The effects of the Type A Behaviour Pattern, perceived stress and social structure on depressive symptomatology, alcohol consumption, and smoking behaviours: secondary analysis of an interaction model.

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- Barry Leech

C O N T E N T S

CHAPTER THREE

CHAPTER FOUR

CHAPTER FIVE

* *

LIST OF FIGURES AND TABLES

ABSTRACT. A theoretical interaction model is presented relating perceived stress, the Type A Behaviour Pattern (assessed by means of the Structured Interview method), and the psychosocial variable close friends, with psychological and problematic behavioural outcomes. The model was tested in a secondary analysis of data from a community sample of 524 New Zealand males ages between 30 and 55 years (Spicer et al. 1981). As an adaption and elaboration of the original study model, stress variables included combined upset/excitement scores, upset alone, undesirable events, life events total, workload, loss upset, and bereavement upset. The latter two stress variables were constructed out of the original data. Outcome variables included depressive symptomatology, alcohol consumption, and smoking behaviours. Consistent with findings in Spicer et al. (1981), interaction effects show Type As more likely to smoke and consume more alcohol than Type Bs, when under stress. Another significant finding is that number of close friends did not moderate the relationship between the Type A Pattern and health outcomes. The Buffering Effect was therefore rejected for this group. Overall, evidence showed the benefits of adopting an interaction strategy

consequent upon the discovery of no main effect relationship among variables of interest. A notable few interactions were not in the expected direction, including the finding that Type As tended to drink more alcohol the more friends they had. Limitations of the present model focused on the relatively unsatisfactory performance of the workload and friends variables. Future studies of this type might well benefit from the inclusion of a qualitative component for each.

CHAPTER ONE

This thesis represents an investigation of associations among a complex set of variables at the centre of which is the Type A Behaviour Pattern (TABP). Pattern A has been the subject of much theorizing and experimental research since its presentation and elaboration by Friedman and Rosenman (1959).

The TABP is a summary label that was attached to a collection of behaviours which appeared to be common among middle-aged and younger cardiac patients. These individuals were subject to careful observation by Friedman and Rosenman (1974) during the course of their private practice. The four critical elements of this behaviour pattern were identified by Rosenman (1978) as marked aggressiveness, a low hostility-threshold, a sense of time-urgency, and excessive competition with others in the context of a desire to achieve. Albeit still a controversial phenomenon, the TABP attracts continuing attention primarily because it has been verified as an independent risk factor for coronary heart disease [CHD[(Matthews, 1982).

Adopting a multifactorial, interactional approach, the proposed model shown in Figure 1 includes: workload, general life events, social structure, the TABP, depressive symptomatology, smoking behaviour, and al-

cohol consumption. It also highlights three general main effects and three general interaction effects reflected in the list of hypotheses at the end of chapter two.

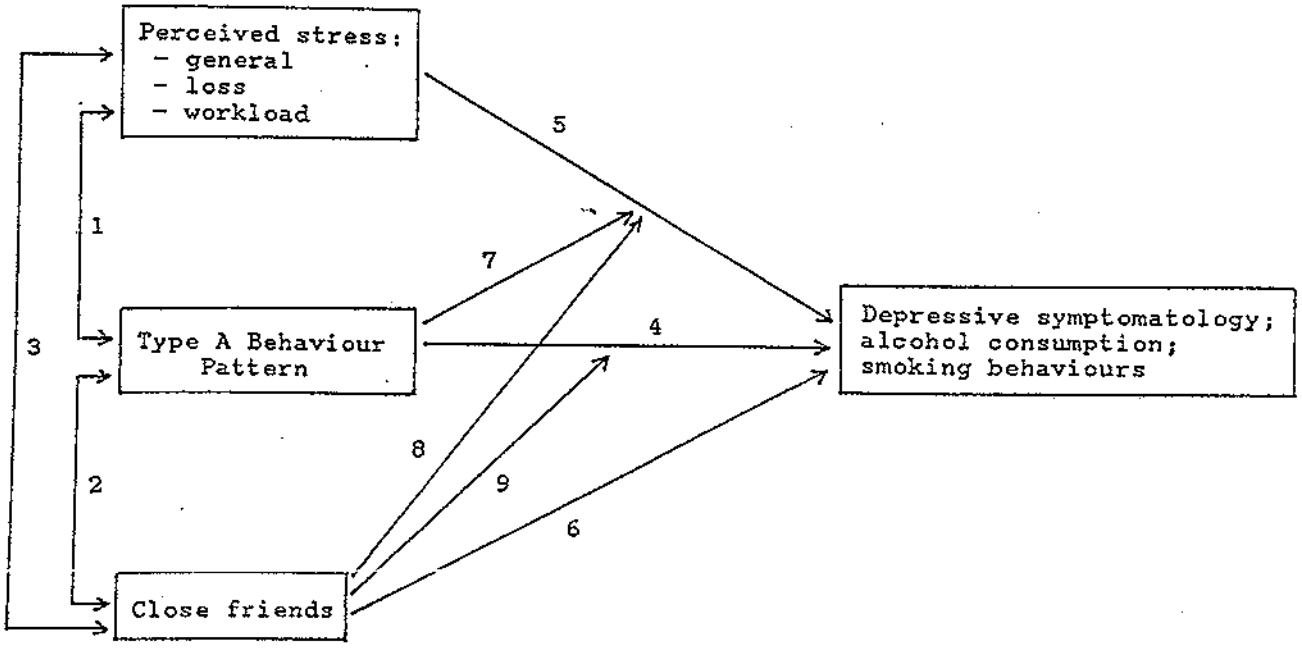

Figure 1. A model with the Type A Behaviour Pattern at the centre, relating perceived stress variables, and the psychosocial variable close friends with depressive symptomatology, alcohol consumption, and smoking behaviours. A numbered arrow represents a general hypothesis addressed in this study. Arrows terminating on boxes indicate possible main effects, and those terminating on other arrows indicate possible interaction effects.

This model is both an adaption and an elaboration of that designed and tested by Spicer, McLeod, O'Brien and Scott (1981). This author concurs with Spicer et al. (1981) in their assertion that the mixed results from the investigation of relationships between the Type A pattern and health outcome could well be explained by the theoretically-guided use of interaction analyses. This principle is a crucial one for the present study

and follows from the assertion that many TABP researchers have, in the past, been content to follow too simple a strategy for isolating hypothesized relationships between Pattern A and variables of interest.

Spicer et al. (1981) were concerned to examine associations among certain psychological correlates of CHD, as well as their associations with certain important somatic risk factors. The psychological variables chosen included the TABP, trait anxiety, trait depression, life-change and loss distress, and subjective workload. The somatic risk factors included in the model were: serum cholesterol, tobacco smoking, and blood pressure as traditional CHD risk factors, and serum triglycerides, uric acid and glucose.

The Type A behaviour pattern was operationalized by Spicer et al. (1981) in terms of its theoretical components - Type A personality trait and Type A behaviour - each considered to play a different role in the CHD risk pattern.

The present model is an adaption of the original in that the concern is exclusively with psychological variables and with the traditional global TABP dichotomy, placing Type A at one extreme and Type B at the other extreme of a continuum. This decision was taken, in part, because the 'trait-behaviour' division appeared

to diffuse the true impact of the pattern when tested in the pilot analysis mentioned in the next paragraph. Furthermore, depressive symptomatology (as distinct from clinical depression), alcohol consumption and smoking behaviours were included as psychological health outcome factors rather than as a trait and behavioural strains respectively. Depressive symptomatology was treated as an affective outcome because it is hypothesized to be a health-endpoint (Price, 1982) as distinct from a moderator variable in the relationship between the TABP and CHD somatic risk factors. In addition, the original model was elaborated by including social structure as an independent variable.

With theory as a guide, a pilot analysis was conducted on unpublished data from a Coronary Heart Disease (CHD) risk factor study conducted in Hobart, Tasmania in 1979. Subsequently, and after expectations were refined, a secondary analysis was made on data from the aforementioned Auckland Study (Spicer et al. 1981), focusing on the TABP, perceived stress, and social structure as the independent variables, and depressive symptomatology, smoking behaviour and alcohol consumption as dependent variables.

The Type A literature pays relatively little attention to the TABP as a risk factor for non-disease endpoints. While acknowledging that Type A is, in itself, a non-

psychopathological pattern of intense behavioural activation, it is proposed that the Type A individual's risk of an intermediate psychological health outcome - specifically, depressive endpoints, smoking behaviours, and alcohol consumption - may increase as a function of the interaction of environmental factors.

All of the variables included in the present model have been investigated at length in previous studies, but not in the same complexity as they are here. An attempt has been made to build a model parsimonious and inclusive enough to allow an investigation of possible interaction effects overlooked elsewhere in the Type A literature.

The Type A Behaviour Pattern

At the outset, this study requires a clear understanding of its central factor, the Type A Behaviour Pattern. In the past, the TABP has been inappropriately treated as a stable personality trait, rather than the pattern of behaviour that it truly is.

The Type A Behaviour Pattern first appeared as a construct in a medical setting (Friedman & Rosenman, 1960), and came to be recognized as an independent risk factor for coronary heart disease (CHD) [The Review Panel on Coronary-Prone Behaviour and Coronary Heart Disease, 1981]. It is only recently that Pattern A has

been widely recognized and investigated as a psychological construct (Matthews, 1982). Such recognition is consistent with the definition of the Type A Behaviour Pattern as an "action-emotion complex that can be observed in any person who is aggressively involved in a chronic, incessant struggle to achieve more and more in less and less time, and if required to do so, against the opposing efforts of other things or other persons" [P.67] (Friedman & Rosenman, 1974).

This is not to suggest that the psychological dimensions underlying the Pattern A behavioural characteristics have been clearly identified. It does indicate, however, that the investigation continues, and ought not be confined to the association between the TABP and disease outcomes alone.

Much has been written about the environmental and personal stress factors which serve to elicit the TABP within the life-experience of given individuals. This study proposes that the TABP, in all its complexity and, in the presence of a combination of environmental circumstances, will have behavioural and/or psychological outcomes as well as, or perhaps prodromal to, medical-clinical outcomes such as CHD.

Price (1982) believes that when self-imposed standards for positive self-evaluation are not met by the Type A,

there may follow long periods of rumination, self-recrimination, a sense of worthlessness, and depression. These negative arousals could well be an immediate antecedent of an acute coronary event for many Type As (Lown, Desilva, Reich, and Murawski, 1980).

The immediate concern of this study, however, is not directly with CHD or disease outcomes of any kind. In fact, there appears to be only minimal evidence to suggest that the TABP is related to disease occurrences other than CHD (Keltikangas-Jarvin, 1987). Nonetheless, the association between the TABP and CHD plays a theoretically important role here. While many Type As may never develop CHD, and given that the dependent variables chosen for this study are potential mediators for risk of CHD, what happens in the intermediate term to those individuals who habitually manifest the TABP? This question can only be answered in the context of interactive models. The aim, therefore, is to make sense of mixed results from the associations among variables in the Type A literature, possibly obtained because, in a large number of studies, the real impact of the TABP has been averaged out.

Cohen (1982) notes that there are basically two different ways in which psychological factors are investigated as independent variables in health outcomes. One is by way of behavioural characteristics - like the

TABP - which is likely, under given circumstances, to render individuals vulnerable to certain affective states like depression, and to produce inadequate coping strategies. Glass (1977) provides an important example of this approach, having observed the Type A's tendency, when faced with failure, to switch to using strategies for coping that cannot possibly succeed. This sense of uncontrollability can also result in behaviours (such as smoking or excessive alcohol consumption) that are potentially damaging to health. A second approach to the ways in which psychological factors impact on health end-points has centred on stressful life situations demanding increased coping efforts and resulting in negative affective states.

It would seem that these two approaches have generated separate research methodologies encouraging a somewhat artificial division of attention. This study adopts a multifactorial model of associations with the TABP at the centre, redolent of the Additive Burden hypothesis proposed by Dohrenwend et al. (1982). In this context, the consequences of habitually manifesting the TABP, and of undergoing certain stressful life experiences, could be highly interactive (Byrne, 1981).

On the one hand, an individual's Type A rating could influence whether stressful life events are encountered or avoided and, whether or not an appraisal of stress

is made. The TABP, then, might be expected to affect the outcome of the person-environment transaction (Price, 1982). It seems appropriate, therefore, to investigate life experiences and the TABP in combination in order to predict psychological health outcome.

The balance of this chapter is devoted to a consideration of the evidence for main effects among the variables of interest. Chapter two completes the theoretical and empirical overview by concentrating on interactive effects.

Smoking and Alcohol Consumption as Dependent Variables

In a review of the literature on tobacco, alcohol, and caffeine use, Istvan and Matarazzo (1984) report a moderately strong link between cigarette smoking and alcohol consumption. For example, epidemiological studies such as that conducted by Klatsky and Friedman (1977) have shown that people who consume large amounts of alcohol are also more likely to smoke.

With reference to the sparse literature on the TABP and smoking and alcohol consumption, results from one study (Spicer et al. 1981) showed no direct relationship. This finding may be explained, in part, because of the way in which the TABP was measured in this study. However, the same authors did discover an interaction effect of stress on the relationship between Type A per-

sonality and smoking. This result further encourages inclusion of the TABP in its global complexity, and adoption of a statistical analysis strategy which reveals any interaction effects.

Epstein and Jennings (1986) highlight an hypothesis which links stress and smoking. They suggest that smoking alters the perception of environmental and bodily cues, leading to a dissociation between bodily state and environmental demand. This notion seems especially plausible in the context of the TABP when considered in association with Glass's (1977) finding about Type As. He found that Type As tend to suppress subjective states, such as fatigue, that might interfere with a task performance. It is possible, then, to conceive of any dissociation experiencedby a smoker, as an attempt on the part of an individual, to focus on particular tasks without distraction (Epstein & Jennings, 1986).

Regarding the pairing of tobacco smoking and alcohol consumption, Istvan and Matarazzo (1984) provide, among others, two plausible explanations for this phenomenon. First, it may be that substance use patterns are linked by reciprocal activation mechanisms, with the use of one substance acting as a cue to elicit use of the second substance. Second, the relationship linking these behaviours may not involve the role of direct reciprocal processes between consumption behaviours at all. It

may be that a paired use of tobacco and alcohol is simply incidental if each, acting independently, has been evoked by the same situational factors. It is these 'situational factors' - to be examined in detail in Chapter two - which are hypothesized to play a vital interactive role for the Type A in relation to any non-medical health outcome.

Depressive Symptomatology as a Dependent Variable

A key hypothesis in this study is that males displaying the TABP under are more likely to manifest depressive symptomotology, as distinct from clinically defined depression. It is necessary, then, to consider what is already known about the TABP and affective outcomes.

The standard definition of the TABP as an 'action-emotion complex' already hints at the role of an affective element within the construct. Booth-Kewley and Friedman (1987), in their review of the psychological predictors of heart disease, arrive at some interesting, if tentative, conclusions about the chronically activated Type A. They suggest that rather than the traditional picture of the Type A as a competitive, time-urgent, hard-driven individual, a truer picture probably includes the presence of one or more negative emotions - for example, depression, anxiety, anger, and frustration - either alone or in combination. The same

authors go on to conclude that the activated Type A reflects a maladapted personality with certain psychological attributes such as depression, in addition to those attributes classically associated with the TABP.

Price (1982) had previously considered, if only briefly, the potential importance of the TABP as a determinant of affective problems. She cites psychological depression as the second major posture or state associated with the activated TABP, after behavioural immoderation. Having acknowledged the general oversight in the literature with respect to depression and Type A, Price (1982) places responsibility at the door of those who have focussed Type A research on the American male. The traditional hard-driving, aggressive, competitive image associated with this population, she argues, is far removed from a representation of depression, a state often associated with weakness, submission, and capitulation. It seems likely that this argument is valid for the New Zealand male population, a large sample of which provides the data for this investigation.

This social role issue is further complicated by the fact that depression has been, and still is, more commonly associated with women. Conversely, it is less likely to be reported by the Type A male who has been

characterized as an individual who is preoccupied with the need to prove himself, achieve a lot, and to do an exceptional job at whatever he undertakes (Price, 1982). It is interesting, therefore, to discover that Spicer and Hong (1988) did find a relationship between hopelessness and the TABP (assessed using the Framingham Type A Scale) in women.

Moreover, Dimsdale, Hackett, Block, and Hutter (1978) found that the TABP, assessed by the Jenkins Activity Survey (JAS) Form B, correlated ($r = .18$, $P < .008$) with depressive mood measured according to the Profile of Mood States (POMS). Chesney et al. (1981) highlight the confusion that results in the literature when the TABP, identified by some measures, does correlate with certain distress variables, and with other measures, does not. These authors reported a JAS classified Type A - depression Pearson's correlation of $r = .10$. While, therefore, Spicer et al. (1981) found no relationship between Type A and depression, once again this may have occurred because of the way Type A was measured (using the Structured Interview). Ultimately, Chesney et al. (1981) conclude that correlations between the various self-report Type A scales and the Structured Interview method were notably low.

In her discusion of the TABP and depression, Price (1982) goes on to suggest that the Type A male is, in

reality, 'propelled' into a depressed state, given the right environmental conditions. A consideration of these conditions will be offered later in this chapter, and identified from an interaction point-of-view in chapter two. At this point it is appropriate to examine the utility of the TABP.

The Utility of the TABP

In order to understand why it is that some Type As are likely to be propelled into a depressed state, it is necessary to consider the personal 'utility' of the TABP.

Price (1982) has proposed that the TABP is the actions persons engage in to prove their personal self-worth, an hypothesis alluded to by Matthews (1982) in an overview of uncontrollability and failure experiences for Type As who attempt to exert control over environmental events. Glass (1977) discovered that Type As, consistent with his uncontrollability hypothesis, appeared to lose faith in their ability to exert environmental control after a minimum level of failure to do so on specific tasks. And when failure seemed assured, these same people switched to using strategies for control that could not possibly succeed. Strong support for this theoretical view emerges in the results of a study by Evans and Fearn (1985), who see the core element of

the TABP as an overdeveloped concern with the exercise and maintenance of control over potential threatening events. In this context, the results of a study by Chesney, Ward, Black, Swan, Chadwick, and Rosenman (1979) are of particular note.

Since Type A behaviour correlates with such characteristics as work-orientation, dominance, and autonomy, Chesney et al. (1979) were interested to find if there was an environment that fits the Type A personality and another environment that fits the Type B personality. The sample population employed in their study consisted of 385 healthy adult male volunteers between the age of 23 and 62. All were administered the Type A Structured Interview and a battery of questionnaires including the Work Environment Scale (WES); the State-Trait Anxiety Inventory (STAI); the Eysenck Personality Inventory (EPI); the Symptom Distress Checklist (SCL-90); and a Job Dissatisfaction Scale developed for the study.

Results of self-reported symptoms demonstrated no significant differences between Type As and Type Bs on any of the measures of psychological distress. This result confirmed a clinical observation that there was little direct relationship between the TABP and affective distress (Rosenman, 1978).

However, results from the WES Control subscale provided a different picture. Type Bs perceived considerably

more external control of their work environment than did Type As. As opposed to the Type B, the Type A person tended to make his own work rules and to work under less supervision. The implication is that the Type A was in control. Chesney et al. (1979) claimed that the control factor presented them with the best opportunity for investigating the person-environment fit as it related to the TABP. They further discovered that the lack of behaviour pattern-environmental control fit was associated with increased psychological distress.

Chesney, Black, Chadwick, and Rosenman (1981) confirmed the finding of Chesney et. al (1979) in a study of the psychological characteristics of 384 adult males. Each subject had been classified Type A or Type B by way of the Structured Interview, as well as the Jenkins Activity Survey (JAS), the Activity subscale from the Thurstone Temperament Schedule, the Framingham Type A Scale, and the 20-item adjective checklist Type A scale. Subsequently, subjects were given a battery of psychological measures.

Results showed that although Type A subjects had significantly higher scores ($P < 0.001$) than Type B subjects on various sub-scales of the Adjective Check List, Type A and B subjects did not differ on measures of psychological distress. This included the EPI Neuroticism subscale; the Anxiety, Depression,

Somatization, and Interpersonal Sensitivity SCL-90R subscales; and the State and Trait Anxiety subscales of the STAI.

Another noteworthy finding for the purposes of this present study arises from an investigation conducted by Byrne and Rosenman (1986). The authors selected a random sample of 593 male employees (all volunteers) from a single British government organization, and all free of physical disease as confirmed by medical examination. Among assessment instruments used were the Structured Interview (SI) measure of the TABP, and a series of three emotional distress and discomfort scales: the Hopkins Check-list (SCL90), the State-Trait Anxiety Inventory (STAI), and the Eysenck Personality Inventory (EPI).

Results showed that SI -defined Type As reported significantly higher levels of depression (and anxiety) than those defined as Type B. However, neuroticism is also commonly associated with the presence of affective distress. Because of the associations between measures of the TABP and the neuroticism scale of the EPI, relationships between the TABP and emotional discomfort were reexamined by the authors, while controlling for neuroticism. In this case, the effects of SI categories on measures of emotional discomfort disappeared for the Depression Scale of the SCL-90.

Byrne and Rosenman (1986) conclude that insofar as depressed mood is associated with the TABP it can be accounted for largely by the simultaneous action of neuroticism. However, the authors claim that their data join those from a growing list of studies linking the TABP directly with some experience of emotional discomfort. At the very least it would seem that the continued expression of the TABP does not constitute a positive affective experience.

Having referred to a somewhat confusing section of the literature which suggests some association between the TABP and negative affect, it is now appropriate to consider stress as an environmental trigger for Pattern A. This is consistent with the assertion that the Type A individual requires 'demand' and 'challenge' as stimuli to elicit the distinctive TABP (Kirmeyer & Biggers, 1988).

Life Events and Workload as elicitors of the TABP

In this study, the TABP is investigated a central factor in a model linking stress with depressive symptomatology, and smoking and alcohol consumption as problematic health behaviours. One suggestion linking the TABP and stress presents the latter as the necessary elicitor of the former, an idea clearly relevant in terms of main effect relationships.

Over the years researchers have attempted to discover if there is indeed a link between the TABP and a variety of stress variables. Byrne (1981) provides evidence to support the argument that Pattern A is associated with the frequency of stressful life events reported as occurring in the twelve-month period prior to a major health outcome. The association was found to be such that the more strongly manifest the TABP, the greater were the number of life events that the Type A subject appeared to encounter. It was also found that Type As are more likely than Type Bs to perceive the emotional impact of these events as negative.

Byrne and Rosenman (1986) reported similar results in correlations between self-report measures of the TABP and measures of life events. Although these relationships were modest, they did indicate a tendency among Type As both to encounter a higher total of life events, and to accumulate distress associated with those events, in excess of those individuals classified Type B.

As a corollary to findings such as those reported above, Hamberger and Hastings (1986) reflect a generally accepted position when they suggest that the TABP is not manifested in chronic arousal. Rather, it is thought to emerge and become pathogenic in reaction to

specific challenges posed by environmental events and situations. This is a critical assertion for the present investigation.

In this context, it is as well to acknowledge that stress, in itself, is not a simple variable but a system of independent processes related to personal factors in the receiver. These personal factors appear to mediate the frequency, duration, intensity, and type of psychological response to a stressor (DeLongis, Folkman, & Lazarus, 1988).

Cohen (1982) acknowledges several different hypotheses about which stress factors are most likely to lead to ill-health: (1) situations that involve loss, such as bereavement, and events that result in the loss of important gratification, sources of support, or reinforcement (loss events); (2) an accumulation of diverse life stresses and events requiring readjustment (change events); and (3) the occurrence of life events which the individual appraises as stressful (stress-appraised events).

As is often the case when investigating people in a real world, it is likely that all of these variables are implicated in their relationships with health outcomes. This expectation is reflected in the choice of factors included in the present model. They include

change and loss events with subjective affective ratings - all in the context of general and work-related life circumstances. Work events are mentioned here advisedly, and will be addressed in the next section.

Job stress and the TABP

Friedman and Rosenman (1974) and Jenkins (1975) reached some interesting conclusions about the work habits of Type As, based on a large number of clinical interviews with men. Results showed that Type As (1) work long, hard hours under deadline pressures and conditions of overload; (2) carry work home and show an inability to relax; (3) often cut holiday and leisure times short to return to work; (4) constantly compete with themselves as well as others, setting high standards of productivity they seem driven to maintain; (5) feel frustrated in the work situation; (6) are impatient and irritable when it comes to the work efforts of subordinates; and, (7) feel misunderstood by their superiors (Burke, Weir & DuWors, 1979).

The descriptions given above suggest that the TABP may exert influences on the sources of stress an individual is exposed to at work, as well as on any resulting outcome. In particular, it may be that Type As, because of their propensity to 'work', attract higher workloads

or, at the very least, perceive themselves as experiencing higher workload. Indeed, Spicer et al. (1981) did discover an association between heavier workload and both Type A personality and Type A behaviour.

In summary, then, it seems there is evidence available to suggest that the TABP is related, in particular, to both a high total of life events and high workload (Byrne, 1981; Byrne & Rosenman, 1986; Spicer et al. 1981). What is more, the hard-driven behaviour common to individuals who display Pattern A makes special sense of these findings. The expectation is that these people are likely, on average, to encounter a greater range of life experiences, both in the personal and job-related domains, than their Type B counterparts.

The TABP in its Social Context

It is clear enough from its definition that the TABP, elicited by some threat or challenge from the environment, is manifested by the individual within some social structure or social context.

Within the wider literature addressing social support and its types, House and Kahn (1985) define social structure as a construct which, when measured, reflects the existence, quantity, and type of social relationships which a person has, and which is reasonably easy to measure. Such social structural measures are

generally considered to supply objective characteristics of social networks and therefore an indicator of 'embeddedness' in a social system. The implication that follows identification of the existence of a social structure is that the individual is - to some degree or other - well-placed to receive feedback and support from others that helps form self-identity and feelings of stability, predictability, and control. As a result, it is possible to ask whether number and form of social relationships influence health.

Orth-Gomer and Unden (1987) reviewed a number of social support instruments potentially applicable in population studies. In the course of this review, they provide evidence which suggests that the frequency of social contacts, number of available persons in a network, and the amount of social activity, all have a substantial effect on health and survival. The assumption is that 'the chance of receiving qualitatively effective social support is greater if the individual's network is more extended, has a larger number of members, and gives the recipient more natural possibilities for social contact.

In a six-year follow-up study, Orth-Gomer and Johnson (1987) provide another relevant finding for the purposes of this study. The authors examined the relationship between social network interaction and total

and cardiovascular mortality in 17,433 Swedish men and women between the ages of 29 and 74. They found that low social support, as indicated by a relatively low level of social interaction and few social ties, was associated with an excess CHD mortality risk of approximately 50%, after adjustments for the effects of age and sex.

Why is it that social support appears to be such a vital commodity in a person's life? Cohen (1988) highlights two important potential effects of membership in a social structure for individuals in the face of stress: (1) the stress-buffering effect - social environmental factors have the potential for moderating the impact of stress, therefore working as a 'buffer' by decreasing vulnerability and increasing resistance to negative health endpoints. (2) The alternative or main-effect - social interaction and social support are fundamental human needs, therefore the absence of these crucial factors, social isolation, may be a stressor in itself. In other words, social resources have a beneficial effect irrespective of whether persons are under stress or not.

Implied in both stress-buffering and main-effect hypotheses is the notion that support is linked to health oucomes through behavioural and/or biological processes. In the case of the buffering effect, support

is expected play a moderating role in any association between the TABP and depressive and problematic outcomes. This phenomenon will recieve more attention in chapter two.

Stress as a loss of social support

As has already been implied, an important issue in this study touches on the fundamental distinction between support - however it is operationalized - and stress (Gottlieb, 1983). It is critical to distinguish between the psychological distress resulting from the loss of social support, and the distress experienced by those who lack, or have little access to, a social structure. In other words, distress and ill-health produced by stressors involving losses from a social structure ought to be disentangled from the negative outcomes due to levels of ongoing support that are insufficient to buffer stress.

Thoits (1982) has observed that stress and support are neither operationally nor conceptually independent of each other. Many life changes are actually losses or breaks in social ties. And so too, many events may seriously disrupt, distort, reduce, or otherwise change existing network relationships. The extent to which life events and social structure overlap could severely hamper the ability to assess their relative impacts on

health outcomes. Any attempt to disentangle these two variables can only be effective where appropriate psychosocial measures are available. The issue is addressed in the present study where data is available reflecting loss of social relationships - the death of a spouse, a family member, or a close friend; occupational events, including loss of job, and retirement; divorce or marital separation, and other unavoidable but time-limited separation from spouse or significant other. Distress due to inadequate membership in a social structure is treated as a function of the psychosocial asset 'number of close friends'.

Having addressed the issue of stress, support, and a 'loss-index', there are still elements in each of these factors that could be problematic. This in spite of adequate measures for each.

The Type A and Significant others

There is a variety of evidence to suggest that Type A individuals are less embedded in a social structure than their Type B counterparts. For example, as Price (1982) points out, because employed Type A males spend a disproportionate amount of time engaged in work-related activities, the social influence of their immediate family members may be expected to be small by comparison with Type Bs.

There is also some evidence to suggest that the spouses of Type A males are often seen by their husbands as 'stress absorbers'. And as far as their children are concerned, Price (1982) reports that many extreme Type A men commonly refer to their adolescent children as a major source of chronic stress.

Number of close friends is the single element of social structure investigated in this study. The assumption is that a man with more rather than fewer close friends has more access to supportive interpersonal relationships. However, this general assumption stands in marked contrast to the Type A's friendship profile. Affection and intimacy appear to be rare features in Type A men. Friendship, and close friendship in particular, has been characterized by Type As as an opportunity for competition. While a friend may make a good sporting companion or conversation partner, there is no evidence to suggest exchanges about personal concerns or sources of stress (Price, 1982).

The TABP, therefore, claims special attention with regard to social support. In her cognitive social learning model of Type A, Price (1982) has suggested that proving self-worth is an essential function of Pattern A. According to her model, the Type A is characterized as relying excessively on feedback from

others for a sense of esteem. While theory predicts a positive response to social support from the Type A who depends on feedback from others for the maintenance of self-esteem, empirically, there seems to be little support for this expectation. Indeed, two recent studies (Seeman & Syme, 1987; Blumenthal, Burg, Barefoot, Williams, Haney, & Zimet, 1987) found no significant relationship between the TABP and social network structure. It might have been expected that the Type A, ahead of many others, would positively seek out social support. On the other hand, a closer look at the Friedman and Rosenman (1974) definition of the TABP suggests that the Pattern is hardly facilitates easy membership in an adequate social structure.

Williams, Haney, lee, Kong, Blumenthal and Whalen (1980) highlight the uneasiness of the Type A-social support phenomenon in a study which shows relationships between atherosclerosis and both the TABP and hostility. The Type As in their sample, who tended to score higher on the Hostility Scale, considered others to be bad, selfish, and exploitive. It would seem, therefore, that the Type A's competitiveness and aggressiveness mitigate against a final satisfying fit between a need for social support and chances that it will actually be forthcoming.

Friedman and Rosenman (1974) suggest that Type As demonstrate a virtual absence of satisfying interpersonal relationships. Rather, they appear to place great store in independence as a prerequisite for achievement and self-efficacy. The irony of this situation is inescapable.

Smith and Rhodewalt (1986) also refer to Type As and their interpersonal relationships. They suggest that Type As exacerbate the stressfulness of their lives through their interactions - or lack of them - with others, and their use of a stress-engendering personal style. Continuing the consistency in findings, the results of several other studies (Burke, Weir & DeWors, 1979; Keegan, Sinha, Merriman & Shipley, 1979; Kelly & Houston, 1985) even suggest a picture of greater marital discord for Type As than for Type Bs.

Taken together, theory would suggest that the Type A man is likely, at the very least, to have fewer closer friendships than his Type B counterpart. While it might have been expected that the Type A person would find a firm place in some social network, if for no other reason, than to find the feedback and affirmation he craves, this expectation is without empirical support.

In this chapter, an overview of the relevant TABP literature has been provided. It has highlighted evidence

for and against relationships between Pattern A and the variables of interest. The overview process has, to some extent, been somewhat confusing, owing largely to the mixed results that have emerged from so many studies. In the end, two important and problematic issues stand out. The first concerns the use of different measures for the TABP, and the second, the tendency among some researchers to adopt a relatively simple strategy in the search for significant associations between the TABP and variables of interest.

CHAPTER TWO

Chapter two concentrates on the interaction effects reported in the literature, which justify the model chosen as a basis for this investigation.

The TABP, stress, tobacco smoking, and alcohol consumption

Most relevant to this study are the investigations which provide evidence for increased smoking behaviour and alcohol consumption in stress as compared to non-stress conditions. For example, in a study conducted by Schacter, Silverstein et al. (1977) subjects smoked more cigarettes in shock than in non-shock conditions. And in a prospective study of 600 medical students over 10 to 24 years of follow-up, Thomas (1973) found that subjects who smoked throughout the study period reported more stress at the initial interview than subjects who had stopped smoking or who had never smoked.

Similarly, with regard to smoking and alcohol consumption, Spicer et al. (1981) reported that general distress was related to both behaviours, but only in Type As.

If it is true that Type As may, under some circumstances, block out subjective cues for discomfort in the face of stress, then smoking could be considered a consistent behaviour by inappropriately maintaining

performance beyond the time when active coping is adaptive. Arguably, when smoking acts to reduce perceived stress, the negative aspects are less apparent to the smoker but may be more significant from a health perspective.

It seems reasonable to suspect that the Type A who smokes does so, in part, in order to reduce aversive stimulation (Epstein & Perkins, 1988). Interestingly, Pomerleau, Adkins, and Pertschak (1978) found that subjects allowed to smoke while experiencing controlled stressors reported less deterioration in mood than those not permitted to smoke. This issue of mood-deterioration will be addressed further in the next section.

The Type A, stress, and depressive symptomatology

In chapter one, the work of Chesney et al. (1979) was cited especially because it addressed a main effects issue. It it presented again in this chapter as an example of a fruitful effort to extend the search for associations into the realm of interaction. The authors presented an hypothesis which proposed that their discovery of a lack of behaviour pattern-environmental control fit is associated with increased psychological distress in the Type A.

In order to test this hypothesis, differences among three Type A and three Type B sub-groups on distress scales, were examined. The analysis revealed that the Type A group in the Highly Externally Controlled Environment scored significantly higher on the Trait Anxiety Scale ($T = 2.49$, $P < .05$) than did the Type As in the Low Externally Controlled Environment. Conversely, the Type Bs in the High Externally Controlled Environment scored significantly lower on the Trait Anxiety Scale ($T = -2.33$, $P < .05$) than the group of Type Bs in the Low Externally Controlled Environment. These subjects also scored significantly higher on the Eysenck Personality Inventory ($T = 2.02$, $P < .05$) than did the Type As in the Low Externally Controlled Environment. And although there was no statistically significant difference for Type Bs, the converse trend of more distress associated with less control continued to hold.

Overall, the results of the Chesney et al. (1979) investigation support Glass's (1977) finding that Type A individuals do experience feelings of helplessness and distress when they are faced with an environment over which they do not have control.

Results such as these help make sense of the tendency for Type As to 'hyper-react' in a loss-of-control

situation. Another study (Contrada et al.,in press, cited in Matthews, 1982) investigated Type As and Type Bs, identified by the Structured Interview, in failure situations and including a control condition for comparison. Tentative support for the hypothesis that uncontrollability elicits behavioural hyper-responsiveness from the Type As alone was present in this data.

It already appears that this hyper-responsiveness and its ineffectiveness as a counter to inevitable loss-of-control may heighten the Type A's sense of personal failure. It is also thought to increase self-recrimination, related to extremely high and ambiguous standards of self-evaluation (Price, 1982; Matthews, 1982). It would be reasonable to expect, therfore, that the resulting lowered self-esteem could be manifested in depressive symptomatology. The final 'depressive discovery' for the Type A is that their behavioural strategy is unworkable in the face of uncontrollable environmental conditions.

This chapter is concerned with interactions, and clearly one of the more important of these interaction effects emerges from the Type A's life context. A University of Michigan Study conducted in the mid-1970s illustrates further the importance of paying due consid-

eration to interactive effects when investigating a variable as complex as the TABP.

The Michigan study found no significant correlations between the TABP and various stress outcomes such as job dissatisfaction, anxiety, and depression. The researchers found, instead, that the TABP acted as a moderator in their equation: when the TABP was combined with work and family stress factors, it did predict stress-related ill-health (Caplan, Cobb, French, Harrison, & Pinneau, 1975).

A tentative conclusion, based on findings reported in this section, is that the TABP is related to some aspects of depressive symptomatology. And this is the case only given certain stress conditions.

The TABP, workload, and psychological distress

For the TABP to be elicited - and, indeed, to become pathogenic - Rosenman (1979) asserts that the Type A individual must first interpret a given situation or combination of events as challenging. In other words, a stimulus is only a stressor for the Type A if it elicits a TABP response.

Spicer et al. (1981) found that Type A behaviour was related to workload and to the distress experienced by those who suffered some loss (including bereavement).

As the latter report suggests, the amount of work a person perceives he/she is asked to complete has frequently been identified as a potential form of job stress (Van Sell, Brief, & Schuler, 1981). As was indicated in the previous chapter, this finding has particular relevance for the Type A. The implication is that the distinction between the actual occurrence of potentially stressful events and their perception by the individual as actually stressful, is a vitally important one. As Spicer et al. (1981) point out, there is some evidence (Lundberg, Theorell, & Lind, 1975) that an individual's subjective view of an event or situation correlates more highly with the onset of CHD than does the simple frequency of events. This notion of the 'qualitative appraisal' of potential stressors is incorporated in the present study by way of 'upset' and 'thrill' indicators.

Brief, Rude, and Rabinowitz (1983) include something of the 'qualitatitive appraisal' notion in a study with 162 male basketball coaches with a median age between 30 and 35 years. The authors hypothesized that the TABP would moderate the relationship between subjective quantitative workload and workload dissatisfaction, as well as the relationship between workload dissatisfaction and depression.

Results indicated that persons exhibiting the Type A pattern perceived exposure to greater levels of job stressors (workload), and a strong positive relationship was detected between subjective workload and dissatisfaction among Type As. The researchers found that not only did Type As perceive exposure to greater levels of job stress, but they also responded more negatively than Type Bs to the stressors they perceived. More importantly, however, it appeared that Type A behaviour did moderate the subjective quantitative workload-workload dissatisfaction relationship. The second hypothesis: that the TABP would moderate the relationship between workload dissatisfaction and depression was not supported.

Referring to the work of Glass (1977) as a useful starting point for further exploration of the Type A-Job stress phenomenon, Brief et al. (1983) acknowledge the obvious limitations of their study. Among other limitations, the study sample is drawn from only one occupational group, and the self-report Type A measure employed (Sales, 1969, cited by Brief et al. 1983) is unlikely to compare favourably with the Structured Interview method of TABP assessment. Nonetheless, the results of this investigation provide tentative additional support for the inclusion in this present study of subjective workload as a job stress factor. Further-

more, the results from this investigation strengthen expectations about likely interaction effects.

The TABP is an action-emotion complex elicited by, and likely to become pathogenic in combination with, a variety of stress factors. It comes time, then, to reintroduce the variable which, to some extent, overlaps with stress as an active ingredient in the TABP-non-disease outcome model.

Social structure, stress, and the TABP

The model for this study includes the expectation that social structure - represented by the variable 'number of close friends' - will buffer any relationship between the TABP and specific outcomes. The notion contained within the buffering hypothesis has already been introduced in the previous chapter. In the context of that hypothesis, there are two ways in which a Type A's social structure might provide protection against depressive symptomatology and problematic health behaviours like smoking and excessive alcohol consumption.

First, the existence of a social structure (a large number of close friends) may moderate the relationship between a potentially stressful event and the TABP by mitigating a stress-appraisal response, and by making it less likely that the behavioural pattern will be ac-

tivated in the first place. Put in a different way, the perception by an individual that support is, at the very least, available by virtue of membership in a social structure, may encourage the redefinition of the potential for psychological harm arising from a stress situation, and may prevent its appraisal as a challenge.

Second, the possibility of support may moderate the relationship between an already activated TABP and the onset of health outcome, by reducing or eliminating any negative affective reaction, and/or by altering maladaptive behavioural responses. This second possibility receives attention here. In the context of the model adopted for the present study, an hypothesis reads as follows: the relationship between the Type A Behaviour Pattern and depressive symptomatology, alcohol consumption, and smoking behaviours will be stronger for those with fewer close friends.

The effects of social support, then are generally expected to be positive or beneficial for health, though some forms of support, in some situations, can have adverse effects. This assertion seems relevant to the Type A who is characterized as "struggling to achieve . . . . against the efforts of other things and other people" [P.67] (Friedman & Rosenman, 1974).

The mechanisms through which buffering operates appear to involve effects of social support on the processes of the appraisal of, and adaption to, stress. In the presence of social support, environmental conditions may be perceived as less stressful and may be responded to more adaptively. Hence, social support may mitigate negative health effects.

Cohen and Wills (1985) and House (1981) suggest that support may alleviate the impact of stress appraisal in a number of ways. First, by providing a solution to a problem; second, by reducing the perceived importance of a problem; and third, by providing a distraction from a problem, or by facilitating healthy behaviours. The interplay among psychological factors and social support commonly shows that subjects reporting low social support also rate high on depressive symptoms and feelings (Orth-Gomer & Unden, 1987).

On the positive side, Cohen and Syme (1985) refer to a 'general perceived affiliation benefit' available to all those who belong to an adequate social structure. This benefit is derived from a perception that others will provide support when it is needed, and seems to lead to a positive affect and a better psychological state. Thus people in close relationships may experience both positive affect from affiliation, and self-

efficacy from their confidence in the availability of support in the future (Kessler & McLeod, 1985).

Social comparison theory makes its contribution in the finding that social information can be used by an individual to assess the severity of a stress event or situation, and thus have an important impact on how that event or situation is experienced (Gruder, 1977). This assertion, along with so many of the others about the positive effect of social support for the stressed individual, seem far removed from the real experience of the Type A male.

There is, however, a glimmer of hope for the Type A. Lefcourt, Martin, and Saleh (1984) found that individuals with internal locus of control and with support, were resilient in the face of stress. On the other hand, persons with internal locus of control and little support, seemed to be in jeopardy. Unsupported internals showed elevated mood disturbance as negative life events increased, wheras socially supported internals exhibited minimal effects from such events. The finding that may be relevant for the Type A is this: that those who were generally less sociable or more autonomous appeared to benefit the most from the presence of social support.

Lefcourt et al. (1984) found that relationships between negative life events and mood disturbance were substan-

tially reduced by social support on four counts: for those who were internal for affiliation, internal for achievement, less generally affiliative, and more highly autonomous. Each of these markers seems to have reasonable face validity for the Type A as he is represented in the literature. Overall, it appeared that internals expressed less need of, but showed a greater benefit from having, social support. And, interestingly, externals showed more need of, but fewer benefits from, such support.

A propos of the Lefcourt et al. (1984) study, and beginning with a model that took account of correlation differences across sub-groups, Spicer and Hong (1988) report results that suggest the availability and frequency of social contact might moderate the relationship between the TABP and hopelessness, a frequent symptom of depression.

A final word about methodology seems relevant at this point. In order to test any theory of social support - main effect or buffering - there is an important implication to be considered. Primarily, measure of social support should be as specific as possible in regard to both the type and source of support. It is only then that it can be better understood <u>who</u> gets <u>how much</u> of <u>what kind</u> of support <u>from whom</u> about <u>which</u> problems of stress and health, and with <u>what effects</u>

(House, 1985). It remains, now, to outline the research hypotheses of interest in this investigation.

Research hypotheses

The following research hypotheses are listed according to the numbering system used in Figure 1. The list is divided into two categories: main and interaction effect hypotheses. Included in the former category are some hypotheses with no theoretical support. They are presented here for the sake of completeness, and in order to provide a contrast with what the interaction effects actually show. Therefore, if the proposed interaction hypotheses are true, certain of the main effects will, of course, not hold.

Main effect hypotheses:

1. Type A subjects are more likely than Type Bs to perceive a high level of stress in the general, loss, and work-related domains.

2. Type A subjects are more likely than Type Bs to have few close friends.

3. Subjects with few close friends are more likely to perceive a high level of stress in the general, loss, and work-related domains, than subjects with many close friends.

4. Type A subjects are more likely to report higher levels of depressive symptomatology, alcohol consumption, and smoking behaviours than Type Bs.

5. Subjects who perceive a high level of stress in the domains of interest are more likely than others to report high levels of depressive symptomatology, alcohol consumption, and smoking behaviours.

6. Subjects with few close friends are more likely to report high levels of depressive symptomatology, alcohol consumption, and smoking behaviours than those with many close friends.

Interaction effect hypotheses:

7. The impact of perceived stress on depressive symptomatology, alcohol consumption and smoking behaviours will be greater for Type As than for Type Bs.

8. The impact of perceived stress on depressive symptomatology, alcohol consumption and smoking behaviours will be greater for subjects with fewer rather than many close friends.

9. The relationship between the Type A Behaviour Pattern and depressive symptomatology, alcohol consumption and smoking behaviours will be stronger for those with fewer close friends.

CHAPTER THREE

Chapter three outlines the characteristics of the sample used, emphasises the differences in measurement method, and outlines the statistical analysis employed in this investigation. The detail pertaining to the sample, measures and method employed in the original study may be obtained by reference to Spicer (1978), Spicer et al. (1979), and Spicer et al. (1981).

Sample

The data set was obtained from a cross-sectional epidemiological study of associations between traditional and psychological CHD risk factors. The final sample of 524 European males aged 30 - 55 years ($\bar{x}$ = 42yrs; SD = 7.7yrs) represented 77% of the initial subject pool randomly drawn from the electoral rolls for the city of Auckland, New Zealand. In comparison with population figures, the sample was found to be unbiased with respect to age, but contained an over-representation of subjects in upper socio-economic levels.

Method

98% of the sample was assessed under standard conditions at Auckland Medical School by Spicer (1978). The remaining 2% were tested at their home or workplace.

They first provided standard sociodemographic information concerning their age, nationality, educational attainment, marital status and occupation.

Socio-economic status

This variable was introduced, along with age, as a control variable following particular expectations about their roles in regard to alcohol consumption and smoking behaviours (Haynes, Levine et al., 1978; Istvan & Matarazzo, 1984). Subjects were classified according to socio-economic status on the 6-point Elley-Irving Index for New Zealand (Elley & Irving, 1972). The scale was subsequently dichotomized by recoding the three lower scale numbers to indicate higher SES. Educational attainment, as a control measure, was excluded in the present study because the Elley-Irving Scale is itself a combined income and education measure.

Type A measure

The Type A Behaviour Pattern was originally assessed by a trained rater (Spicer et al. 1981) using the Structured Interview [SI] technique (Rosenman, Friedman, Strauss, Wurm, Jenkins, Messinger, Kositchek, Hahn, & Werthessen, 1966). Used in the Western Collaborative Group Study, the SI was found to predict CHD. This method has been shown to have the best predictive validity of any of the Type A measures (O'Looney, Harding, & Eiser, 1985), and to attain levels of inter-

observer and test-retest reliability which are adequate for research purposes (Jenkins, 1978). It is, however, arguably the most problematic of all the TABP measures. Accurate assessments rely entirely on the trained rater, who focuses on the speech and motor behaviours exhibited by the interviewee (Ivancevich & Matteson, 1988).

The interviews which provide Type A/Type B data for the present study were analyzed three times to obtain A/B classifications of overt behaviour, personality, and the two combined. Type A behaviour and Type A personality are components of the global TABP. In order to tap the full complexity of the Pattern, only the traditional TABP global classification was used in the analysis presented here.

Depressive symptomatology

Depressive symptomatology was assessed using a subscale of the Minnesota Multiphasic Personality Inventory (MMPI) [KR-20 reliability co-efficient = 0.77]. The scale used has been found, in other investigations, to differentiate coronary patients from healthy controls (Rodda, Miller, & Bruhn, 1971). In this study, depressive symptomatology was treated as an affective outcome in order to highlight its conditional variability. Although data from the MMPI-Anxiety Scale was also available it was not used, because in this

scale anxiety is highly correlated with depression ($r = .42$; $P < 0.01$).

Workload

Perceived workload was measured using six items from Caplan's Subjective Quantitative Work Load Index (Caplan, 1972). These items were chosen since they were applicable to all occupational situations. Typical items are "the number of things you have to do" and "the amount of time you have", on which subjects rate their occupation using a five-point scale. The reliability Alpha of this modified scale was 0.78.

Life events stress

Recent life events were measured using an extended version of the Schedule of Recent Experience (Holmes & Rahe, 1967). Subjects were shown a list of 60 events and asked to indicate which had happened to them in the preceding year. They then indicated the emotional tone of each event which had occurred, in two ways. First, they simply indicated whether the event had been desirable, undesirable, or neither. Finally, subjects rated each event either as upsetting or thrilling, on one of two three-point scales. The points on the upset scale were: unaffected (score 0), quite upset (score 1), very upset (score 2); those points on the thrill scale were: unaffected (score 0), quite thrilled (score 1), and very thrilled (score 2).

Various indices were derived from the life event data in the original study and are used here : a simple count of events reported (life events total); the sum of all upset and thrill scores (stress); the sum of all upset scores (upset); the sum of all undesirability scores (undesirable events); and two loss indices. The first loss index consisted of a sum of all loss event-upset scores. The second loss index - a count of loss experiences - was not used in this present study and was replaced with a new scale summing upset scores for bereavement experiences (bereavement upset). Such experiences involved "death of wife", "death of son or daughter", "death of close relative", and "death of close friend". The intention was to isolate a more specific stress experience and the relative magnitude of its effect on outcomes.

Social structure

Social structure was measured using only one four-point scale asking subjects to indicate which of four statements best describes their number of friends: "I have many close friends" (score 1); "I have some close friends" (score 2); "I have only a few close friends" (score 3); and, "I have no friends" (score 4). For the purposes of the present study, the scale was recoded: 2 = 1, and 3,4 = 0, producing a dichotomous variable. Choice of this variable was to some extent dictated by a relative lack of available support indicators in the

data. Marital status was rejected because of the few subjects who were single.

Smoking behaviours and alcohol consumption

Cigarette smoking was assessed in two ways. Subjects were classified as currently smokers or non-smokers (a dichotomy,coded 2=0), and for subjects who smoked (N = 249), as light, moderate, and heavy smokers on the basis of the number of cigarettes smoked per. day (an interval scale variable, coded: 1 = 1-10; 2 = 11-20; 3 = 21-30; 4 = 31+). Average weekly alcohol intake for the preceding year was recorded in the units used by the subject and then converted to grams of alcohol.

Ultimately, all variables used in this analysis were represented as either interval level or dichotomous variables thus permitting the use of correlational procedures.

Statistical analysis

Initially, frequencies and distributions were obtained for all variables, including the control variables of socio-economic status and age. Next, relationships among variables in the present data were analyzed using the SPSSX Pearson's r programme (User's Guide, 1983). Statistical significance was assessed using one-tailed tests with alpha set at .05 since directional hypotheses were to be tested.

Main effects were analyzed by employing the All-in regression procedure with separate runs for the seven stress variables across all four dependent variables. Spicer et al. (1981) found that this data was appropriate for correlation regression analysis on two grounds. First, despite the skewed distributions of some of the dependent variables, transformation procedures employed by Spicer et al. (1981) produced no real change in results. Second, even though one of the analyses used a dichotomous variable, this procedure can be justified (Cohen & Cohen, 1975; House & Jackman, 1979; House, McMichael et al. 1979).

Finney, Mitchell, Cronkite, and Moos (1984) discuss the two methods for examining interaction effects in the context of multiple regression. These authors argue for the use of Product Terms Regression analysis over what they call the Within-groups method. The former method was chosen for two important reasons: (1) One of the two key interaction variables in this investigation is the TABP - a true dichotomy. It therefore makes particular sense to look at the effects of Type A and Type B separately. (2) If the Cross-product Terms method were to be used it would assume a uniform change in independent-dependent variable relationships across all levels of a moderating variable. However, there is no theoretical basis for making this assumption. What is

more, because this present study is partly in the business of replication, the use of Product-terms regression by Spicer et al. (1981) was seen as an important lead.

There are difficulties comparing regression coefficients across sub-groups most often due to unequal variance, unequal sample sizes, and low power. Use of the Z-test deals with some of these problems. However, as far as this analysis was concerned, in no case was the number of subjects in a sub-group less than N = 169. Therefore, no particular power problem was expected. Moreover, an option for the Product-terms method is consistent with the nature of the hypotheses of interest. Outcomes were hypothesized to be greater for the impact of criterion variables on one subgroup than on the other.

Finally, a large-sample Z Test for parallelism was performed on significant interaction equations using the formula provided in Kleinbaum and Kupper (1978).

CHAPTER FOUR

This chapter provides the results of all univariate, bivariate, and multiple regression analyses performed on the variables of interest. All are presented as they relate to the hypotheses listed at the conclusion of chapter two.

Univariate results

Table 1 (over) shows the means, standard deviations, and ranges for dichotomous variables, and the percentage of the sample in each category of the dichotomous variables.

An initial comment concerns the shapes of the continuous variable distributions, and the percentage of subjects represented in each dichotomous category in the study data. Of the continuous variables, all stress variable distributions, save for one, show a marked negative skew. Workload alone approximates a normal curve. Depressive symptomatology, alcohol consumption, and cigarettes per day all show negative skews. The latter distribution yields a mean number of cigarettes smoked per day of only .92, suggesting that people in

this sample smoke very little. The control variable, age, approached a normal distribution. Of the dichotomous variables, 34.54% were classified Type A, 47.52% were smokers - an extraordinary result, 50.95% reported having many close friends, and 60% of subjects rated with high socioeconomic status.

Bivariate relationships

Special attention is paid to Pearson correlation coefficients, because for the first three hypotheses, they are all this investigation has to work with. Furthermore, correlations provide some basis for outcome expectations on all hypotheses These simple correlations among the study variables are listed in Table 2. Coefficients above the r = .08 level are significant at the P < .05 (one-tailed) level.

The magnitude, direction, and significance of the relevant coefficients provides support for **Hypothesis 1**. This hypothesis states that Type As are more likely to perceive high levels of stress than Type Bs in the domains of interest. Indeed, Type A correlates positively and significantly with six out of the seven stress variables (excluding loss upset), and with socioeconomic status.

Hypothesis 2 states that Type As are more likely than Type Bs to have few close friends. There is no sig-

TABLE 1: Means, standard deviations, and ranges for depressive symptomatology, alcohol consumption, cigarettes, stress, upset, undesirable events, loss upset, bereavement upset, life events total, workload, and age. Percentage of sample (N = 524) represented in the Type A, smoker, many close friends, and high socio-economic status categories.

	Mean	SD	Range
Depressive symptomatology	2.31	2.20	0 - 13
Alcohol (Grams)	174.13	198.41	20 - 980
Cigarettes	.92	1.25	0 - 4
Stress	4.00	3.78	0 - 19.5
Upset	2.51	2.81	0 - 18
Undesirable events	2.39	2.09	0 - 9
Loss upset	.99	1.45	0 - 6
Bereavement upset	.51	1.07	0 - 3
Life events total	5.24	3.49	1 - 18
Workload	20.02	3.63	8.5 - 29
Age (Years)	42.21	7.72	30.5 - 54.5

	Percentage
Type A	34.54
Smokers	47.52
Many friends	56.30
High socio-economic status	60.90

TABLE 2: Simple correlations among Type A, depressive symptomatology, alcohol consumption, smoking behaviours, stress, upset, undesev, lelu, lebu, letot, workload, friends, socioeconomic status (SES), education, and age.

	TA	DS	AC	S	C	St	U	Un	LU	BU	LT	Wl	Fr	SES	Age
Type A (TA)															
Depression (DS)	.01														
Alcohol (AC)	.03	.00													
Smoking (S)	.06	.10	.22												
Cigarettes (C)	.07	.13	.23	.77											
Stress (St)	.19	.21	.12	.13	.17										
Upset (U)	.13	.28	.10	.16	.20	.83									
Undesirable events (UN)	.13	.26	.06	.14	.16	.71	.83								
Loss upset (LU)	.06	.03	.04	.14	.15	.39	.49	.38							
Bereavement upset (BU)	.09	-.008	.001	.06	.04	.18	.26	.21	.71						
Life events total (LT)	.17	.18	.10	.06	.11	.75	.55	.67	.31	.13					
Workload (Wl)	.30	.03	-.03	.05	.06	.17	.14	.16	.03	-.02	.14				
Friends (Fr)	-.03	-.16	.12	.03	-.01	-.05	-.09	-.05	.06	.08	-.01	-.02			
Socio-economic status (SES)	.18	-.09	-.02	-.14	-.15	.04	-.07	-.02	-.08	-.09	.14	.16	-.03		
Age	-.02	-.02	-.06	.06	.00	-.11	.00	-.04	.08	.08	-.14	-.11	-.01	-.23	

nificant support for this hypothesis, although the negative correlation is in the direction predicted by theory.

Hypothesis 3, which states that those with few friends are more likely to perceive high levels of stress, receives only tentative support. The significant and negative correlation of friends with upset is as expected. The significant positive correlation of friends with bereavement upset is the opposite to the expected direction. However, friends does not correlate significantly with any of the other five stress variables.

The results of hypotheses 4 - 8 are now outlined on the basis of simple Pearson correlations. It is noted that there is no initial basis for expectations in **hypothesis 4** which states that Type As are more likely than Type Bs to be depressed, to drink more, and to engage in more smoking behaviour. However, there are reasons for believing that results for correlations among dependent variables may interlock in some way. For example, Istvan and Matarazzo in the context of a review of likely synergistic effects for combined tobacco and alcohol use, note the evidence that suggests an association between the use of these two substances. Indeed, Type A shows no significant correlation with any of the dependent variables and therefore no support for hypothesis 4. However, as expected, depressive symptomatology shows a small but significant positive

correlation with both smoking and cigarettes, and alcohol shows significant and positive correlations with smoking behaviours, in the r = .22 - .23 range. There is no significant relationship between depressive symptomatology and alcohol in this sample.

Hypothesis 5 states that those who perceive high levels of stress will register higher on all dependent variables. There is some support for this hypothesis based on correlation coefficients. Four of the stress variables correlate significantly and positively with depressive symptomatology. Three stress variables show significant positive correlations with alcohol consumption. Unexpectedly, the direction of the correlation between workload and alcohol consumption changes to negative in this sample. Four stress variables show significant positive correlations with smoking behaviours, and life events total shows a significant positive correlation with cigarettes, but not with smoking.

Finally, in the bivariate results section, **hypothesis 6** states that those with few close friends are more likley that those with many close friends to report high levels of depressive symptomatology, alcohol consumption, and smoking behaviours. There is some support for this hypothesis on the basis of a significant negative correlation between friends and depressive symptomatol-

ogy. However, there is a significant positive correlation between friends and alcohol, and no significant relationship between friends and smoking behaviours.

Main effect results

Tables 3 - 9 (over) provide the main effect regression results pertaining to hypotheses 4 - 6.

Hypothesis 4 (Type A on all dependent variables)

Overall, there is little support for a Type A main effect on any of the dependent variables. While there is a significant effect of the TABP on smoking behaviours in one regression run (Table 7), results are otherwise consistently non-significant.

Hypothesis 5 (Stress on all dependent variables)

Support does emerge for this hypothesis. The only unhypothesized results were as follows: undesirable events shows no significant impact on alcohol (Table 5); loss upset shows no significant impact on either depressive symptomatology or alcohol (Table 6); neither bereavement upset nor workload impact on any of the dependent variables (Tables 7 & 9); and life events total impacts significantly on all but smoking.

TABLE 3: Effects of the Type A Behaviour Pattern (TABP), friends, stress, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours. (N=524)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.06	-.01	NS	6.91	.01	NS	.07	.07	NS	.17	.06	NS
Friends	-.71	-.16	.0002	51.05	.13	.003	.03	.03	NS	-.01	-.007	NS
Stress	.11	.19	.0000	7.50	.14	.001	.01	.12	.006	.05	.16	.0002
SES	-.38	-.08	NS	-16.00	-.04	NS	-.13	-.13	.008	-.32	-.13	.009
Age	-.006	-.02	NS	-1.40	-.05	NS	.003	.05	NS	.00	.002	NS
	Ad.r2=.06;F=6.41;P=.0000			Ad.r2=.03;F=3.70;P=.001			Ad.r2=.03;F=3.92;P=.0008			Ad.r2=.05;F=5.57;P=.0000		

TABLE 4: Effects of the Type A Behaviour Pattern (TABP), friends, upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours. (N=524)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.07	-.01	NS	9.99	.02	NS	.07	.07	NS	.18	.07	NS
Friends	-.66	-.14	.0006	53.02	.13	.002	.04	.04	NS	.002	.00	NS
Upset	.19	.24	.0000	9.32	.13	.003	.02	.13	.002	.07	.17	.0001
SES	-.28	-.06	NS	-11.30	-.02	NS	-.12	-.11	.016	-.28	-.11	.022
Age	-.01	-.04	NS	-1.78	-.07	NS	.002	.03	NS	-.002	-.01	NS
	Ad.r2=.08;F=8.66;P=.0000			Ad.r2=.02;F=3.43;P=.002			Ad.r2=.03;F=4.21;P=.0004			Ad.r2=.05;F=5.87;P=.0000		

TABLE 5: Effects of the Type A Behaviour Pattern (TABP), friends, undesirable events, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours. (N=524)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.07	-.01	NS	13.40	.03	NS	.08	.07	NS	.19	.07	NS
Friends	-.70	-.16	.0002	49.72	.12	.005	.03	.03	NS	-.02	-.008	NS
Undesirable events	.25	.24	.0000	7.25	.07	NS	.03	.12	.005	.08	.14	.001
SES	-.34	-.07	NS	-14.90	-.03	NS	-.12	-.12	.011	-.31	-.12	.013
Age	-.007	-.02	NS	-1.70	-.06	NS	.002	.04	NS	-.001	-.007	NS
	Ad.r2=.08;F=8.66;P=.0000			Ad.r2=.01;F=2.44;P=.024			Ad.r2=.03;F=4.00;P=.0006			Ad.r2=.04;F=4.98;P=.0001		

TABLE 6: Effects of the Type A Behaviour Pattern (TABP), friends, loss upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours. (N=524)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.08	.01	NS	16.15	.04	NS	.08	.08	[.064]	.22	.08	[.060]
Friends	-.76	-.17	.0001	47.15	.12	.008	.02	.02	NS	-.05	-.02	NS
Loss upset	.05	.03	NS	6.43	.04	NS	.03	.11	.012	.11	.13	.002
SES	-.37	-.08	NS	-14.43	-.03	NS	-.12	-.12	.015	-.29	-.11	.019
Age	-.01	-.04	NS	-1.94	-.07	NS	.001	.02	NS	-.005	-.03	NS
	Ad.r2=.02;F=3.40;P=.002			Ad.r2=.01;F=2.13;P=.048			Ad.r2=.03;F=3.71;P=.001			Ad.r2=.04;F=4.77;P=.0001		

TABLE 7: Effects of the Type A Behaviour Pattern (TABP), friends, bereavement upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours. (N=524)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.10	.02	NS	18.15	.04	NS	.09	.09	.047*	.25	.09	.033*
Friends	-.75	-.17	.0002	48.35	.12	.006	.02	.02	NS	-.04	-.01	NS
Bereavement upset	-.01	-.006	NS	-.34	-.001	NS	.01	.03	NS	.01	.01	NS
SES	-.39	-.08	NS	-16.44	-.04	NS	-.13	-.12	.010*	-.32	-.12	.010*
Age	-.01	-.04	NS	-1.81	-.07	NS	.002	.03	NS	-.003	-.01	NS
	Ad.r2=.02;F=3.30;P=.003			Ad.r2=.01;F=1.95;P=.071			Ad.r2=.02;F=2.73;P=.012			Ad.r2=.02;F=3.13;P=.005		

TABLE 8: Effects of the Type A Behaviour Pattern (TABP), friends, loss events total, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours. (N=524)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.03	-.007	NS	10.54	.02	NS	.08	.08	[.069]	.19	.07	NS
Friends	-.75	-.17	.0001	48.60	.12	.005	.03	.03	NS	-.03	-.01	NS
Life events total	.11	.18	.0001	6.47	.11	.012	.01	.07	NS	.04	.13	.003
SES	-.46	-.10	.037	-20.38	-.05	NS	-.14	-.13	.005	-.36	-.14	.004
Age	-.005	-.01	NS	-1.43	-.05	NS	.002	.04	NS	.00	.00	NS
	Ad.r2=.05;F=6.0=;P=.0000			Ad.r2=.02;F=3.02;P=.006			Ad.r2=.02;F=3.06;P=.006			Ad.r2=.04;F=4.64;P=.0001		

TABLE 9: Effects of the Type A Behaviour Pattern (TABP), friends, workload, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours. (N=524)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.05	.01	NS	25.32	.06	NS	.07	.07	NS	.19	.07	NS
Friends	-.75	-.17	.0001	47.97	.12	.006	.03	.03	NS	-.03	-.01	NS
Workload	.02	.03	NS	-3.27	-.06	NS	.009	.07	NS	.02	.07	NS
SES	-.40	-.09	NS	-14.24	-.03	NS	-.14	-.13	.005	-.34	-.13	.006
Age	-.01	-.03	NS	-1.98	-.07	NS	.002	.04	NS	-.001	-.008	NS
	Ad.r2=.02;F=3.40;P=.002			Ad.r2=.01;F=2.22;P=.040			Ad.r2=.02;F=3.00;P=.007			Ad.r2=.03;F=3.54;P=.002		

Hypothesis 6 (Few friends on all dependent variables)

Only one significant hypothesized main effect occurs. There is support for the assertion that subjects with few close friends are more likely to report a large number of depressive symptoms than those with many close friends. While consistent with simple correlations, subjects with many close friends are likely to drink more - a result opposite to the hypothesized effect. With regard to the control variables, the finding that those who engage in smoking behaviours have low socioeconomic status is expected.

Interaction effect results

Results for this section are found in Tables 10 - 23 (over). Tables 10 - 16 pertain to hypothesis 7, while Tables 17 - 23 are relevant for hypotheses 8 and 9.

Hypothesis 7

Hypothesis 7 proposes that the impact of perceived stress on all dependent variables is greater for Type As than for Type Bs. Results show that the effects of stress (Table 10) and upset (Table 11) on alcohol consumption are greater for Type As than for Type Bs.

TABLE 10: Effects of friends, stress, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for Type As and Type Bs.

T Y P E A (N = 169)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-1.02	-.22	.001	.06	.06	NS	.06	.06	NS	.12	.05	NS
Stress	.12	.21	.003	.02*	.20	.006	.01	.14	.053	.05	.17	.024
SES	-1.23	-.24	.001	.09	.08	NS	-.08	-.07	NS	-.27	-.09	NS
Age	-.02	-.09	NS	-.002	-.04	NS	.005	.08	NS	.006	.04	NS
	Ad.r2=.16;F=7.59;P=.0000			Ad.r2=.04;F=2.45;P=.035			Ad.r2=.02;F=1.93;P=.090			Ad.r2=.02;F=1.90;P=.097		

T Y P E B (N = 315)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.53	-.12	.028	.15	.15	.006	.02	.02	NS	-.10	-.04	NS
Stress	.09	.16	.003	.006*	.04	NS	.01	.11	.047	.05	.16	.003
SES	-.02	-.005	NS	.03	.03	NS	-.15	-.15	.011	-.34	-.14	.022
Age	.004	.01	NS	-.009	-.14	.012	.002	.03	NS	-.003	-.02	NS
	Ad.r2=.02;F=2.88;P=.014			Ad.r2=.03;F=3.15;P=.008			Ad.r2=.02;F=2.57;P=.026			Ad.r2=.05;F=4.52;P=.0005		

* $Z = 1.64, Z_{crit.} = 1.64, P < .05$ (1-tailed)

TABLE 11: Effects of friends, upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for Type As and Type Bs.

T Y P E A (N = 169)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.83	-.18	.009	.09	.09	NS	.10	.10	NS	.21	.08	NS
Upset	.23	.28	.0001	.03*	.19	.014	.04*	.24	.001	.10	.23	.002
SES	-.99	-.19	.010	.12	.10	NS	-.03	-.03	NS	-.16	-.05	NS
Age	-.03	-.11	NS	-.004	-.06	NS	.004	.06	NS	.003	.02	NS
	Ad.r2=.19;F=9.33;P=.0000			Ad.r2=.03;F=2.15;P=.061			Ad.r2=.06;F=3.34;P=.006			Ad.r2=.05;F=2.81;P=.018		

T Y P E B (N = 315)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.53	-.12	.027	.15	.15	.006	.01	.01	NS	-.10	-.04	NS
Upset	.15	.19	.0004	.004*	.02	NS	.01*	.08	NS	.06	.15	.006
SES	.02	.004	NS	.03	.03	NS	-.15	-.15	.014	-.32	-.13	.032
Age	.00	.00	NS	-.009	-.14	.009	.001	.02	NS	-.005	-.03	NS
	Ad.r2=.04;F=3.74;P=.002			Ad.r2=.03;F=3.04;P=.010			Ad.r2=.01;F=2.22;P=.052			Ad.r2=.04;F=4.24;P=.0009		

* $Z = 1.78, Z_{crit.} = 1.64, P < .05$ (1-tailed) * $Z = 1.72, Z_{crit.} = 1.64, P < .05$ (1-tailed)

TABLE 12: Effects of friends, undesirable events, socio-economic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for Type As and Type Bs.

T Y P E A (N = 169)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.96	-.21	.002	.07	.06	NS	.07	.07	NS	.14	.05	NS
Undesirable events	.29	.27	.0001	.02	.11	NS	.03	.16	.030	.09	.16	.035
SES	-1.05	-.20	.006	.09	.08	NS	-.06	-.05	NS	-.22	-.07	NS
Age	-.02	-.09	NS	-.003	-.05	NS	.005	.08	NS	.005	.03	NS
	Ad.r2=.19;F=9.14;P=.0000			Ad.r2=.01;F=1.37;P=.234			Ad.r2=.03;F=2.14;P=.062			Ad.r2=.02;F=1.76;P=.123		

T Y P E B (N = 315)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.54	-.12	.025	.15	.15	.006	.02	.02	NS	-.11	-.04	NS
Undesirable events	.21	.20	.0003	.00	.003	NS	.02	.11	.045	.08	.14	.011
SES	-.03	-.006	NS	.03	.03	NS	-.15	-.15	.011	-.34	-.14	.023
Age	.002	.007	NS	-.009	-.14	.009	.001	.02	NS	-.005	-.03	NS
	Ad.r2=.04;F=3.83;P=.002			Ad.r2=.03;F=3.00;P=.011			Ad.r2=.02;F=2.60;P=.025			Ad.r2=.04;F=4.04;P=.001		

TABLE 13: Effects of friends, loss upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for Type As and Type Bs.

T Y P E A (N = 169)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-1.07	-.23	.001	.05	.05	NS	.05	.05	NS	.09	.03	NS
Loss upset	.07	.04	NS	.02	.06	NS	.04	.14	NS	.10	.11	NS
SES	-1.25	-.24	.002	.09	.08	NS	-.06	-.05	NS	-.23	-.08	NS
Age	-.03	-.12	NS	-.005	-.07	NS	.002	.04	NS	-.00	-.002	NS
	Ad.r2=.11;F=5.56;P=.0001			Ad.r2=.0004;F=1.01;P=.410			Ad.r2=.02;F=1.81;P=.113			Ad.r2=.008;F=1.28;P=.274		

T Y P E B (N = 315)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.58	-.13	.018	.14	.14	.007	.009	.009	NS	-.14	-.05	NS
Lelu	.04	.02	NS	.01	.03	NS	.03	.10	[.065]	.12	.14	.007
SES	.004	.00	NS	.03	.04	NS	-.15	-.15	.015	-.32	-.13	.034
Age	-.001	-.006	NS	-.009	-.15	.008	.00	.01	NS	-.007	-.04	NS
	Ad.r2=.002;F=1.14;P=.340			Ad.r2=.03;F=3.10;P=.009			Ad.r2=.02;F=2.46;P=.033			Ad.r2=.04;F=4.21;P=.001		

TABLE 14: Effects of friends, bereavement upset, socio-economic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for Type As and Type Bs.

T Y P E A (N = 169)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-1.05	-.23	.001	6.27	.01	NS	.06	.06	NS	.11	.04	NS
Bereavement upset	-.01	-.006	NS	-5.53	-.03	NS	.005	.01	NS	-.001	-.001	NS
SES	-1.31	-.25	.001	-22.64	-.05	NS	-.09	-.08	NS	-.30	-.10	NS
Age	-.03	-.11	NS	-1.31	-.05	NS	.004	.06	NS	.003	.02	NS
	Ad.r2=.11;F=5.47;P=.0001			Ad.r2=-.02;F=.33;P=.892			Ad.r2=.004;F=1.16;P=.330			Ad.r2=-.004;F=.84;P=.522		

T Y P E B (N = 315)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.56	-.13	.021	70.03	.17	.001	.009	.009	NS	-.13	-.05	NS
Bereavement upset	-.02	1.01	NS	3.21	.01	NS	.02	.04	NS	.02	.01	NS
SES	-.002	-.00	NS	-13.20	-.03	NS	-.15	-.15	.015	-.33	-.13	.031
Age	-.001	-.003	NS	-1.91	-.07	NS	.00	.01	NS	-.006	-.04	NS
	Ad.r2=.001;F=1.10;P=.356			Ad.r2=.02;F=2.67;P=.021			Ad.r2=.01;F=1.91;P=.092			Ad.r2=.02;F=2.71;P=.020		

TABLE 15: Effects of friends, life events total, socio-economic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for Type As and Type Bs.

T Y P E A (N = 169)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-1.06	-.23	.001	.06	.06	NS	.06	.06	NS	.10	.04	NS
Life events total	.11	.18	.013	.02	.15	.049	.009	.07	NS	.05	.14	[.066]
SES	-1.32	-.25	.0007	.07	.06	NS	-.09	-.08	NS	-.31	-.11	NS
Age	-.02	-.07	NS	-.002	-.02	NS	.005	.08	NS	.009	.05	NS
	Ad.r2=.14;F=6.91;P=.0000			Ad.r2=.02;F=1.69;P=.140			Ad.r2=.009;F=1.32;P=.257			Ad.r2=.01;F=1.54;P=.180		

T Y P E B (N = 315)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.56	-.12	.020	.15	.15	.006	.01	.01	NS	-.12	-.04	NS
Life events total	.10	.16	.003	.01	.07	NS	.01	.08	NS	.04	.13	.019
SES	-.09	-.02	NS	.02	.02	NS	-.16	-.16	.008	-.37	-.15	.015
Age	.002	.009	NS	-.009	-.14	.012	.001	.02	NS	-.004	-.03	NS
	Ad.r2=.02;F=2.87;P=.014			Ad.r2=.03;F=3.35;P=.005			Ad.r2=.01;F=2.18;P=.056			Ad.r2=.04;F=3.84;P=.002		

TABLE 16: Effects of friends, workload, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for Type As and Type Bs.

T Y P E A (N = 169)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-1.07	-.23	.001	.04	.04	NS	.05	.05	NS	.08	.03	NS
Workload	.01	.02	NS	.02	.15	[.051]	.009	.06	NS	.03	.08	NS
SES	-1.33	-.26	.001	.04	.04	NS	-.10	-.09	NS	-.34	-.12	NS
Age	-.03	-.11	NS	-.003	-.04	NS	.005	.07	NS	.005	.03	NS
	Ad.r2=.11;F=5.49;P=.0001			Ad.r2=.01;F=1.67;P=.144			Ad.r2=.008;F=1.30;P=.262			Ad.r2=.002;F=1.08;P=.372		

T Y P E B (N = 315)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
Friends	-.55	-.12	.024	.15	.14	.007	.02	.02	NS	-.11	-.04	NS
Workload	.03	.05	NS	-.002	-.01	NS	.008	.05	NS	.02	.06	NS
SES	-.01	-.002	NS	.03	.03	NS	-.15	-.15	.011	-.33	-.13	.026
Age	.00	.001	NS	-.009	-.15	.008	.001	.02	NS	-.005	-.03	NS
	Ad.r2=.003;F=1.23;P=.291			Ad.r2=.03;F=3.02;P=.011			Ad.r2=.014;F=1.96;P=.083			Ad.r2=.029;F=2.92;P=.013		

TABLE 17: Effects of the Type A Behaviour Pattern (TABP), stress, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for subjects with many close friends and few close friends.

MANY CLOSE FRIENDS (N = 261)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.30	-.07	NS	-.03	-.03	NS	.11	.11	NS	.33	.13	.036
Stress	.11	.20	.001	.01	.07	NS	.005	.04	NS	.03	.09	NS
SES	-.36	-.09	NS	.06	.06	NS	-.16	-.16	.022	-.39	-.15	.021
Age	.00	.001	NS	-.007	-.12	.050	.008	.12	.042	.007	.05	NS
	Ad.r2=.03;F=2.79;P=.017			Ad.r2=.006;F=1.36;P=.238			Ad.r2=.04;F=3.20;P=.008			Ad.r2=.06;F=4.78;P=.0003		

FEW CLOSE FRIENDS (N = 223)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.18	.04	NS	.06	.06	NS	.02	.03	NS	.004	.001	NS
Stress	.10	.18	.006	.01	.14	.034	.02	.21	.001	.07	.24	.0003
SES	-.41	-.08	NS	.02	.02	NS	-.09	-.08	NS	-.20	-.07	NS
Age	-.01	-.04	NS	-.006	-.09	NS	-.002	-.04	NS	-.008	-.05	NS
	Ad.r2=.02;F=2.28;P=.047			Ad.r2=.02;F=1.96;P=.085			Ad.r2=.04;F=2.97;P=.012			Ad.r2=.05;F=3.45;P=.005		

TABLE 18: Effects of the Type A Behaviour Pattern, upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for subjects with many close friends and few close friends.

MANY CLOSE FRIENDS (N = 261)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.21	-.05	NS	-.01	-.01	NS	.12	.11	NS	.36	.14	.019
Upset	.17	.20	.001	-.01	-.01	NS	.006	.03	NS	.03	.07	NS
SES	-.30	-.07	NS	.06	.06	NS	-.16	-.15	.024	-.38	-.15	.027
Age	-.005	-.02	NS	-.008	-.12	.038	.008	.12	.048	.006	.03	NS
	Ad.r2=.037;F=3.05;P=.017			Ad.r2=.001;F=1.08;P=.367			Ad.r2=.039;F=3.17;P=.008			Ad.r2=.06;F=4.55;P=.0005		

FEW CLOSE FRIENDS (N = 223)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.08	.02	NS	.05	.05	NS	.01	.01	NS	-.03	-.01	NS
Upset	.19	.27	.0001	.02	.14	.029	.03	.24	.0004	.11	.28	.0000
SES	-.27	-.05	NS	.04	.04	NS	-.06	-.06	NS	-.13	-.05	NS
Age	-.01	-.05	NS	-.006	-.10	NS	-.004	-.06	NS	-.01	-.07	NS
	Ad.r2=.065;F=4.18;P=.001			Ad.r2=.021;F=2.01;P=.077			Ad.r2=.053;F=3.59;P=.003			Ad.r2=.07;F=4.45;P=.0007		

TABLE 19: Effects of the Type A Behaviour Pattern, undesirable events, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for subjects with many close friends and few close friends.

M A N Y C L O S E F R I E N D S (N = 261)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.25	-.06	NS	-.01	-.01	NS	.11	.11	NS	.36	.13	.023
Undesirable events	.23	.22	.0003	-.002	-.008	NS	.01	.05	NS	.05	.08	NS
SES	-.36	-.09	NS	.06	.06	NS	-.16	-.16	.021	-.39	-.15	.022
Age	-.002	-.009	NS	-.008	-.13	.037	.008	.12	.042	.006	.04	NS
	Ad.r2=.04;F=3.32;P=.006			Ad.r2=.001;F=1.09;P=.36			Ad.r2=.041;F=3.29;P=.006			Ad.r2=.064;F=4.64;P=.0004		

F E W C L O S E F R I E N D S (N = 223)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.12	.02	NS	.06	.06	NS	.03	.03	NS	.01	.006	NS
Undesirable events	.28	.26	.0001	.02	.09	NS	.04	.20	.002	.12	.21	.001
SES	-.29	-.06	NS	.03	.03	NS	-.07	-.07	NS	-.16	-.06	NS
Age	-.01	-.04	NS	-.006	-.10	NS	-.003	-.05	NS	-.009	-.06	NS
	Ad.r2=.063;F=4.10;P=.001			Ad.r2=.009;F=1.45;P=.206			Ad.r2=.039;F=2.88;P=.015			Ad.r2=.04;F=2.92;P=.014		

TABLE 20: Effects of the Type A Behaviour Pattern (TABP), loss upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for subjects with many close friends and few close friends.

MANY CLOSE FRIENDS (N =261)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.16	-.04	NS	-.01	-.01	NS	.11	.10	NS	.35	.13	.024
Loss upset	.11	.08	NS	.01	.05	NS	.03	.09	NS	.10	.12	.032
SES	-.30	-.07	NS	.07	.07	NS	-.15	-.15	.029	-.36	-.14	.033
Age	-.009	-.03	NS	-.008	-.13	.032	.007	.11	NS	.003	.02	NS
	Ad.r2=.000;F=1.02;P=.402			Ad.r2=.004;F=1.21;P=.303			Ad.r2=.047;F=3.66;P=.003			Ad.r2=.074;F=5.26;P=.0001		

FEW CLOSE FRIENDS (N = 223)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.35	.07	NS	.08	.08	NS	.05	.05	NS	.07	.02	NS
Loss upset	-.03	-.01	NS	.009	.02	NS	.04	.13	.044	.13	.15	.023
SES	-.47	-.09	NS	.02	.02	NS	-.08	-.08	NS	-.18	-.06	NS
Age	-.01	-.05	NS	-.007	-.11	NS	-.005	-.08	NS	-.01	-.09	NS
	Ad.r2=-.005;F=.74;P=.591			Ad.r2=.001;F=1.06;P=.381			Ad.r2=.016;F=1.76;P=.122			Ad.r2=.017;F=1.78;P=.116		

TABLE 21: Effects of the Type A Behaviour Pattern (TABP), bereavement upset, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for subjects with many close friends and few close friends.

MANY CLOSE FRIENDS (N = 261)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.13	-.03	NS	-13.62	-.03	NS	.12	.11	[.065]	.37	.14	.017
Bereavement upset	.03	.02	NS	-.82	-.004	NS	.02	.05	NS	.05	.05	NS
SES	-.32	-.08	NS	5.99	.01	NS	-.15	-.15	.027	-.37	-.15	.029
Age	-.007	-.02	NS	-2.53	-.09	NS	.007	.11	[.060]	.005	.03	NS
	Ad.r2=-.006;F=.68;P=.638			Ad.r2=-.007;F=.61;P=.685			Ad.r2=.04;F=3.27;P=.007			Ad.r2=.06;F=4.40;P=.0007		

FEW CLOSE FRIENDS (N = 223)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.38	.07	NS	56.34	.15	.027	.06	.06	NS	.13	.05	NS
Bereavement upset	-.11	-.04	NS	.31	.001	NS	.006	.01	NS	-.05	-.04	NS
SES	-.48	-.09	NS	-38.21	-.10	NS	-.10	-.09	NS	-.24	-.09	NS
Age	-.01	-.05	NS	-.65	-.02	NS	-.004	-.06	NS	-.01	-.06	NS
	Ad.r2=-.004;F=.81;P=.543			Ad.r2=.01;F=1.56;P=.170			Ad.r2=-.001;F=.93;P=.460			Ad.r2=-.004;F=.79;P=.554		

TABLE 22: Effects of the Type A Behaviour Pattern (TABP), life events total, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for subjects with many close friends and few close friends.

M A N Y C L O S E F R I E N D S (N = 261)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.24	-.05	NS	-.01	-.01	NS	.12	.11	[.061]	.34	.13	.029
Life events total	.60	.15	.019	.005	.004	NS	.005	.005	NS	.03	.09	NS
SES	-.42	-.10	NS	.06	.06	NS	-.16	-.16	.024	-.42	-.16	.015
Age	-.003	-.01	NS	-.008	-.13	.039	.008	.12	.049	.007	.05	NS
	Ad.r2=.014;F=1.78;P=.116			Ad.r2=.001;F=1.08;P=.368			Ad.r2=.038;F=3.11;P=.009			Ad.r2=.065;F=4.70;P=.0004		

F E W C L O S E F R I E N D S (N = 223)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.27	.05	NS	.08	.08	NS	.06	.05	NS	.04	.01	NS
Life events total	.72	.15	.027	.03	.03	NS	.06	.06	NS	.06	.18	.006
SES	-.45	-.09	NS	.01	.02	NS	-.10	-.09	NS	-.24	-.09	NS
Age	-.01	-.03	NS	-.006	-.10	NS	-.003	-.05	NS	-.008	-.05	NS
	Ad.r2=.015;F=1.73;P=.128			Ad.r2=.001;F=1.07;P=.375			Ad.r2=.002;F=1.12;P=.351			Ad.r2=.027;F=2.26;P=.049		

TABLE 23: Effects of the Type A Behaviour Pattern (TABP), workload, socioeconomic status (SES), and age on depressive symptomatology, alcohol consumption, and smoking behaviours for subjects with many close friends and few close friends.

MANY CLOSE FRIENDS (N = 261)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	-.26	-.06	NS	-.004	-.004	NS	.12	.11	NS	.34	.13	.040
Workload	.04	.08	NS	-.003	-.02	NS	.001	.01	NS	.01	.04	NS
SES	-.34	-.08	NS	.06	.06	NS	-.16	-.15	.023	-.39	-.15	.023
Age	-.004	-.01	NS	-.008	-.33	.035	.008	.12	.049	.006	.04	NS
	Ad.r2=-.000;F=.98;P=.425			Ad.r2=.002;F=1.11;P=.355			Ad.r2=.038;F=3.11;P=.009			Ad.r2=.059;F=4.33;P=.0008		

FEW CLOSE FRIENDS (N = 223)

	Depression			Alcohol			Smoking			Cigarettes		
	B	Beta	P<	B	Beta	P<	B	Beta	P<	B	Beta	P<
TABP	.34	.07	NS	.06	.06	NS	.03	.03	NS	.05	.02	NS
Workload	.00	.00	NS	.01	.11	NS	.02	.13	[.052]	.04	.10	NS
SES	-.46	-.09	NS	.002	.002	NS	-.11	-.11	NS	-.24	-.09	NS
Age	-.01	-.05	NS	-.006	-.09	NS	-.003	-.05	NS	-.009	-.06	NS
	Ad.r2=-.006;F=.73;P=.602			Ad.r2=.031;F=1.63;P=.153			Ad.r2=.015;F=1.70;P=.134			Ad.r2=.005;F=1.23;P=.296		

Moreover, the impact of upset on smoking is greater for Type As than for Type Bs. It is only in these three cases that the regression coefficients are significantly different from one another across sub-groups. For stress on alcohol across sub-groups, Z = 1.64 (Z crit. = 1.64; P < .05, one-tailed). For upset on alcohol across sub-groups, Z = 1.78 (Z crit. = 1.64; P < .05, one-tailed). And for upset on smoking across sub-groups, Z = 1.72 (Z crit. = 1.64 (P < .05, one-tailed). Clearly, all Z-scores are relatively borderline.

There is no clear interaction effect for the TABP on the relationship between stress variables and either depressive symptomatology or cigarettes.Socioeconomic status tends to have a greater positive impact on depressive symptoms for Type As than for Type Bs such that Type As who have depressive symptoms are more likely to be of low socioeconomic status than Type Bs. On the other hand, Type Bs who engage in smoking behaviours are more likely than Type As to have low socioeconomic status. Age also reveals a consistent pattern such that Type Bs who drink are more likely than Type As to be younger.

Hypothesis 8

Hypothesis 8 proposes that the impact of perceived stress on dependent variables is greater for Type As than for Type Bs. None of the Z-test results showed any significance, indicating that the relative lack of interaction effects is consistent with the hypothesis 5 main effect of stress on all dependent variables. There is no significant indication of a difference in impact of any stress variable on any dependent variable for Type As or Type Bs. When under stress, those with few close friends tend to drink more alcohol, and engage in more smoking behaviour than those with many close friends.

Once again, the control variables demonstrate a consistent pattern: those who have many close friends are more likely that those with few close friends to engage in smoking behaviours when of low socioeconomic status; those who have many close friends are more likely than those with few close friends to drink when younger; and finally, those who have many close friends are more likley than those with few close friends to smoke when older.

Hypothesis 9

Hypothesis 9 states that the impact of the TABP on all dependent variables will be greater for those with few

close friends. Results do not show support for this hypothesis. The only significant effect for the TABP was in a direction opposite to that hypothesized, such that the Type A with many close friends was likely to smoke more cigarettes than the Type A with few close friends.

CHAPTER FIVE

This final chapter attempts to relate the analysis results to theoretical issues and empirical findings outlined in Chapters one and two.

Results for hypothesis 1 (positive correlation between Type A and stress) are consistent with those reported by Byrne (1981) and Byrne and Rosenman (1986), that there is a tendency among Type As to encounter a higher total of life events than Type Bs, in the immediately previous twelve-month period. Given the critical components of the TABP - including hard-drivenness, and the need to be in control - it is reasonable to characterize Type As as continually alert to a potentially challenging environment (Evans & Fearn, 1985). This notion is discussed later in this chapter, and may prove to be a pivotal one as order is imposed on a series of complex results. For the moment, hypothesis 1 becomes the focus of discussion.

The simple correlations available in this analysis suggest some significant association between stress factors and the TABP. This result stands in marked contrast to to the report by Spicer et al. (1981) that Type A behaviour - as separate from Type A personality - was not significantly related to any stress variable

other than workload and loss distress. Use of the more conventional global TABP dichotomy in the present study probably helped avoid a diffusion of true relationships. As this discussion proceeds, it will become more apparent that workload behaves unexpectedly with respect to the proposed interaction model.

Results of hypothesis 2 (correlation between Type A and few close friends) show a small but insignificant negative association between the TABP and close friends. As such, they are in agreement with the magnitude and direction of a correlation reported by Spicer and Hong (1988) in a sample of women. As compared with the Framingham Type A scale used by the latter authors, the Structured Interview has been questioned since many of its questions are male oriented. Ivancevich and Matteson (1988) provide a useful critical overview of Type A assessment implications for research. It is interesting, therefore, to see similar results coming through for both genders. Returning, now, to the results pertaining to hypothesis 2, theory suggests (Price, 1982) that the Type A behaviour pattern is largely incompatible with the bond of close friendship. While that expectation is not significantly supported on a simple correlational level, the direction of the correlation, for this sample, fits both theory and empirical findings.

Correlations pertaining to hypothesis 3 (subjects with few close friends more likely to perceive a high level of stress than subjects with many close friends) show some association between many close friends and both less general upset, and more bereavement upset. On the face of it, these associations make sense. In the first case, gregarious subjects with many close friends are, perhaps, more likely to have ongoing support in the face of upsetting life events. In the second case, this same group might be expected to be more at risk of the upset accompanying loss of one of these friends through bereavement.

Empirical rejection of hypothesis 4 (Type As more likely to report higher levels of depressive symptomatology, alcohol consumption, and smoking behaviours) continues a line of thought begun in the discussion surrounding hypothesis 1. It is also consistent with the observation made by Friedman and Rosenman, the Type A pioneer researchers, and echoed in Hamberger and Hastings (1986): the TABP is not, of itself, a state of chronic arousal. It follows, then that psychopathogenic and problematic behavioural consequences are not spontaneously apparent in an individual who is merely identified as Type A. Certain environmental conditions may well be required before the Type A is galvanized into action which Price (1982) calls a 'chronic

struggle'. Moreover, this particular result further legitimizes the choice of an interaction strategy in the present study.

Results for Hypothesis 5 (that those who are highly stressed are more likely to report higher levels of the dependent variables) show a consistent positive main effect for stress variables on dependent variables with the exception of loss upset, bereavement upset and workload. While Dohrenwend et al. (1982) refer to the abundant evidence that stressful events are related to adverse changes in health, loss upset and bereavement upset are given a special place. These authors point out that bereavement and general loss experiences tend to have an additive effect such that the occurrence of several such events in a relatively short time period further increases health risk. This finding gives impetus to the possibility that bereavement upset and loss upset <u>háve</u> performed reliably in this instance. This argument will be taken up at a later stage. It is noted that Spicer et al. (1981) found a possible pattern of coronary risk for Type A personalities who seek a heavy workload, lead an exciting event-filled life, and who are unusually distressed by loss events.

For hypothesis 6 (friends on dependent variables) the positive main effect relationship between many close friends and greater alcohol consumption can be sensibly

explained in terms of the social component of alcohol use. It might be reasonably assumed that a person with many close friends will tend to socialize more often, and consume more alcohol in that context. The main effect for socioeconomic status on smoking behaviours is a common outcome, and is in agreement with findings reported by both Haynes, levine et al. (1978) and Spicer et al. (1981). Smoking appears to be more prevalent in the lower social strata.

Interaction hypotheses

Hypothesis 7 (that the impact of stress on dependent variables will be greater for Type As than for Type Bs) is the first to posit interaction effects. Discussion needs to be presented with reference to results on Hypothesis 4, empirically rejected on the basis of findings which show the TABP to be, in itself, a non-pathological psychological phenomenon (Hamberger & Hastings, 1986). Number 7 is a key hypothesis in this study and demands extensive discussion. While overall results tend to support the hypothesis that the impact of perceived stress on depressive symptomatology, alcohol consumption, and smoking behaviours is greater for Type As than for Type Bs, inconsistencies are apparent.

Type A has a significant interaction effect on the relationship between both stress and upset and drinking.

Moreover, Type A also interacts on the relationship between upset and smoking. This pattern is not taken upby all stress variables, however. There are two possible explanations for this state of affairs. On the one hand, variability could, to some extent, be attributed to the difference in the nature of, and upset components among, the stress variables. On the other hand, it may be that the two stress variables 'loss upset' and 'bereavement upset' - constructed for this analysis - were especially reliable scales. But before developing this further, the emergent pattern of interaction is discussed.

As expected, no simple correlational or main effect of Type A on dependent variables strongly suggested the presence of a TABP moderating effect on the relationship between stress and outcomes. Once again, this expectation is consistent with Type A theory, namely, that the Typé A responds 'chronically' to environmental challenge (Price, 1982; Hamberger & Hastings, 1986). In addition, a moderating effect for The TABP would conform similar findings by researchers such as Glass (1977) and Chesney at al. (1979). These kinds of findings reflect the Type A tendency to hyper-respond in loss-of-control situations.

Glass (1977) found that Type A individuals experience feelings of helplessness and distress when faced with

environmental events over which they have no control. Chesney et al. (1979) confirmed this discovery when they found a consistent pattern of more distress associated with less control for Type As over Type Bs. This 'control' issue for the Type A is apparently a pivotal factor. The drive associated with it results in a chronic struggle to command the environment according to a set of high standards for self-evaluation (Matthews, 1982). The final outcome does seem to be depressive in nature, given that the Type A eventually discovers the futility of a struggle which, while it lasts, gives him some sense of achievement. Arguably, while Type As may not be upset easily, when the 'fall' comes it is a hard one.

But what of the greater impact of stress on alcohol and smoking behaviours for Type As over Type Bs? First, the results of this study are in subtantial agreement with Spicer et al. (1981) who found that general distress was significantly and positively associated with smoking, but only for Type As. Once again, the work of Glass (1977) may help to explain why this should be so. First, it is necessary to recall an hypothesis proposed by both Epstein and Jennings (1986) and Epstein and Jenkins (1988). These authors suggested that smoking changed an individual's perception of environmental and bodily cues, leading to a dissociation between bodily

state and environmental demand. This notion of a Type As tendency to smoke more in the face of high perceived stress seems to make special sense in association with another of Glass's (1977) findings about this group of people.

Glass (1977), in his Fatigue Suppression Experiment, reported that Type As tended, far more than Type Bs, to suppress subjective states such as fatigue. And this in association with a greater investment of energy on a variety of tasks. Taking Glass (1977) and Epstein and Jennings (1986) together, it seems possible to characterize something of the Type A's increased smoking behaviour in the face of stress, as an attempt to focus on particular tasks without undue distraction. This theoretically attractive explanation for the Type A's smoking behaviour resonates, not only with Glass (1977), but also with the need for Type As to have 'affective control'. The final equation suggests that Type As are more likely to smoke under stress conditions than Type Bs, for affect control and subsequent 'focused alertness' (Epstein & Jennings, 1986). It is already recognized that Type As do not like to avoid problems, and are inclined to take action to control/solve them when they occur (Vingerhoets & Flohr, 1984). To this extent, smoking is more likely to be a stimulus-control tool for the Type As than it is for

Type Bs. That Type Bs who smoke are more likely to be of low socioeconomic status than Type As, also provides further tentative support for this expectation.

Finally, alcohol consumption is discussed as an outcome in this interaction. Once again, present findings correspond to those reported by Spicer et al. (1981). Type As do tend to engage in more smoking behaviour than Type Bs when under stress. Mention has already been made of the review of the synergistic effects of multiple substance use, specifically tobacco smoking and alcohol consumption (Istvan & Matarazzo, 1984). These authors provide two equally plausible explanations for a pairing of the two behaviours: (1) substance use patterns may be linked by reciprocal activation mechanisms, such that one substance acts as a cue to elicit use of the other; (2) the paired use of tobacco and alcohol is likely to be incidental, if both have been elicited in relationship to the same situational factors. Given no clear evidence to support the latter explanation in this study, it seems likely that the 'reciprocal cue' notion stands for Type As, until evidence to the contrary is available.

Earlier in this chapter, in the opening discussion of hypothesis 7, two possible explanations were proffered for the unexpected performance of the two stress variables 'loss upset' and 'bereavement upset'. On one hand

it is conceivable that the differential effects between these two and the other three general stress variables are confounded by the nature of, and upset components of each. On the other hand, the two 'rogue' variables may actually be the more reliable.

The first explanation, although feasible, is less parsimonious than the second. Both loss upset and bereavement upset tend to tap very specific life events. Furthermore, unlike stress, upset, undesirable events, and life events total, they are arguably less contaminated by conceptual overlap with depressive symptomatology, as evidenced on the simple correlation table (2). They are also likely to be less contaminated by memory effects. This option also seems consistent with results from other hypotheses that required the use of these two variables. However, neither of these options serves to explain the lack of any significant impact by workload on any of the dependent variables.

One of the larger Pearson correlations found in this study was an r = .30 coefficient for the relationship between the TABP and workload. This was not unexpected given work-related component of the activated pattern. But as an interaction variable, workload appears to perform unexpectedly. Spicer (1978) points out a finding that may make some sense of this result. It would seem that the job-involvement factor for the Type As

has shown the least consistent association with CHD. Why should this be so? A possible answer comes to mind. Arguably, work, and work-related events provide an environment within which, all things being equal, Type As thrive. While he may genkrally perceive a 'higher' workload than his Type B counterpart, the Type A man could well see this state-of-affairs as far less stress-engendering than the Type B. It follows that high workload need not increase pathogenic outcomes for the former. Because the Type A needs to be 'doing' to experience any sense of self-worth (Price, 1982), a high workload may even be a source of some satisfaction and self-esteem.

It appears that the only way to test this hypothesis is to provide a workload-stress measure, thereby obtaining access to data which enables a qualitative appraisal of work-related events. Brief et al. (1983) used this strategy in á study model which predicted a Type A effect on depression through workload dissatisfaction and/or through workload and workload dissatisfaction. This hypothesis was tentatively supported in their findings. Further to this, it is apparent that Spicer et al. (1981) placed great store in both workload and work-place distress as pivotal stress factors in CHD risk for Type As. Their positive results very likely reflect, at least in part, the attempt to isolate

certain components of the TABP as especially risky for CHD in the presence of specific stressors.

It comes time now to discuss the results of the two more problematic hyotheses - 8 and 9. Hypothesis 8 (impact of stress on dependent variables is greater for those with few close friends than those with many close friends) received no substantial support. Because there is a main effect of stress on depressive symptomatology (Cf. hypothesis 5), the number of close friends a person has is statistically incidental. This finding is in substantial agreement with the main effects of stress on psychopathological outcomes (Dohrenwend et al. (1982). However, something else seems to be going on in this sample, such that there is a tendency for many close friends to attenuate drinking and smoking behaviours. This finding is cautiously accepted as a confirmation of the buffering hypothesis. Consistent with House's (1985) assertion that the effects of social support are generally expected to be beneficial for health, those with many close friends have more protection from the full pathogenic force of perceived stress than those with few close friends. Again, in general terms, the suggestion by Cohen and Wills (1985) and House (1981) that social support may alleviate the impact of stress appraisal, seems to make particular sense in the context of this study. The two stress var-

iables which performed most consistently were measures of perceived upset. Contact with a wide range of friends, then, might well mean that information is available to a person which mitigates the more unhealthy outcomes of stress. In concert with the kind of empathy that assures a individual he is 'not the only' one, this kind of support could be very effective.

Finally for hypothesis 8, the age effects are hardly surprising. First, those with many close friends are more likely than those with few close friends to drink when younger. Second, those with many close friends are more likely than those with few close friends to smoke when older. Both of these results make sense in view of no main effect of age on any of the dependent variables. It is already evident that those with many close friends will tend to consume more alcohol socially. That these people also tend to be younger is probably a function of their tendency to be more generally socially active than older subjects. Ironically, the 'general affiliation benefit' Lecourt et al. (1984) see as available to people with a large number of personal relationships, seems to explain this state of affairs quite sensibly. For the smoking result, it is likewise already evident that those with lower socioeconomic status tend to be the smokers in society. Older subjects have probably not been so exposed, over time, to

information about the negative health effects of smoking. It also seems reasonable to suggest that they are more likely to be habitual smokers, and have friends who smoke.

Hypothesis 9 (the impact of the TABP on dependent variables will be greater for those with few close friends) is not supported in this sample. In fact the TABP has a significantly greater impact on smoking behaviours for many close friends than for few close friends! The profile is of the Type A who is more likely to engage in smoking behaviours when he has many close friends. Seen alongside the consistently negative (although insignificant) correlation between Type A and friends reported in this study, and by Spicer and Hong (1988), it is difficult not to agree with the bleak picture painted of the Type A's social relationships by Price (1982) and others (Cf. Smith & Rhodewalt, 1986). Furthermore, présent findings do not concur with those reported by Spicer and Hong (1988) after a correlational sub-group statistical analysis of social contact. These authors reported that availability and frequency of social contact appeared to moderate the relationships between Type A and hopelessness.

Once again, it may be that the variable 'number of close friends' was, on its own, just not able to capture enough of the complexity contained within the no-

tion of social support. Many writers (for example, Wilcox & Vernberg, 1985; Payne & Jones, 1987) warn researchers of the conceptual and methodological pitfalls associated with social support investigation. Conceivably, these difficulties are even further increased when a complex variable like the TABP is introduced. Specifically, these authors point out how critical it is to have a clear and precise measure of support. Arguably, future investigation of the relationship between social support and the TABP might well benefit from the use of more qualitative support measures. Until such studies are forthcoming, it is still not possible to say with any degree of conviction, that Type As can benefit health-wise from the support available from a wide range of personal relationships. Making more sense of this issue seems vital if investigations of the TABP are to provide any guidance for clinicians who are in the business of intervention strategies for Type As.

Summary and conclusions

This study set out to test a model that proposed a complexity of main effect and interaction effect relationships among the TABP, number of close friends, per-

ceived stress, depressive symptomatology, alcohol consumption, and smoking behaviours. Given that this was a secondary analysis of interaction effects, concurrence with the findings of Spicer et al. (1981) for Type As and smoking, is pleasing. Furthermore, the seminal work of Glass (1977) on the uncontrollability hypothesis, and the Epstein and Jennings (1986) proposal that Type As who smoke do so for affect control, and the elimination of peripheral stimuli, enjoy a goodness of fit.

Beyond this point, the glaring weaknesses of this study model seem to converge on two variables: workload and number of friends. Both of these variables are more likely to perform to an optimum level when subjectively qualified. For workload, some upset rating would enable a differentiation of effect for Type As who thrive on a high workload within certain parameters, and those who have crossed the thrive/stress barrier. And for social support, somé indication as to whether or not support is actually received, is more likely to tap the active social component of an individual's life than the variable used in this investigation. At the very least, this strategy merits some consideration.

Seen in tandem with the Spicer et al. (1981) findings, it seems that one problematic health behaviour in particular has been identified. Some space was devoted in chapter one, to the likleihood that some risky outcomes

in the present model might act prodromally to the later onset of CHD. Smoking behaviour might well be that variable, although such an assertion must be treated with much caution.

Above all else, however, the choice of an interaction strategy seems to have paid some dividends. The TABP is a complex variable, and the difficulties associated with identifying the ad hoc effects of its various components are reflected in the wide, and sometimes indiscriminant use of poorly validated measures. Add this fact to the discovery by some researchers that the TABP does not correlate well with affective distress measures, and some investigators are in danger of missing the statistical wood for the trees. In other words, interaction analysis should be seen as a logical next step, rather than as a futile attempt to draw out something that does not really exist in the data. Arguably, this temptation to abandon 'controversial' constructs might be even more prevalent when considering a phenomenon like the TABP.

In the long-run, any hope of supplying the clinician with evidence for effective intervention strategies for the Type As hyper-reactivity, depends on the preparedness of researchers to 'immerse' themselves in this construct, with all the conceptual and statistical tools available.

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