circumstances.

In the social sciences causality cannot be defined as a 'necessary' relationship between two variables. From a logical statement of the kind 'B follows A', it can be inferred that A causes B. This does not mean that the occurrence of A is always necessary for the occurrence of B. A hypothetical example illustrates this point. Let us suppose that a bereavement could cause an increase in drinking for a heavy drinker.

This does not imply that in order to bring about an increase in drinking, the occurrence of a bereavement is necessary. It has been argued by James, Mulaik & Brett (1982) that causal relations must also be tentative, "While a causal relation may be deduced logically from prior theoretical assumptions or based inductively on an observation of a regularity in experience, there is no logical guarantee that the relation will occur similarly in future experience". It is the essence of path analysis to provide explanations (by way of mediating variables) of why a particular expected relation may or may not not occur in a particular circumstance.

The term "causality" however, has been almost discarded by science and has been replaced by one of "functional relationships". Simon (1952, 1953) introduced this term, and showed that whereas a functional relationship can be 'symmetrical' with interdependence of variables, 'causation' implies 'asymmetry'. Simon sees a causal relation as an "asymmetric functional relation". His definition however, does not allow for reciprocal causation. It is possible, for instance, to hypothesyze that

(1) problem drinking ('causes') = f(family stress)

(note 'f' means 'is a function of'),

and at the same time

(2) family stress ('causes')= f(problem drinking).

Consequently James et al (1982) propose an amendment to Simon's definition and it is this amended definition of a causal relation that is adopted in the remainder of this thesis - "Causality is a functional relation among certain variables, or subsets of variables, in a self-contained structure, whose functional relation does not imply reciprocal relation but reciprocal relations may be postulated".

The application of path analysis to the data in this study is becoming clear. Before discussing path analysis of the present data, a brief explanation of the assumptions necessary for this type of modelling will be outlined in the next section.

Path Analysis

The basic theories of path analysis, according to Christopher & Elliot (1970) "is that a correlation between any two variables can be written in terms of the routes linking them via other variables" in a particular model. (The correlation referred to is the zero order correlation.) The product of all of the links in a particular pathway indicates the relative importance of that pathway as a cause of the dependent variable. Blalock (1964) distinguishes between direct and indirect causation. X is a direct cause of Y, only if a change in X produces a change in Y (X ---> Y). However, X could be an indirect cause of Y if it

produces a change in Z which in turn produces a change in Y (X ---> Z ---> Y). The 'goodness of fit' of a particular model is determined by comparing the sum of the partial pathway products (i.e. indirect causes) plus the direct causes, with the zero order correlation. The closer this difference is to zero, the better the fit of the model. Christopher & Elliot (1970) suggest accepting a particular model if the difference involved is less than 5%.

Figure 12.2 see over illustrates a simple hypothetical model of drug use and criminal activity. Let us suppose that drug use itself is not a direct cause of criminal activity, but that using drugs leads one to keep a certain type of company which in turn influences one's involvement with crime. Other factors, such as having a criminal family background, may also influence the type of friends we keep. Figure 12.2 is a path diagram for such a hypothesis. The figure also illustrates that there is no necessary relationship between drug use and having a criminal family background (from the absence of a direct arrow between these variables). The curved, double-headed arrow indicates that although these variables may be correlated, the correlation is not considered relevant to the theory.

There are two schools of thought as to how one ought to proceed in order to test this model. The first is that suggested by Sutton (1986) and Blalock

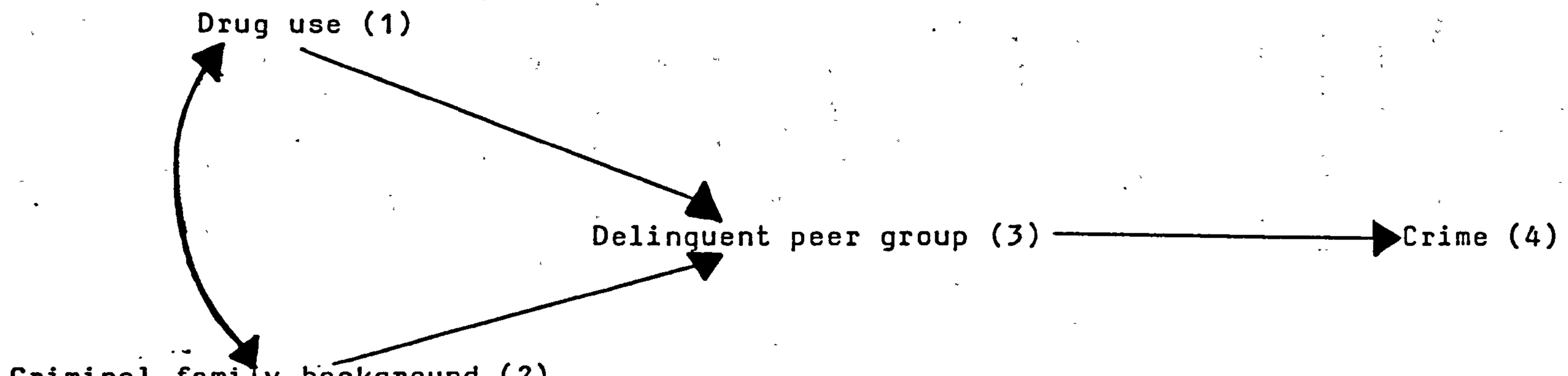


Fig. 12.2. A typical path model

(1964) amongst many others. Basically what this involves is measuring (by means of a number of regression analyses) the relative influence of all variables on each other. The pathways which are found to be statistically insignificant are 'trimmed' from the model and the analysis repeated with the remaining or modified model. This procedure may, in fact, generate significant pathways which would then have to be incorporated into the theoretical basis for the model. Testing the model (in Fig. 12.2) in this way would involve, initially, a regression of (a) 3 on both 1 and 2, and then (b) then a regression of 4 on 1, 2 and 3. This would generate values for pathways 1 to 4 and 2 to 4 which in the current hypothesis are insignificant and therefore not illustrated in the figure. If these were found to be significant the model would be altered to take this into account. This type of model, where all possible pathways are included, is called a "fully recursive" model.

Franklin (1985) and Wright (1960) on the other hand, suggest that once a particular model is hypothesized, only the pathways for that particular model should be estimated. Therefore the 'goodness of fit' test for the above example would involve (a) a regression of 3 on 1 and 2 and (b) a regression of 4 on 3 alone. In this way no added pathways are generated. The original theoretical model is 'fitted' and when a

large number of variables are involved it is certainly a simpler procedure. On the other hand, no unexpected significant pathways can emerge (as only expected significant pathways are tested and the hypothesis is either confirmed or disconfirmed).

Although, as in the first example, a limited set of causal hypotheses can be tested, this method, according to Wright (1960), is <u>primarily</u> a means of working out the logical consequences of a model given two assumptions: (1) a (weak) causal order among the variables is known and (2) the relationships are causally closed.

<u>Operational Procedure</u>

When all variables in the model are considered to be on the same scale, then the partial regression coefficients (Bs) are estimates of the direct causal effect of a particular link in a pathway. In this case the coefficients measure the extent to which a change in one variable would lead to a change in the linked variable. However, when variables are measured on different scales, it is not possible to use 'Bs' and the standardized partial regression coefficients i.e. beta weights, are used instead. Their interpretation can be more difficult, as they measure the change (in standard deviation units) produced in the dependent variable, by a change of one standard deviation in the

independent variable when other variables in unit analysis are held constant. Use of these standardised partial regression coefficients is comparable to converting scores to standard scales prior to carrying out the analysis.

In order to justify the interpretation of regression coefficients as causal effects two assumptions are made.

First, the residual causes of a given dependent variable must be uncorrelated with the residuals for the independent variables. If this were not the case, it would then imply that some third unmeasured variable accounted for the relationship between the dependent and independent variable. In order to satisfy this assumption all relevant variables must be measured. In social science research this is obviously impossible and the best that can be done is to measure all variables which are known or hypothesized to be relevant.

Second, the underlying variables should be normally distributed and their variances homogeneous. These two assumptions represent the 'ideal' and some deviation from them is possible. Furthermore the data should ideally be derived from large samples, so that the significance of the resulting coefficients may be tested against the standard error.

James et al (1982) also list conditions which

pertain to both the appropriateness of a theoretical model for causal inference and operational aspects. These are as follows:

1) formal statement of theory in terms of a structured model. By this condition it is meant that the variables and their causal connections must be specified, along with the rationale for these connections. The context in which these relations will exist must be specified and also the expected stability of the model;

2) Specification of causal order - the temporal order of 'causes' and 'effects' must be specified in advance.

3) Specification of causal direction. Unidirectional or recursive relations are expressed in the form X--->Y As already explained 'non-recursive' systems are also possible (i.e. X <---> Y) and this must be specified by the model. Cyclical models can also be hypothesized and in the present study the model used is a 'cyclical recursive model'.

(4) A further condition specified by James et al (1982) is that the variables in the model must be operationalizable, i.e. it must be possible to measure them.

Path analysis in research on life events and drug use

The review of the literature in Chapter 3 illustrates that although amongst some workers there is a consensus that life events in some way lead to changes in problem substance use, very few studies have attempted to answer the questions 'how' that relationship might operate or 'why' it might exist. Consequently, even if we ignore the methodological problems in these studies, what is left is a sort of shotgun theory of life events and addiction. A lot of different variables combining to 'influence' one. The sole fact that problem substance users may experience more or less life events than others in no way enhances our understanding of the nature or dynamics of addictive behaviours. What is needed is a testable theory about 'why' such a relationship might exist and 'by what' mechanism change is brought about. Instead of attempting to answer the simple question 'Do the lives of substance users differ from those of controls.?' an attempt to answer the following question should be made 'In what way do life events effect change in consumption ?

Path analysis in the current study

Ideally, the type of theory referred to above should be generated from one set of data and then a path model applied to a second set of data. In the current study this ideal condition cannot be met. The

theory and the model arose in the course of the analysis of the data and it was not possible in the context of the current study, to collect a second data set.

A second problem is that in carrying out any such procedure, it must be assumed that all relevant variables have been measured. (Of course it is impossible, especially in research in the social sciences to know that this has actually been achieved). In this case, however, it is known that an inadequate measure of tolerance or euphoric effect was used (see chapter eleven) and therefore assumptions about this variable must be tempered accordingly. The validity of the questionnaire which here is assumed to measure current enjoyment of the substance, could not be assessed.

Given the unsuitability of the present data for the application of path analysis as a means of testing the model, such a procedure would not be a valid test test. Nonetheless, a path analytic procedure should be used to test this type of model and so in order to demonstrate how this procedure should be used, the pathways in the current data set will be assessed while acknowledging that they are incomplete. This analysis is presented in appendix E, to indicate that it is not considered in any way a proper test of the model. However the results presented illustrate the path analysis procedure and show the relationship of the

different variables to each other in the data as it has been collected. Several of the pathways tested were found to be insignificant and it is assumed that this was because of the inadequate measures used and the fact that the model is not a hypothesis about a linear relationship. In order to adequately test the hypothesis the variables would have to be measured both under conditions in which life events would be expected to alter consumption and conditions in which they would not. The results in the appendix therefore, serve only as an illustration of how the path analytic procedure chould be applied to studies of life events.

Tables (12.1 and 12.2) showing the results of this path analysis and figures (12.3 and 12.4) illustrating the pathways which were tested are shown, for illustrative purposes overleaf.

This chapter has provided an explanation of path analysis and why it should be used in the analysis of data on life events and substance use. Furthermore, it has shown in what circumstances path analysis should be used and under what conditions. It has also indicated that this procedure is not just a set of techniques for analyzing data but a means of theory testing which greatly enhances interpretation of results in social science research.

It remains now for this thesis to summarize the state of knowledge about the nature of the relationship

between life events and drug use.

DEPENDENT VARIABLE	INDEPENDENT VARIABLE							COEFFICIENT OF DETERMINATION
	T	I	R	ST	L	S	F	
TN	.463							.214
	.561			-.263				.297
	.372		.324					.191
	.543	.081	-.345	-.448				.388
	.369	-.186	.323					.226
	.439	-.079						.196
	.553		.347	-.471				.382
I	.125			.463	.163	.178	-.151	.327
				.428	.172	.155	-.132	.269
				.450				.202
ST	.110							.012
L				-.054				.002
S				-.017				.000
F				-.056				.065
R	-.345							.119

TABLE 12.1: PATH COEFFICIENTS FOR MODEL, ALCOHOL GROUP

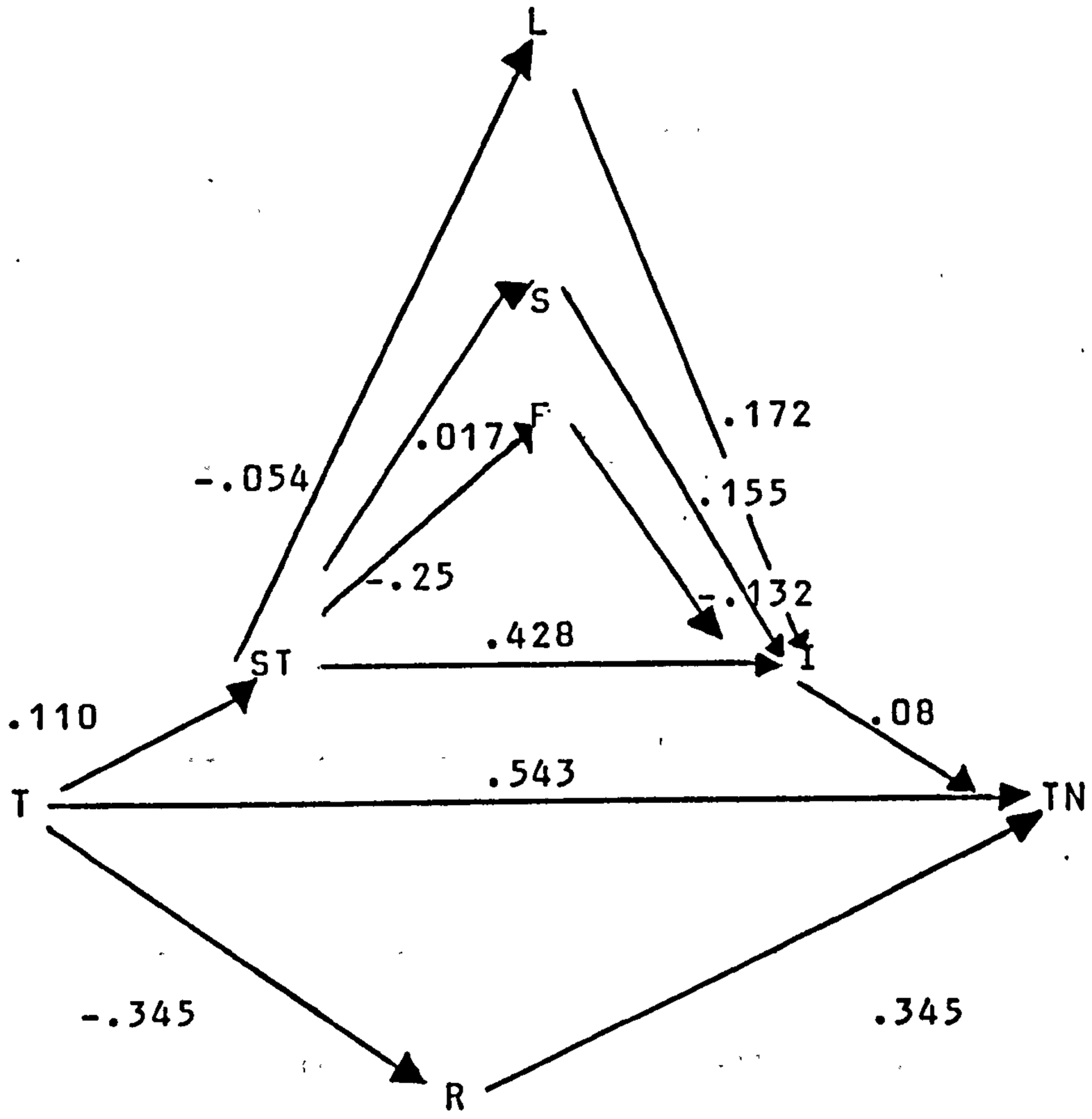


Fig. 12.3. Path diagram for <u>alcohol</u> group. Predictors of TN (i.e. consumption level three months after interview).

DEPENDENT VARIABLE	INDEPENDENT VARIABLE								COEFFICIENT OF DETERMINATION
	T	I	R	ST	S	F	P	M	
TN	.155 .664 -.723 .743 .456	.823 -.751 -.774 .958	-.107	-.324 .369 .138	-.030	-.200			.024 .345 .431 .440 .763
I	-.415 -.407 -.398			.178 .163 .166 .396	. .096 .109	-.058	-.080 .091	.207 .160 .213	.265 .274 .278 .218 .061 .045
ST	.489								.239
S				.085					-.007
F				.063					.004
R	-.039								

TABLE 12.2: PATH COEFFICIENTS FOR MODEL, HEROIN GROUP.

CHAPTER THIRTEEN

CONCLUDING COMMENTS

Life stress and its functional role in drug use have been the central topics in this study. In fact the thesis ends as it began, by raising a number of questions which need to be answered. The model generated by the study is a hypothesis. A proper test of the model was not possible for the reasons outlined in the last chapter.

What can be said at the end of this study about the impact of life events on drug use? To say that drug use has multiple determinants is a cliche but undoubtedly true. Consequently, any conceptualization of a simple link between stress and drug-use is probably inadequate. This, rather than the absence of any link may account for the negative findings reported by some of the studies reviewed in chapter three. What can be said at this point, is that the relationship is not a static one but a dynamic process which may be different for any two individuals or for one individual at two different points in time. Such a dynamic relationship has important implications for the models of drug use which were outlined in chapter four. If it is valid to assume a dynamic relationship between life events and drug use, then each of the four types of model reviewed in chapter four is inadequate as an explanation of that relationship. A different set of

factors may be required to explain each stage of a drug cycle and it is possible that the models, which were illustrated in fig 4.1, are applicable to different stages of the cycle. For instance, at stage one of the proposed model, the taking-up of drug use or re-starting a cycle of use may be explained by social learning type models. The evidence for this is found in studies (reviewed in chapter three) which show that initial drug use is influenced in teenagers by external factors such as peer group pressure and having friends who use alcohol or other drugs (e.g., Davies and Stacey, 1972, Bynner, 1969).

In the next stage of the proposed model acquired physical and psychological factors may lead to continued use. Previous models which were illustrated in fig 4.1., cells 3 and 4, may now be applied to drug taking. An individual may be experiencing both physical effects and psychological effects such as craving, which result in continued use. If the life events of drug users are examined at this stage, the type of results reported by Dudley et al (1974 and 1976), (referred to in chapter three), would be found. They found a higher incidence of life stress in a group of drug users compared to a group of controls. The proposed model suggests that users are likely to report more life stress than 'normals' at this stage but may not have done so at an earlier stage. According to the model, if Dudley had examined the same subjects at a different point in time he may have got different

results. Previous models of drug use have therefore failed to take into account the different impact of life events at different stages in the addiction process.

At the next stage of the process, once the 'euphoric' effect has diminished through increasing tolerance to the drug, behaviour may <u>appear</u> to be the result of an uncontollable disease. This is because the psychological and environmental cues which were important in developing earlier stages of use, no longer have the same impact. The behaviour of the drug user at this stage of the cycle appears to be unaffected by either their immediate environment or by life events. At this point in time a pre-existing physical condition may seem the only logical explanation for the drug use as the other important influences are no longer observable. By contrast, a relapse later in time may best be understood by reference to the social learning models of drug use (see fig. 4.1., cells 1.4, 2.4 and 3.4). Previous models are therefore seen as being inadequate explanations for the impact of life events on drug use as they fail to recognize the importance of studying drug use in its development and maintenance, remission and relapse. The changing relationship between life events and drug use has a number of important research implications. Firstly, any cross sectional research of populations carried out at a fixed point in time is

unlikely to yield anything but negative results. The obvious reason for this is that the research method used ignores the variety of experiences and responses to life events in a population at a given time. Although the individuals studied in this way may experience a variety of life events which affect them in different ways, the methodology is such that, when analzed as a whole, the effects of events on drug use will be masked.

It is nonetheless, possible to carry out single case studies of individual response to a particular life event. The difficulty here however, is that generalizations about the stress/drug-use link must be limited from such studies. It seems that research on life events should ideally be conducted therefore, over long periods of time, where the same individual is observed on a number of occassions. Only in this way will the variety of possible response under a variety of possible conditions and to a range of life events, be adequately assessed.

A second implication is that what people actually <u>say</u> about the causes of and effects of their behaviour should not be treated as if there is some stability to those causes and effects. It must be recognized that the stimuli for behaviour and the behavioural responses to those same stimuli, really do change over time. Consequently researchers cannot treat answers to questions about life events as if they have the qualities of being stable and absolute, like measures

of weight, height or length. An individuals answer to questions about causes and effects of their own behaviour are influenced by their psychological state at the time of interview. This does not mean that their answers are invalid. An individual may give a logical and reasonable account of why they behaved in a certain way in a particular situation. This does not mean however, that this explanation of their behaviour would apply under different circumstances or at a different point in time. In addition there may not be any objective or external validity to justify their explanation in that although events may actually motivate people in the way they describe, it does not necessarily mean that the events actually happened in the way they describe.

A third point is that the actual causes of behaviour change (e.g. of a particular occassion of remission from drug use) may not be easily tied down to a particular set of circumstances and events. As has been shown in this study, people can slip in and out of drug use on a number of occassions. Although the reasons and circumstances for initiating use may be quite obvious, the explanation for a fifth relapse, for example, may not be so clearly defined and may lie more at the level of conditioning and habit formation. Consequently, to look for relapse precipitants in the immediate past, in terms of major life events, may in fact force the identification of current circumstances

and events as stimuli for relapse, when in fact they may bear no more than a temporal association with the relapse.

Longitudinal studies of drug use careers have examined remission in drug takers by focussing on the decision making process of remitters. Such an approach assumes however, that the factors influencing a decision are always available for retrieval. In fact, looking for the exact timeing of decision making and for the 'causes' of particular decisions may represent no more then an attempt to impose a structure on what otherwise might be irrational behaviour. In fact it is perfectly possible that on occassions, individuals cease drug use when they tire of it. In terms of learning theory, the reinforcers no longer hold the same strength as in the past and this may result simply from repetition).

The model suggested here of a dynamic relationship between life events and drug use has implications for treatment of drug problems. If such a dynamic link has any validity, it suggests that the impact of treatment will not always have the same effect, even on the same individual. What it suggests is that there may be windows of opportunity for which treatment could be predicted to have optimum benefit. It should therefore be the aim of any treatment programme to establish when and under what conditions such a window of opportunity occurrs for each patient. This would mean that treatment (for instance psychotherapy) would be witheld

until the window of opportunity occurred for that individual, because at all other times a poor response to treatment would be predicted.

One of the questions left unanswered by this thesis is under what conditions do these windows of opportuity develop. At certain times life events will have a stronger influence on change in drug consumption, than at other times. Tolerance has been postulated as a possible mechanism of change, although it has not been possible to test out this hypothesis. The model in chapter eleven provides a partial explanation but remains at the level of hypothesis.

The conclusion is therefore that life events do play some part in understanding drug use. However, it is the perception of the event which influences drug taking rather than the event itself.

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APPENDIX A : LIST OF REFERRAL SOURCES

APPENDIX A

REFERRAL SOURCES

(1) Denmark St. drug and alcohol clinic

(2) Woodilee Psychiatric Hospital (alcohol and drug problems ward).

(3) Leverndale Psychiatric Hospital (alcohol problems clinic)

(4) Alban house

(5) Gartnavel Psychiatric Hospital (alcohol problems clinic)

(6) Gartnavel General Hospital (drug clinic)

(7) Rutherglen health centre

(8) Southern General 'Drug Stopping Clinic'

(9) Duke Street Hospital (drug clinic)

(10) Easterhouse Campaign Of Drug Action (E.C.O.D.A.)

(11) Possilpark 'Drugline' project

(12) Charing X alcohol problems clinic.

(13) Glasgow Royal Infirmary

(14) Unemployed workers' centres

(15) Barlinnie prison

(16) Scottish Council on Alcoholism

(17) Charing X 'Stop Smoking Clinic'

(18) Evening Times advertisement

APPENDIX B : INTERVIEW SCHEDULE

(Bi) Consumption diary

(Bii) Life events schedule

(Biii) measure of intention

Code..... Date..... Interview.....

Day 7: Alcohol.....

Tobacco.....

Heroin.....

Day 6: Alcohol.....

Tobacco.....

Heroin.....

Day 5: Alcohol.....

Tobacco.....

Heroin.....

Day 4: Alcohol.....

Tobacco.....

Heroin.....

Day 3: Alcohol.....

Tobacco.....

Heroin.....

Day 2: Alcohol.....

Tobacco.....

Heroin.....

Day 1: Alcohol.....

Tobacco.....

Heroin.....

Was this a typical week?.....

.....

.....

.....

CODE NO. _____ DATE _____

EVENT	To whom	when	p +or-	M +or-	L +or-	S +or-	F +or-	E +or-	C=caused U=unrelated	s=subjects use p=sufferers use O=others use	E=effect N=no effect	↑=increase ↓=decrease
HEALTH												
1) heart problems												
2) circulation problems (e.g. strokes)												
3) bronchitis												
4) hepatitis												
5) abscess												
6) serious tooth decay												
7) liver damage												
8) stomach ulcer												
9) depression (diagnosed)												
10) recent concentration and memory problems												
11) sexual difficulties												
12) sleep disturbance												
13) anxiety												
14) loss of appetite												
15) any hospitalizations (other than for above) (specify please)												
16) visits to GP (specify please)												
17) overdosed on drugs												
18) any other illness												

LEGAL

1) any imprisonment
2) jail for (drug related) petty theft, etc.
3) jail for drunk driving
4) jail for disturbance of peace
5) loss of licence/fine
6) court appearance in connection with the above, but not found guilty
7) jail for possession of illegal substances
8) any other court appearance
9) arrested, but not charged

FINANCIAL

1) increase debt (borrowed more)
2) pressure to pay
3) reduced income (for any reason)
4) increase in financial resources

SOCIAL

1) new circle of friends
2) meet new girlfriend/boyfriend
3) split with girlfriend/boyfriend
4) death of spouse
5) death of relative/friend
6) finish formal schooling/ university
7) retirement
8) son/daughter leaving home
9) divorce/separation
10) at centre of family conflict
11) other family conflict
12) marriage
13) pregnancy

14) Moved house

15) other (specify please)

EMPLOYMENT

1) new job

2) failure to find work (specifically tried)

3) threatened with dismissal

4) redundancy

5) increased pressure at work/ study

6) added responsibility

7) promotion

8) problems with boss/teacher

9) sat exams

10) failed exams

11) changed working hours

12) any other events that have affected your life recently

To whom	When	P +or-	M +or-	L +or-	S +or-	F +or-	E +or-	C=caused U-Unrelated	S=subjects use P=sufferers use O=others use	E=effect N=no effect	↑=increase ↓=decrease

P - PHYSICAL EFFECT - Any change that you have experienced in your physical health should be mentioned here. Anxiety and depression <u>should not</u> be included here but in the next category. However, ulcers, sleep loss or weight loss as a result of anxiety <u>are</u> physical effects and so should be mentioned here. Any physical effects besides those suggested above should also be included here.

M - MENTAL OR EMOTIONAL EFFECT - Any change in your feeling of wellbeing, either increases or decreases, should be noted here. Any feelings of anxiety or changes of mood <u>or</u> any diagnosed psychiatric illness should be noted here.

L - LEGAL EFFECT - Has this event made you feel more law abiding or more criminal than in the past? If so, this should be noted here. Even if this is not so, has there been any legal consequences of this event or any involvement with the legal profession as a result of this event? These should all be noted here.

S - SOCIAL EFFECTS - Any changes in (1) where, (2) how, (3) when or (4) with whom you usually spend leisure time. Consider each of these categories separately before deciding if this event has had any social effects.

F - FINANCIAL EFFECTS - Any increase or decrease in financial circumstances that has resulted from this event. Any financial change at all should be included here. Even if <u>actual</u> income hasn't changed but you have increased or decreased spending power because, e.g. you have given something up, should be included here.

E - EMPLOYMENT - Any change in employment status from unemployed to employed or vice versa that has resulted from this event should be included. Any other effect on employment, such as more responsibility, satisfaction or changed working conditions, should be included here.

IF YOU HAVE RECENTLY RETURNED TO DRINKING AFTER A PERIOD OF ABSTINENCE, HOW MUCH DO YOU AGREE WITH THE FOLLOWING STATEMENT? (REMEMBER A PERIOD OF ABSTINENCE CAN BE VOLUNTARY OR ENFORCED, E.G. AS A RESULT OF A PRISON SENTENCE OR BEING IN HOSPITAL.)

I enjoyed the drink the first time I had one after my recent period of 'being off'. I enjoyed it more than I did on the last occasion before I stopped drinking.

AGREE DISAGREE

---

strongly moderately slightly neither slightly moderately strongly

HOW LIKELY IS THE FOLLOWING STATEMENT TO BE TRUE?

I intend to remain off alcohol for the next 4 months.

---

extremely quite slightly neither slightly quite extremely

LIKELY UNLIKELY

APPENDIX C : INTERVIEW PROCEDURE

APPENDIX C

Interview procedure

At the first interview the nature of the study was explained to the subjects and if they had not already received one they were given the information sheet shown in appendix D. Subjects were encouraged to ask questions about the procedure involved in participating in the study. Two key elements were stressed. They were told

(1) "This is not an attempt to get you to give up cigarettes (or alcohol or heroin). Sometimes people give up and often they start using again. We want to interview you to find out what sort of things help you give up and what sort of things might lead you to start using again"

(2) "Although we want to interview you every three months, you are free to withdraw from the study at any point in time and you are not obliged to continue with the interviews".

The subject was then asked to sign the consent form shown in appendix E. At subsequent interviews this part of the procedure was omitted.

INTERVIEW SCHEDULE First the consumption diary (see

appendix Bi) was produced and subjects were told by the interviewer " I want to find out how much alcohol or tobacco or other drugs you have had in the past week".The diary was then placed on the table between the interviewer and the subject so that it could be seen by the subject. The interviewer proceded. "We'll start with yesterday and work backwards. As this is a study about drug use, it would be helpful if you could also tell me about your use of other drugs. Now, what did you have to drink yesterday ?"

The interviewer asked in turn about consumption of the target substance and then consumption of all other drugs. Drug use in the morning, afternoon, evening and night was enquired about in turn. The control groups were asked about alcohol consumption as most of them were social drinkers. They were also asked about consumption of other drugs, even if these were prescribed by a doctor. The procedure involved working back sequentially through each day until one week had been covered.

Second, the life events schedule (see Appendix Bii) was administered. A semi-structured interview format was used to elicit information about life events although a standard introduction was always used. The interviewer said the following

"I want to find out what has happened in your life over the past three months. I am interested only in events which have happened in the last three months (or since the last interview). As this is .... (give actual

date).. I want to talk about what has happened since ....(give date three months ago). I have here a list of events. I want to know if any of these events has happened to <u>you</u> over the last three months or to any <u>significant person</u> in your life. A significant person can be a member of your family, a close friend or anyone who you feel is important in your life. Now, in the last three months have you or anyone important to you had any heart problems" (i.e. this is the first item on the life events list).

The interviewer then worked down through the list until an event was ticked. The semi-structured aspect of the interview involved discussing with the subject details of the event and the circumstances surrounding it. No attempt was made at this stage to record this information. The purpose was to bring the event to mind for the subject. The interviewer would then say "I want to see how this has affected you. When exactly did this happen".The date or approximate date was then noted in column one of the interview form along with the subject of the event. "Do you think this event is affecting your health just now ?" If the subject answered yes to this question then the interviewer asked." this is a positive or a negative effect on your health ?".

The interviewer would then ask about effects on legal, social, financial and work aspects of life. In each case the subject rated the effect as negative, positive or neutral.

The interviewer then asked "do you think that (the event) was caused by your drinking (or smoking or heroin use) or do you think it was unrelated to it ?". The subject was usually asked to justify their response to this question to ensure that random answers were not being given. The interviewer then marked the response in the column headed C/U. C indicates 'caused' and U indicates "unrelated". Next the interviewer asked "Do you think that this (the event) is having any effect on your drinking (or smoking or heroin use) at the moment? Is it causing you to use more, to use less or is it not having any effect at all on your drinking ?". The appropriate answer was then coded in the columns headed E/N, indicating effect or not and in the last column which indicates the direction of the effect.

Each event reported was dealt with in the same way. For the control groups the procedure differed only in that when they were the subject of an event the last two questions relating to the cause of the event or its effect on their consumption were omitted.

The scale measuring intention was then produced (see appendix Biii) and each subject told "I want to know how much you agree with this statement. Is it more likely to be true or more likely to be false". When the subject answered the interviewer asks "Is that slightly (un)likely, moderately (un)likely or extremely (un)likely". Finally the scales measuring perception of relapse and perceived pleasure (see appendices Biv and Bv) were administered in the same way.

Each interview was conducted in a similar way, although, however, after a subject had completed two or three interviews, it was common for them to interrupt the interviewer and say that they remembered the procedure involved. If the interviewer was sure that this was true then the initial explanations were not given at the start of each subsection of the schedule although interviewer continued to give prompts to the subject for the information required.

APPENDIX D : INFORMATION SHEET

UNIVERSITY OF STRATHCLYDE

LIFE EVENTS AND USE OF TOBACCO, ALCOHOL, HEROIN AND OTHER DRUGS

INFORMATION SHEET

We would like you to read the information on this sheet and then decide if you would be willing to take part in a study being conducted by Strathclyde University. We will pay £5.00 for every interview you take part in. Because we need at least two interviews, payment for the first interview will be made after the second interview, i.e. £10.00 after two interviews. Thereafter payment will be made after each interview.

We want to meet people who use any of the following substances: tobacco (i.e. smokers), alcohol (drinkers), heroin or other drugs. We also want to meet people who rarely use any of these substances.

We plan to interview all groups of people every four months over a two year period, i.e. six interviews per person. These interviews will each last approximately one hour. At each interview we will be asking either about the sorts of events that have happened in our subjects' lives over the previous four months and how these events have affected them, or how people feel about their lives and the things that are important for them. We will not just be asking about major or serious events, but also the smaller events that affect everybody in their day-to-day lives. We will also be asking about attitudes and beliefs in relation to smoking, drinking, using heroin and other drugs. We will be asking our volunteers to state approximately how many cigarettes, drinks or other substances they are using around the time of our interviews.

If you agree to participate in this study you will be agreeing to be interviewed by one of our team every four months. We will arrange these interviews at your convenience, either in a clinic, your own home or the university. However, at any point in this study volunteers will be free to withdraw from the programme and cease involvement with any further interviews. We stress that nobody is obliged to take part in this study but we would appreciate it if you would volunteer. All information will be confidential and used anonymously for research purposes only. Payment for each interview will be made by postal order, sent through the post.

We stress again that volunteers will be free to withdraw at any stage of the programme.

Fiona O'Doherty,
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552 4400 (ext.2570 or 2244)

APPENDIX E : CONSENT FORM

STUDY ON LIFE EVENTS

AND USE OF ALCOHOL, TOBACCO, HEROIN OR OTHER DRUGS

I agree to take part in a study on life events and use of alcohol, tobacco, heroin and other drugs. I have read the information sheet on this study and have had an opportunity to ask questions.

I understand that I may withdraw from the study at any time. I also understand that the information will remain anonymous and confidential and used for scientific purposes only.

Signed _____

Date _____

APPENDIX F : RESULTS OF PATH ANALYSIS

APPENDIX F

(see figures 12.3 and 12.4, Tables 12.1 and 12.2)

The model outlined in chapter 10 predicts that the individuals intention to change (I) their behaviour, i.e. future drug consumption (TN), is influenced by the way they perceive events which are occurring at that time. The perceptions of legal (L), social (S) and financial (F) effects are predicted to have the most influence on future alcohol consumption. Furthermore, the way events are interpreted is hypothesized to be influenced by whether or not the subject is currently enjoying a 'euphoric' effect (ST), of the substance. Future drug consumption is also hypothesized to be influenced by the perceived benefit, through the increased effect (R), that will be produced by a return to substance use. The actual level of present consumption (T), terms, is not itself hypothesized to influence strongly the effect (ST) or intention (I), as, although unmeasured in the present study, tolerence should be a mediating variable on this influence. The absence of a measure of tolerance is the first major criticism of the procedure as applied to the current model. The influence of unmeasured variables cannot be estimated and in this case tolerance has been hypothesized to be an important variable in the model. Henceforth this procedure is for illustrative purposes only. Any further research on the model should use a path analytic procedure but acquire adequate measures of

tolerance.

As drinking during the past week (T), has been shown to be a reliable indicator of future drinking (Chick, Kreitman and Plant, 1981), it is hypothesized to have a direct effect on drinking at a subsequent interview (i.e T influences TN directly).

These hypotheses are illustrated in the form of path diagrams in figures 12.3 and 12.4, for the heroin and alcohol groups. As there was so little variation in tobacco consumption, it was felt that this particular path diagram (examining pathways of change) would be meaningless. The numbers on the pathways show the consequences of the hypotheses just listed and represent the unstandardized partial regression coefficients or beta weights, for the particular relationships between variables illustrated by the diagrams. These can be interpreted as the change in standard deviation units of the dependent variable, given a change of one standard deviation unit in the independent variable when other relevant variables (i.e. at the same level), are held constant.

It musts be stressed that these particular path analysis are of extremely limited value for reasons which have been referred to already. Consequently, no detailed interpretation of the results can be made and the prediction of only two of the variables on the model will be discussed here. Interpretation of the results shown in tables 12.1 and 12.2 will be confined to discussion of

future consumption (i.e. TN) and of intention with respect to that consumption (i.e. I).

ALCOHOL

First the relationship between T and TN, that is where consumption at time X affects consumption at a future interview, will be considered.

The zero order correlation between these variables for the alcohol group was found to be .465. In other words 21% of the variance in alcohol consumption at each interview could be predicted by consumption at the last interview. This is shown in table 12.1 where the coefficient of determination is .214.

When enjoyment of the substnce (ST) (euphoric effect) is entered into the equation, the path coefficient (from T to TN) is increased to .561. This indicates that alcohol consumption at a given time influences future use of alcohol, but this influence is mediated by present 'euphoric effect' of the substance. Furthermore, the prediction of future consumption can be substantially increased, (to 39%), by taking into account of four variables in the model (T,I,R and ST), i.e. (1) present consumption (2) intention with respect to future use (3) perception of the effect of a period of abstinence and (4) present 'euphoric effect' of the substance.

The largest direct effect on intention to change alcohol consumption, can be seen from table E.1 to come from ST, or present euphoric effect of the substance. ST

has more than three times the effect on intention that present level of consumption (T) has. This is entirely in line with the hypothesis outlined, in that, intention to change consumption is determined by whether or not one is enjoying the drug and not by the actual level of consumption itself. It is likely, however, that at extremely high levels of consumption, an individual is not enjoying use and this would account for the small relationship between T and I. The prediction of intention, from the perceived effects of events is disappointing for the alcohol group. A total of just under 10% of the variance in intention, which was predicted by ST, is determined by the perception of legal (L), social (S) and financial (F) effects of events. The rest of the explained variance is determined by the direct effects of ST itself. ST alone predicts 20% of the variance in intention. (The figure of 10% for the influence of perceived effects of events, is calculated from the total amount of variance determined by the indirect paths from ST to I, i.e. through S,F and L).

Given the limitations of this particular path analysis, it is not safe to interpret further these results. Some evidence for the hypothetical model has emerged for the alcohol group. Both 'intention' to change and future consumption are strongly influenced by the present effect of a substance. The actual size of the influence of the 'euphoric effect' on the perception of events was, however, small.

HEROIN

The results for the heroin group are discussed below.

Although fig 12.4 illustrates the path coefficients for the hypothesized model, table 12.2 shows more clearly, the process involved. Again the same two variables as for the alcohol group, will be discussed.

The zero order correlation between T and TN was found to be only .155, which means that less than 3% of the variance in heroin use could be predicted simply on the basis of consumption at the previous interview. When intention to change (I), is controlled for, the coefficient of determinationn jumps massively to .345 (see table 12.2). The standardized beta weight for T to TN increases fourfold, which shows that most of the influence of T on TN is mediated by intention to change. ST, or 'perceived euphoric effect', is also shown by table 12.2 to have a significant impact on TN. Although this impact is separate to that of the impact of T (because the inclusion of ST in the equation does not influence the path coefficients of T or I, but does increase the coefficient of determination, increasing it from .345 to .431). Finally the inclusion of the effect of life events (using only the two variables found to be significant for this group in chapter ten) i.e. the social (S), and financial (F), impact of events, is shown to have little effect on the other variables. However, 76% of the variance in future consumption is now

explained by the equation, therefore, these variables add significantly to the prediction of consumption (TN). However the direct effects of these variables on TN is extremely small, as shown by the small direct path coefficients. This shows that the effect of these variables is mediated through some other variables. The model shown does not explain in a satisfactory way how these variables influence consumption. However, some support for the model is found in the fact that the perceived effect of events has an influence on future consumption.

The 'euphoric' effect (ST), influences intention but when the influence of T is added, it is seen that ST increases the explained variance in intention by only 3%, i.e.the coefficient of determination rises from .23 to .26. The largest effect on intention comes from present level of consumption. Although this was not predicted by the model, it does not imply rejection of the model. It is possible that although the euphoric effect is not necessarily directly effected by level of consumption, a spurious correlation is in operation here. If an individual is not obtaining a euphoric effect, it is likely that they have already reached high levels of consumption. (In fact a correlation of -.226 was found between T and STS confirming that there is a negative relationship between these variables). This would explain why there is only a small increase in the prediction of intention when ST and T are jointly used as predictors. The impact of S and F (the social and financial impact of

events), adds only a further 2% to the explained variance in intention. The addition of these variables in explaining intention, had a negligible effect on the path coefficients of T and ST, which shows that the effect of S and F is not mediated by these two variables. As with alcohol, the actual size of the impact of life events on consumption was dissappointingly small.

Again, further interpretation of this path analysis was not considered worthwhile, due to the number of methodological assumptions for path analysis which are violated on this occassion.

APPENDIX G

STUDY DESIGN, RECRUITMENT AND TRAINING OF INTERVIEWERS.

The outline of this study was designed by Dr John Davies in a research proposal submitted for funding to the Health Promotions Research Trust. This proposal stated that three groups of drug user would be studied and specified that these would consist of a heroin group, an alcohol group and a tobacco group. The proposed study resulted from the literature on spontaneous remission which had suggested that major life events may be important factors leading to reduced alcohol consumption. Each group would consist of fifty people who would be interviewed on six occasions each.

When the funding was agreed, the author of this thesis was employed to carry out the research. The total number of interviews required by the original proposal amounted to nine hundred plus any on non-drug subjects as controls. The manpower resources available to carry out these interviews consisted of the author and one research assistant. The time available was eighteen months.

The present author felt that it would be impossible to complete the proposed workload without additional interviewing staff and consequently approached the Manpower Services Commision in an attempt to obtain funding for some interviewers. Although the Commission's remit did not at that time allow them to fund directly any new jobs, they did suggest developing a project under the Community

Programmes scheme. The aim of this scheme, in December 1984, was to provide employement through job creation programmes in which there was some "material benefit" to the community.

The project designed by this author required a team of six interviewers including a secretary, some of whom worked part-time. Their main role was to write a booklet about drug use in the community thus fitting the requirement for a "materiel benefit". This booklet when completed was titled "Focus on Drugs". 1000 copies were printed and it was distributed through a wide number of outlets including libraries, health centres, unemployed workers centres and drug units.

The advantage for the research project was that information for the booklet was collected by conducting the interviews necessary for the study.

PERSONNEL

Initially, two full time and three part time interviewers and one secretary were recruited. This team was expanded later in the project (at the MSC's request) to include two further part-time interviewers. All interviewers were graduates and three were psychology graduates.

TWO STUDIES

Prior to recruitment of the interview team, the study was divided into two seperate projects. The other study was designed and carried out by the research assistant referred to above (Niall Coggans) and examined attributional style of drug users. Seperate interviews were conducted on seperate subjects for this study, although the interview team recruited collected data

for both studies.

TRAINING

In the first week of the project all interviewers (including the research assistant) were trained in the administration of the questionnaires. This training was carried out by the author and consisted of videoing interviews in which the trainees were used as dummy subjects. Feedback was given both on the actual questionnaire administration and on the social skills of the interviewers in the interview situation. Difficulties with the interviews were sorted out at this stage and at subsequent weekly meetings throughout the project in which interviewers reported back on their weeks contacts.

In the second week of the project the interviewers accompanied the author (or Niall Coggans in the case of interviews on the attributions project) and observed real interviews. Gradually over the next couple of weeks control of the interviews was shifted to the new recruits. Although interviews by the team were always conducted in pairs, the present author carried out most interviews alone. In total over 1200 interviews were conducted (628 of these were for the study presented in this thesis and the remaining interviews were used in the other study referred to). Approximately 150 of the total number of interviews were conducted by the author of this thesis who also frequently accompanied the interviewers to ensure that no problems developed in the course of the data collection.