THE TYPE A BEHAVIOUR PATTERN, SEX DIFFERENCES AND
CONTROL IN THE OCCUPATIONAL ENVIRONMENT

Neil Cameron Woodger

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fulfillment of the degree of Master
of Clinical Psychology at the
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Declaration

I declare that this thesis reports my original work, and that no part of it has been previously accepted or presented for the award of a degree or diploma by any university. To the best of my knowledge no material previously published or written by another person is included except where due acknowledgment is given.

Neil C. Woodger
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I would like to thank my supervisor, Dr Don Byrne, for his guidance and patience throughout this enterprise. In addition I wish to acknowledge his research assistant, Monika Reinhart, for the time she spent with me in the early days when I must have appeared so ignorant.
Although the death rate from Cardiovascular Disease (CD) is declining it still constitutes a major health problem. In the past the focus of research on the incidence, aetiology and treatment of CD was mainly on the male population. Significant sociological shifts have occurred with the changing pattern of participation by women in the workforce. Consequently concerns have arisen for women’s health as well as that of men in an occupational environment which itself has altered in character since the Second World War. The era of the highly competitive individualist aggressively striving to achieve against an unending string of obstacles has been replaced by the requirement to "fit in" and work in a team setting towards "corporate goals". The proposal that stress is a risk factor in the aetiology of CD has attracted a great deal of interest both lay and professional. Within this context the notion of the Type A Behaviour Pattern (TABP) has been heavily researched, at times inconclusively. The incidence of the TABP in women and the question of sex differences has received relatively little attention, an omission given the emergence of women in the workplace, especially in positions previously dominated by men. The present study, reflecting concern over
inequalities between men and women in occupational status, consisted of a field survey of sex differences in the TABP, perceived control, psychological symptomatology and angina pectoris. Responses from 247 subjects were obtained. While no significant sex differences were found there was some support for a link between the TABP, being low on perceived control and an increased incidence of psychological symptoms. Finally, it was suggested that further research in the area of sex differences might focus on comparisons between men and women performing similar duties rather than compare the sexes across occupational groups.
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CHAPTER 1

INTRODUCTION

The leading cause of premature death in Western nations has been Cardiovascular Disease (Lynch, 1977). In 1900 in the USA Cardiovascular Disease (CD) accounted for 20% of the death rate, by 1950 55%. While this change is partly explained by the declining contribution of infectious disease there is no doubt that CD has adversely affected average life expectancy. In 1969 the World Health Organisation warned that CD had reached enormous proportions and was striking at younger people.

Australians were affected by the CD "epidemic". Craig (1978) cites a 1974 survey in which Australian men ranked third in the world in CD frequency while women ranked first, with CD accounting for one in four deaths for women and one in three for men. Women accounted for one third of admissions to a coronary care unit. Recent Australian data provided by the National Heart Foundation's "Heart Facts Report" (1988) indicates that CD remains the leading cause of death, 46% of all deaths in 1988, 42.7% for men and 49.8% for women. Nearly 60% of CD deaths are caused by Coronary Heart Disease (CHD), 22.6% by stroke and the remainder by
hypertensive disease, cardiomyopathy and diseases of the pulmonary circulation and blood vessels.

For women CHD, particularly stroke, represents a more frequent cause of death than for men. The Heart Facts Report observed that this sex difference is of lesser significance as women live longer than men and are therefore more likely to die of CHD in any case. This comment should not be seen, however, to minimise the importance of CHD as a cause of death amongst women but merely that women are under-represented in other causes such as motor vehicle accidents. In no sense is CHD a "natural cause" of death to which we must all succumb sooner or later.

Since 1960 death rates have fallen for the 30-64 age group (Heart Facts Report, 1988). This decline has affected men and women almost equally. Compared with 1950 the death rate for CD has declined by 54% for men and 71% for women. The decline has occurred across all major regions and social groups but has not been uniform. Rates are higher for Australian-born, less educated and blue collar people. The last two factors are of particular interest in the present study as is the finding that the ACT as a region has a low rate of CD death with the decrease in the cardiac death rate for women being greater than anywhere else.

Price (1982) suggests a number of factors to account for the declining CD death rate in the USA evident by the end of the 1970's. She suggests that improved coronary care and medical treatment through technological advances,
training and improved surgical techniques, as well as the success of public education to reduce smoking have all contributed. In Australia by the end of the 1980's comparable changes are evident. The National Health Survey of the Australian Bureau of Statistics (1989) confirms the reduction in smoking in this country since 1977.

The overall decline in CD mortality rates and high risk behaviour (smoking) is welcome yet available information still gives rise to concern. The National Health Survey yielded figures for Diseases of the Circulatory System for males of 106.1 and for females of 155.8 (rate per 1,000 population). While females had a lower incidence of heart disease compared with males females reported a greater incidence of hypertension (Australian Bureau of Statistics, 1990). Hypertension is an established risk factor for CD thus the greater incidence for females is cause for concern.

Finally, Price (1982) raises the issue of distinguishing between the overall decline in the CD mortality rate and the fact that the death rate in the five years post-infarction has not improved in the USA since 1966. Once disease is established the risk of another infarction is 36%. The overall decline reflects a lower rate of primary infarction. The disease itself still constitutes a major threat and a source of economic and financial strain on individuals and the community.
1.1 A Note on Terminology

Differences in terminological usage and classification can at times prove confusing. Lynch (1977) divides CD into the major categories of atherosclerosis, cerebrovascular disease and rheumatic fever. Byrne (1987) sees CD as encompassing a wide range of pathophysiological states with coronary artery disease the largest clinical group. This process places a person at higher risk of acute myocardial infarction (MI) or coronary heart disease (CHD).

Some authors use the terms MI and CD interchangeably. Buell and Eliot (1983), for example, use CHD as a broad classification of which angina pectoris, MI and sudden cardiac death are the major manifestations. They acknowledge significant overlap between all three entities while not viewing MI and sudden death as necessarily synonymous. In the present study Byrne’s (1987) usage will be adopted for convenience.

1.2 CARDIOVASCULAR DISEASE AND CAUSALITY

According to Byrne (1987) risk factors for CHD may be conveniently divided into four categories:
1. Fundamental biology, e.g., sex, age and inherited characteristics
2. Endogenous regulatory mechanisms, e.g., hypertension and hyperlipidemia
3. Environmental and behavioural issues, e.g., smoking and exercise
4. Organ-system pathology, e.g., chronic renal disease

From these groups Byrne (1987) concludes that according to the epidemiological evidence four factors stand out. These are serum lipids, high blood pressure, smoking and being high on the Type A Behaviour Pattern.

Psychological intervention has followed two main paths. Firstly psychological methods have been devised to reduce an individual's risk status for some factors, for example the application of covert conditioning to the treatment of overeating (Cantella, 1972) and the treatment of cigarette smoking using reciprocal aversion (Lichstein & Stigaitis, 1980). Dishman (1982) and Lee & Owen (1986) matched different behaviour change techniques to the various stages of developing an exercise programme.

Secondly, and together with the application of psychological methods to the more traditionally accepted risk factors has been the development of widespread popular support for the notion of psychological stress as a causative factor for CHD. To quote Freeman (1988): "Few subjects in medicine have produced such a wealth of literature as that which is devoted to the effects of psycho-social influences on human health and particularly the effect of stress on the cardio-vascular system" (p 501).

The notion that the heart is the seat of all emotions, especially anxiety, is an old one deeply rooted in our
society (Lynch, 1977). Contemporary theories view the heart more as an "end-organ" responding to signals from the central nervous system. Cardiovascular responses are deemed to be fundamental to the subjective experience of anxiety. To quote Byrne & Byrne (1990): "Anxiety produces cardiovascular symptoms, if only transiently. Not surprisingly, therefore, it follows in the reasoning of most lay people and many in the medical and psychological professions that anxiety by whatever synonym it is described must be a contributing factor in diseases of the heart and circulation" (p 214).

In order to avoid conceptual confusion Byrne & Byrne note that stress is a more ambiguous concept than anxiety, the latter a more specific term with its implications for the diagnosis of mental health disorders. They argue that "anxiety is an integral component of the stress reaction while stress ... is a complex and multi-faceted phenomenon, the nature of which is not yet completely understood" (p 215).

Given the popularity of the theory of a stress/CHD link, the National Heart Foundation of Australia came under pressure to prepare a statement (Freeman, 1988). The sources of pressure were media reports, the growth of stress reduction centres and the issue of legal compensation. The Foundation responded by establishing the Stress Working Party which went on to express concern over the popularity
of the stress/CHD link with its implications for workers' compensation.

The Working Party was cautious in its findings, citing the many problems in research methodology in its review of the evidence. It said: "A major problem with the evidence on psychological and social factors and heart disease is that most of the studies are retrospective, in that patients with heart disease are sampled alone and are compared with a matched group of healthy persons. This can invite the bias of 'effort after meaning' whereby those who are involved with illness actively seek available psychological or social reasons to explain it" (p 511). Animal studies (e.g., Lown, De Silva, Reich & Murawski, 1980; Verrier & Lown, 1980) involving experimentally induced stress were viewed more positively. They "present strong evidence [but] cannot be used alone to draw conclusions because they were not conducted in humans" (p 511).

The Stress Working Party believed that a case had been made for the role of stress in affecting the established risk factors although it was uncertain of the extent of the effect. Its review of the TABP/stress/CHD link was inconclusive yet its recommendation was clear. Further research "is both needed and justified" especially in countries such as Australia to assess the suggestion that the TABP is a primarily North American phenomenon.
1.3 LIFE EVENTS STRESS AND CHD

The proposal that stress from life events is correlated with self reported tension, distress and diagnosed illness was originally expounded by Holmes & Masuda (1974) and Rahe (1974). The question was asked whether there were classes of environmental factors which may alter human resistance in significant ways such that certain individuals become more or less susceptible to illness (Cassell, 1974). The notion of stress related illness became widely accepted as did the idea that stress can be a component of any illness, not just the psychosomatic disorders (Rabkin & Streuning, 1976). Retrospective and prospective studies in the 1960's and 1970's pointed to moderately significant relationships between stress and sudden cardiac death, myocardial infarction, tuberculosis and leukemia as well as tracing accidents and sports injuries to prior stressful events (Rabkin & Streuning, 1976). Theorell (1974) reviewed several studies and concluded that stressful aspects of the environment were important in the development of premature coronary disease.

The original concept of life event stress has been modified. The critical factor responsible for triggering the stress response is the perceived undesirability of the event (Mueller, Edwards & Yarvis, 1977; Parkel, 1974; Vinokur & Selzer, 1975). Undesirable events are strongly linked with measures of psychological impairment. It is difficult to
deny that certain life events are noxious. Ifield (1976) argues that certain stressors can be of long duration in their effects and consequently damaging to the individual years after onset.

More recent work on the links between life event stress and CHD has resulted in criticism of earlier studies regarding their methodology and research design (Byrne & Byrne, 1990). In the literature on recent catastrophic stressors some studies showed elevations in cardiac mortality weeks or months after a natural disaster (e.g., Trichopoulos, Zavitsanos, Katsoyanni, Tzonou & Dallavorg, 1983). Other studies, e.g., Byrne (1987), showed no relationship at all. Similarly, studies on CHD links with recent bereavement failed to yield clearcut results or suffered from methodological shortcomings that prevented conclusions being drawn (Clayton & Darvish, 1979).

Studies of unemployment, a life event often associated with both physical and mental illness (Finlay-Jones & Eckardt, 1981), have suggested a link with CHD. Brenner (1979) reported that being unemployed correlated with psychiatric morbidity within a year. Cardiovascular disease correlated less strongly and occurred later (two to three years after the event). It is in addition difficult to ignore the media portrayals of unemployed people suffering declining nutritional standards, weight gain and increased smoking within a few months of the event as well as
increased stress levels. The possibilities for interaction effects are clear.

Given the time taken for the development of CHD symptoms it is, as Byrne & Byrne (1990) point out, "intuitively sensible to relate risk of CHD in the long term to the experience of single traumatic life events in the past ... "(p 218). Survivors of POW camps show evidence of psychiatric disturbance yet no elevation in CHD mortality relative to the general population (Gill,1983; Goulston, Dent, Chapuis, Chapman, Smith, Tait & Tennant,1985).

Byrne & Byrne's (1990) analysis overlooks an important issue in that prison camp survivors and other victim groups are exposed to repeated trauma and should not be viewed as survivors of single life events. Herman (1992) makes a useful contribution in this context by drawing parallels between prison and concentration camp survivors and other groups, specifically members of some religious cults, brothels, other forms of organised sexual exploitation, and abusive families. Herman describes the phenomenon of Complex Post Traumatic Stress Disorder and categorises the symptoms into three groups: somatisation, dissociation and the affective. To the extent that dissociation may function as a positive coping mechanism it may operate in a way protective of cardiac function. Those survivors who were more prone to "somatise" may have developed a greater risk status for CHD. As Herman points out dissociation is a frequently reported response to multiple trauma hence the otherwise surprising
failure to find CHD rates in excess of the general population in this group.

Another aspect of the study of life events stress has involved the study of cumulative events. Yet again no firm conclusions about stress/CHD links may be drawn. Studies supporting a link (e.g., Siegrist, 1984; Bengtsson, Hallstrom & Tibblin, 1973) are counterbalanced by those failing to confirm (e.g., Byrne & White, 1980). Byrne & Byrne (1990) conclude:

"The evidence (with respect to cumulative life events) is therefore suggestive, but cannot be taken as strong support for an association between stress and CHD" (p 220).

1.4 THE TYPE A BEHAVIOUR PATTERN

The absence of conclusive evidence for a life events/CHD link notwithstanding, research exploring the status of the TABP as an independent CHD risk factor has positive implications for this issue. Individuals high on the TABP may act unwittingly to place themselves at risk of encountering stressful life events (Byrne, 1981). High Type A people may behave in such a way as to precipitate stressful life events such as the loss of close relationships through their hostile attitudes and aggressive behaviour (Dimsdale, Hackett, Block & Hutter, 1978; Byrne, 1981).
The Type A Behaviour Pattern was originally described by Friedman & Rosenman (1959) as consisting of extremes of competitive achievement, striving, hostility, aggressiveness and time urgency. Two major American prospective studies established the notion of the TABP as an independent risk factor for CHD. The Western Collaborative Group Study (WCGS), initiated in 1960, reported data for 3,182 males aged 39 to 59 and found to be healthy at initial examination. A significantly increased incidence of CHD was associated with a family history of CHD, elevated blood pressure, smoking, elevated cholesterol, triglyceride and beta lipoproteins, and the TABP (Rosenman, Straus, Jenkins, Zyzsanski & Wurm, 1970). Significantly Rosenman et al concluded that the TABP exerted a strong pathogenic force which operated mostly outside the mechanism of any other variables, thus according the TABP status as an independent risk factor. A link between the central nervous system and the occurrence of CHD appeared to be established. At 8.5 years after the initiation of the project it was found that high Type A men had between 1.87 and 1.98 times more CHD risk than non-Type A men (Haynes, Feinleib & Kannel, 1980).

The second American project, the Framingham Study, looked at 1674 men and women aged between 45 and 77 years over an 8 year period. Among men aged 45 to 64 being high on the TABP was associated with double the risk of angina pectoris, myocardial infarction and CHD in general. Type A women had twice the rate of CHD and three times as much
angina as Type B women. It was concluded that the TABP and suppressed hostility were important risk factors for CHD in both sexes with the qualification that the relationship did not hold for blue-collar men (Haynes, Feinleib & Kannel, 1980).

A large-scale European study, although retrospective in design, again found the TABP to be an independent risk factor. The study used 6000 subjects in a Belgian industrial setting and took the form of a controlled preventive trial in men aged 40 to 59 years. CHD was measured using ECG results or a history of angina. The TABP/CHD association was strongest for subjects with angina or with ECG abnormalities in subjects with CHD (Kornitzer, Kittel, DeBacker & Dramaix, 1981).

An additional source of evidence in support of a link between the TABP and CHD is found in studies reporting efforts at teaching heart disease sufferers to alter Type A behaviour to prevent further recurrence (e.g., Powell, Friedman, Thoresen, Gill & Ulmer, 1984; Freedman, Thoresen, Powell, Ulmer, Thompson et al, 1984; Friedman, 1979). These studies all reported significant success in reducing myocardial infarction recurrences (secondary prevention) through the application of behavioural counselling and cognitive behavioural techniques, mostly in a group setting.

The issue of primary prevention has, according to the National Heart Foundation Stress Working Party, been addressed only infrequently. It said "no trial of primary
prevention has been reported" (p 152). Roskies, Spevack, Cohen & Gilman (1978) reported a study aimed at reducing CHD risk in healthy men by modifying their Type A behaviour pattern. The authors reported that both behaviour therapy and brief psychotherapy served to affect positively subjects' status on major psychological and physical risk factors. The clinical validity of these findings, however, could not be confirmed in the absence of a large-scale long term prospective study.

Negative evidence or argument regarding the TABP exists at both the theoretical and empirical level. Ragland & Brand (1988), in a prospective study, found that Type A subjects were less likely to die from CHD than Type B subjects. Other prospective studies, Shekelle, Gale & Norusis (1985); Case, Heller, Case & Moss (1985), have failed to find a TABP/CHD link. Given methodological criticisms levelled at these studies the Stress Working Party firmly recommended further research on the issue.

At the theoretical level efforts to classify and conceptualise the TABP have generated considerable controversy. The TABP has been referred to as a "trait", a "typology" and as "a consistent behavioural syndrome" (Bass, 1983). Its earlier definition as distinct from notions of stress and psychiatric impairment does not conform with more recent views (Byrne & Byrne, 1990). Significant associations between the TABP and measures of psychological distress have been reported in people free of CHD (e.g.,
Byrne & Rosenman, 1986; Francis, 1981) as well as people with diagnosed disease (Dimsdale et al, 1978). Byrne & Rosenman (1986) propose that the subjective experience of heightened autonomic arousal resulting from a sense of time pressure may account for the emotional distress suffered by high Type A subjects.

While a comprehensive review of all the evidence regarding the TABP is beyond the scope of the present study it appears reasonable to conclude that the TABP has status as a separate personality dimension and that there is a suggested link with symptoms of distress. More recent conceptualisations of the TABP do specifically include an affective component, namely emotional distress (Byrne & Byrne, 1990). Price (1982) suggests that a key element is the combination of behaviour and negative emotions.

A cognitive aspect is highlighted by Byrne (1981) who describes how Type A's interpret life events as being of greater emotional impact than coronary disease-free controls. Furthermore other research has pointed to the importance of the cognitive mechanism of perceived control. The Type A's need to impose control on the environment may be an important pathogen (Vingerhoets & Flohr, 1984).

Some researchers have argued that certain aspects of the TABP are in fact key elements. Friedman & Rosenman (1974) emphasise the importance of both time urgency and hostility. Byrne & Rosenman (1986) cited time urgency and impatience as an explanation for the association between the TABP and
emotional discomfort. A recent report by Weekes & Waterhouse (1991) also cites the importance of interpersonal hostility. The high Type A person possesses hostile attitudes and frequently displays anger. By this process high Type A's may precipitate stressful life events such as the loss of close relationships (Byrne & Byrne, 1990).

An additional line of research notes the tendency of high Type A's to suppress attention to task distracting stimuli such as fatigue and hunger (Matthews & Brunson, 1979). Suls (1990), in a review of studies of the relationship between the TABP and chronic distress concluded that those Type A's who were aware of their behaviour displayed more distress symptoms than those who were unaware of their Type A status. The low awareness group was more at risk for CHD perhaps through the suppression of subjective perceptions leading to engaging in overexertion and the worsening of the atherosclerotic process. In addition, the high denial Type A may engage in other high risk coronary-prone behaviour such as overeating and the seeking out of challenging deadlines. Suls proposed that uncertainty about the self rather than poor self-esteem is the fundamental cognitive mechanism underlying the TABP. Type A's are constantly seeking comparative data about their performance and thus falling into what Van Egeren (1991) described as the "success trap".

Byrne & Reinhart (1989a), in a review of the evidence, conclude that psychosomatic research in the 1980's has not altogether supported the role of the TABP as a causative
factor for CHD. It is clear that the issue needs further research and to this end recent refinements of the TABP as an interactionist variable may prove helpful. This notion links well with Theorell, Lind, Christensson & Edhag's (1981) division of cardiac risk into predisposing and precipitating factors. The TABP in this framework is a predisposing factor which Price (1982) defines as a collection of discrete behaviours underlayed by a cognitive set. Suls' (1990) clarification of the cognitive aspect is noteworthy for its stress on the role of mental events not readily accessible to the person's consciousness, a factor which may account for the refractory nature of the behaviour itself. If the work of Vickers, Hervig, Rahe & Rosenman (1981) and Vingerhoets & Flohr (1984) is added a picture emerges of a person with a strong desire for control over his/her environment, with an uncertain self-image, suffering a number of distress symptoms triggered as argued by Theorell et al (1981) by precipitating events such as illness, physical overload or other life events. The perception of life events as noxious (Paykel, 1974; Mueller et al, 1977) fits well with the cognitive "interpretative" emphasis of more recent conceptualisations of the TABP. A high Type A person is at risk of misinterpreting (overstating) the importance of an event and is therefore prone to develop stress symptoms and possibly CHD.

Overall it appears reasonable to consider the TABP to be a separate personality dimension. Furthermore it is
important to investigate its links with psychological distress symptoms in view of the TABP's status as a possible predisposing factor for CHD. The absence of a clearcut connection is of concern and necessitates further research.

1.5 CONTROL, STRESS AND THE TABP

The proposal that control plays a central part in the stress process is well established in the literature (Bandura, 1982; Thoits, 1983; Pearlin, Menaghan, Lieberman & Mullan, 1981). To quote Kobasa (1987): "The notion that individuals who perceive themselves as having control over events in their lives cope more effectively than do individuals who place others or fate in charge has generated more research on personality as a stress-resistance resource than has any other individual difference concept" (p 201).

Control has been defined in a number of different ways: as a belief in the individual's competence, as an action involving "a generative capability in which cognitive, behavioural and social subskills must be organised into integrate courses of action" (Bandura, 1986, p 391), a coping resource involving an attitude of mastery, a need basic to a person's self-concept, a personality preference or an evaluative cognitive act in which the situation is appraised as threatening or challenging (Arnkoff & Mahoney, 1979; Bandura, 1986; Folkman, 1984; Gurin & Brim, 1984; Pearlin et al., 1981;).
Lack of perceived control is thought to trigger stress reactions through its effect on self-worth leading to a sense of helplessness and worthlessness. High control is associated with better adjustment and perceptions of events as less threatening (Folkman, 1984; Gurin & Brim, 1984).

The idea that a perceived need for control is an integral part of the TABP is well illustrated in Friedman's early (1969) definition:

"A characteristic action-emotion complex which is exhibited by those individuals who are engaged in a relatively chronic struggle to obtain an unlimited number of poorly defined things from their environment in the shortest period of time, and if necessary against the opposing efforts of other persons or things in the same environment".

Glass (1977) went further by defining the TABP as a response to stressors that threaten the individual's sense of control. The Type A person's time urgency, competitiveness, achievement striving, aggression and hostility collectively represent a set of control mastery coping responses elicited by perceived threats. Rhodewait & Fairfield (1990) argue that high Type A's respond to threats by increased efforts to regain control. Glass' (1977) emphasis on control as an essential component of the TABP may, as Byrne (1987) cautions, build too great a degree of specificity into its conceptualisation. There is no doubt, however, that the concepts of locus of control and learned
helplessness (Seligman, 1975) are well supported experimentally (Byrne, 1987).

Studies of the psychological differences between Type A's and non-Type A's (Type B's) have yielded alternative frameworks yet converge towards the common theme of how Type A's and Type B's differ in their appraisal of, and coping with, perceived challenges. Rhodewait & Fairfield (1990) argue that self-appraisal biases operate for Type A's which lead them to believe that the possession of behavioural freedoms is attributable to factors under their control. Type B's, on the other hand, perceive factors in the situation as responsible. Type A's consequently respond with "reactance", i.e., active responding, to restore order. There is a sense of a rigidly internalised locus of control whereby the person overemphasises his/her own responsibility or power at the expense of a more rational appraisal of reality. Glass & Carver (1980) account for this rigidity by suggesting that faulty encoding of relevant information is a factor. Cognitive errors persist, resulting in a cycle of overactivity (reactance) and vulnerability to learned helplessness. Clark & Miller (1990) see a Type A's need to maintain control over the environment as a major conceptual focus in research on the mechanisms underlying the TABP. Recent work (Miller, Lack & Asroff, 1985; Strube & Werner, 1985) illustrates how Type A's prefer to retain control when given the option to surrender it to others. Theoretically the notion of a high Type A person rigidly
trying to maintain a high degree of control over his/her environment fits well with Kobasa’s (1986) observation that too much control is as unhealthy as too little.

Support for the importance of the Type A/control link has not been unanimous. Price (1982) concluded that the literature up to that time was not able to provide unequivocal results. Price believed that other variables, particularly self-esteem, were more important. Price’s conclusion, whatever its merits, runs the risk of confusing the situation by categorising the possible explanations. The conceptualisation of control as multidimensional (Bandura, 1982, 1986) as a response to inconsistent experimental findings regarding the control/stress relationship is helpful in this context. As a multidimensional concept it has been defined as competence, mastery, independent achievement and influence.

The notion of control as competence is associated with the work of Bandura for whom control is the individual’s judgement of capability to "organise and execute courses of action required to attain designated types of performances" (Bandura, 1986, p.391). Competence has been suggested as determining both effort invested in and persistence with mastery of difficult experiences. People who doubt their competence are more likely to give up rather than increase their attempts to meet challenges (Bandura, 1982).
Control as mastery is closely related to self-concept. Mastery is "the extent to which people see themselves as being in control of the forces that importantly affect their lives" (Pearlin et al., 1981). Self-directed mastery experiences strengthen beliefs in competence and reduce vulnerability (Bandura, 1986). Kobasa (1979) defined mastery as "hardiness". In Kobasa's study "hardy" business executives approached stressful life events with a belief in their competence, their ability to affect outcomes and with confidence.

The dimension of control as independent achievement is rooted in the (Western) cultural belief that adults have control over their lives by which they satisfy their needs and pursue goals (Brim, 1974). Bandura (1986), supporting the views of Miller, Lack & Asroff (1985) and Strube & Werner (1985), suggests that Type A people, competitive and hard driving, will not allow others to assist them in achieving goals and mastering task demands.

Control as influence involves an individual judging the demands of a situation and his/her ability to do something about it. Control is seen as an integral part of the relationship between the person and the environment. Situational control may alter the extent to which stressful experiences are appraised as threatening or challenging. It may also mediate stress outcomes by its influence over choice of coping mechanism (Folkman, 1984).
The work of some stress researchers, especially Bandura and Pearlin, highlights the importance of control in the stress process. The TABP may be seen as a mediating variable in this process in so far as it predisposes a person to the development of distress symptoms through that person's need to pursue control. The high Type A's cognitive misinterpretation of a situation as potentially controllable if only he/she tries hard enough underlies the (maladaptive) behaviour.

Pearlin & Schooler (1978) contributed to the issue of sex differences in control in a large-scale study of the relationships between life strain in various role areas, general psychological resources, specific coping responses, and emotional distress. Pearlin & Schooler found marked imbalances in favour of males in the possession of stress coping devices, especially Mastery, something they attributed to differing patterns of socialisation.

In conclusion it is clear that further research is required to clarify possible relationships between control, stress and the TABP. The issue of gender differences may assist in this regard with the concept of Mastery possibly gender sensitive.
1.6 OCCUPATION, STRESS AND THE TABP

The incidence of CHD in the community varies with a number of factors: age, sex, the levels within the community of smoking and cholesterol and, although less well demonstrated, socio-occupational differences (Byrne, 1987). Differences both within occupational groups and between occupations have been demonstrated. Kornitzer et al (1981), for example, reported differences between private and public bank employees which they attributed to the private sector group being under greater pressure. Particular occupations/professions have been found to have higher rates of CHD than other groups with merchant marine officers being a classic example, e.g., Mundahl, Erikssen & Rodahl (1982); Zorn, Harrington & Goethe (1977). In an earlier study French & Caplan (1970) reported substantially higher levels of CHD amongst blue-collar workers and managers than the professional group of scientists and engineers. Byrne & Reinhart (1989b) argue for the importance of research on occupational groups other than white collar/managers/professionals. While French & Caplan (1970) attribute their findings to the higher stress levels experienced by the blue collar group Byrne & Reinhart (1989b) argue further that the stress level differentials reflect the lower degree of freedom and flexibility offered to the blue collar group by management. Byrne & Reinhart express concern about the incidence of CHD for such
occupational groups that operate under tighter constraints than others. A further illustration of this concern is contained within a recent report, "Australia's Health" (1992). This survey found that male blue collar workers had a higher death and disability rate than professionals.

The National Heart Foundation Stress Working Party (1988) noted the findings of some prospective research in the area of occupation, i.e., a study by Karasek, Baker, Marxer, Ahlborn & Theorell (1981) and concluded that "these data represent the most suggestive evidence in relation to occupational stress (and a CHD link)" (p 512). Karasek et al devised a model which stresses interaction between two job characteristics. These are firstly the job demands (stressors) and secondly environmental stress moderators including social support but particularly the degree of decision-making freedom available to the workers. Karasek et al hypothesised that high job demands and low decision making latitude triggered higher mental strain and CHD risk, especially for subjects high on the TABP. From their study of a large random sample of Swedish male workers they concluded that constraints on decision making appeared to be an independent CHD risk factor, a result that in their view may resolve a paradox concerning excessive job demands, namely that people in higher level managerial jobs have lower rates of CHD. According to Karasek et al degree of decision making latitude represents a stress moderating factor operating for some people as a positive coping
mechanism. Thus constraints on decision making, not decision making per se, become the risk factor. While acknowledging Karasek et al's model, the Stress Working Party wanted further research before being willing to come to any conclusions regarding an occupational stress/CHD link.

The usefulness of Karasek et al's model notwithstanding it should be noted that the literature has not always produced unequivocal results on the subject of a CHD/job stress link. Earlier studies indicated a positive association (Byrne & Byrne, 1990). One of the important prospective projects, the Framingham Study, reported a relationship for the older but not the younger subjects in its sample (Haynes, Feinleib, Scotch & Kannel, 1978). Cross-cultural differences emerge in Orth-Gomer's (1979) study with a Swedish group displaying a positive link between work demands and CHD and an American group the opposite outcome.

Returning to the control issue it appears that the combination of perceived lack of control and work demands may be pathogenic. Alfredson, Karasek & Theorell (1982) found a significant relationship between lack of control, high work demands and CHD. Langosch, Brodner & Borcherding (1983) in a longitudinal study reported a similar finding. Both the severity and progression of CHD was associated with high job demands and low (perceived) control.

Scandinavian experiments in industrial democracy have been predicated on the idea that an active orientation towards working life and the demand for worker participation
in company affairs are generally favoured by autonomy and the right to determine activities in one's own job (Gardell, 1981). Dahlstrom (1969) reported in a study of workers in large-scale mechanised industry that where worker participation was restricted a negative ("alienative") attitude existed whereby work was evaluated as trivial and uninteresting. Gardell (1981) argued that this negative attitude went with "generally lower life satisfactions, with lower self confidence, and with a higher degree of anxiety" (p 279). He went on to hypothesise that increased autonomy would lead to greater job involvement and consequently greater "aspirations to decision making influence".

The TABP becomes important in the occupational setting if it is firstly accepted that control issues are especially salient to high Type A people (as argued in Section 1.5). Secondly, if it is agreed that the sorts of terms used in the occupational psychology literature, "decision-making latitude", "participation in decision-making" "autonomy" and "industrial democracy" have a common theme of control then it follows that an individual's status on the TABP is potentially a health issue. Given the theorised status of the TABP as a predisposing factor in the stress model of Karasek et al (1981) it is surprising then that the issue of the TABP and occupation has attracted comparatively little research despite the existence of a positive association (Byrne & Reinhart, 1989b). Yet on the other hand
the TABP is the most widely researched dimension of individual difference characteristics contained within models used for understanding occupational stress (Burke, 1988).

The occupational environment is an important setting for the expression or frustration of the TABP with that pattern's competitiveness, striving, ambition and achievement orientation. The extent to which high Type A's avoid psychological stress at work is at least partly determined by the environment's capacity to positively reinforce Type A behaviour as well as triggering it (Lawler & Schmeid, 1987). Where it fails to reward the TABP the individual experiences persistent frustration, emotional distress and elevated autonomic reactivity, hostility towards others, suspicion and mistrust (Weidner, Friend, Ficarrotto & Mendell, 1989).

In the work setting the following characteristics are suggested by Chesney (1981) as associated with high Type A people:

High Type A's:
1) underestimate the time required to complete tasks
2) work quickly and become impatient if required to slow down
3) deny or ignore stress symptoms while working and report them only when finished
4) work harder and become more aroused when perceiving a challenge
5) express hostility in response to challenge or threat
6) need to be in control
7) are usually of higher educational and occupational status
8) describe their jobs as being more responsible and onerous than Type B’s do
9) report the same levels of job satisfaction, anxiety and depression as Type B’s

A recent study by Byrne & Reinhart (1989a) found an association between the TABP and occupational achievement in a sample of higher level public servants in professional and managerial positions. It was found that high Type A subjects committed more time to their jobs and kept more irregular hours. For these (and other) reasons high Type A’s achieved higher occupational status. Thus in this sample the TABP and achievement were positively correlated. Another possible explanatory factor, education, was found to be less important.

The hypothesis that the TABP plays a moderating role in the stressor-strain relationship has not always been confirmed. Ganster (1987) in a literature review, used an integrative model to consider the relationship between the TABP and occupational stress. Ganster found substantial support for the finding that work stressors were more strongly associated with measures of strain for Type A subjects than for Type B subjects. The reciprocal
relationship was not found so consistently, supported as it was by laboratory studies but not field studies.

Burke (1988), noting Ganster's conclusions, set out to examine "three possible effects of Type A behaviour: main effects on work and non-work stressors, main effects on satisfaction and well-being, and moderating effects on the stressor well-being relationship" (p 452). Burke's sample consisted of 828 male and female police officers (728 men, 62 women and 28 who did not indicate their sex). The study found that Type A behaviour was associated with poor emotional wellbeing but not with a measure of work satisfaction, work alienation or intention to leave the job. Its results also confirmed Ganster's (1987) conclusion that higher Type A subjects did not have higher levels of job demands or stressors. More importantly the study failed to support the role of the TABP as a stress moderating variable. Burke cited the nature of his sample, police officers, as well as other variables such as his choice of Type A measure, as possible explanatory factors. He described his sample as essentially blue-collars in nature and more homogeneous than heterogeneous in character without altogether clarifying how this issue affected the result. Of particular interest and relevance to the present study, however, is Burke's comment concerning the lack of generalisability of laboratory-based findings to organisational ("field") settings. Further research is clearly required to help understand "the psychological
processes underlying Type A behaviour in the work setting" (p 457).

To summarise the discussion to date, it appears reasonable to accept the conceptualisation of the TABP as a predisposing factor for stress, possibly for CHD and as a mediating variable in a link between stress and the need for control. In an occupational environment the TABP does not necessarily operate in any clearcut manner. Its impact requires further clarification in field studies, preferably with a heterogeneous population and in further contrast to Burke's (1988) sample, with a better balance by sex.

1.7 SEX DIFFERENCES IN THE TABP AND OCCUPATION

Coronary Heart Disease (CHD) accounted for 60% of deaths by Cardiovascular Disease (CD) in Australia (Heart Facts Report, 1988). Sex differences emerge in that CHD is a more frequent cause of death for women than for men. Women also have a greater incidence of hypertension, an established CHD risk factor. In so far as the TABP confers coronary risk then the issue of sex differences in TABP incidence and manifestation arises. Price (1982) provides a cognitive/social learning model of the TABP which accounts for both individual and population differences in TABP manifestation. Price argues that it is important to study such differences to obtain a better understanding of the TABP itself. The simplicity of the TABP label, chosen by
Friedman and Rosenman as a neutral term to minimise cross-disciplinary controversy, may imply a degree of homogeneity which cannot be justified.

Although the Framingham Study provided early evidence on the manifestation of the TABP amongst women and the issue of male/female differences the TABP has nonetheless been less systematically studied in the female population (Baker, Dearborn, Hastings & Hamberger, 1984; Greenglass, 1987; Kelly & Houston, 1985; Lawler & Schmeid, 1987; Waldron, 1977) and less often (Weidner, 1989) than in the male population. The Framingham Study (Haynes, Feinleib & Kannel, 1980) found that women aged 45 to 64 with CHD had higher TABP scores, suppressed hostility, tension and anxiety scores than women without CHD. Type A women developed twice the rate of CHD and three times the rate of angina as Type B women. Type A women either in paid outside employment or as housewives were at a greater risk for CHD than their Type B counterparts. Type A housewives had CHD rates similar to those of Type A employed women. Cross-sectional studies provide additional evidence that the TABP is related to the incidence of CHD in women, e.g., Keningsberg, Zyzanski, Jenkins, Wardwell & Licciardello (1974). Waldron (1983) concluded that the TABP can increase women's risk status for cardiovascular disease (CD) with coronary atherosclerosis of particular concern.

Further impetus for the study of the TABP in women and of male/female differences stems from the convergence in the
rate of CHD for both sexes in older age and the fact that middle-aged women are much more likely to die from infarction than males (Thoresen & Low, 1990). There is in addition more general concern for women's health in a changing society in which women are exposed to increasing stress, especially as a response to multiple roles (Cooper & Davidson, 1981; Froberg, Gjerdingen & Preston, 1986). While women may benefit from role diversification role strain remains an issue (Froberg et al, 1986).

The relative neglect of women as subjects in TABP research reflected the concern of the 1950's and '60's for the predominance of men in cardiac wards. The consequence of this "male" emphasis is well expressed by Thoresen & Low (1990):

"Simply put, we do not at present have a very clear understanding, scientifically as well as clinically, of TA in women" (p 118).

In an earlier review Baker et al (1984) noted the methodological and design problems evident in many studies. These included inadequate reporting of statistics, the use of very small samples, unsystematic subject selection and self-selected samples. Large-scale epidemiological studies over-interpreted small differences owing to their large numbers of degrees of freedom. Measurement issues were ignored with, for example, different TABP scales treated as if they were interchangeable, overlooking the possibility of the scales addressing different aspects of the TABP notion.
Thoresen & Low (1990), reviewing the literature some years later, are no more positive or complimentary. To quote:

"Unfortunately, the research on TA in women has been plagued by inadequate assessment. With rare exception, measures used with women have not been validated against significant outcomes over time in female populations" (p 119).

Measurement issues appear to be of primary importance. The Structured Interview (SI), considered the most valid predictor of CHD (Booth-Kewley & Friedman, 1987), may not be especially applicable to women. The SI's failure to generate a continuous scale (Thoresen & Low, 1990) and its (stereotyped) male oriented item content (Matthews & Haynes, 1986) are two criticisms. The SI measures overt signs of hostility, angry behaviour and speech stylistics found less often in women than in men. Its emphasis on competitive behaviour and its work orientation may also render it less useful as an assessment tool with female subjects (Matthews & Haynes, 1986).

Sex differences in reactivity appear to exist at the physiological level. Frankenhauser, Dunne & Lundberg (1976) exposed males and females to two stressors, a cognitive task and repeated venipuncture. They found that both groups responded with increased heart rate and feelings of distress. Between the sexes, however, there were different patterns of adrenaline excretion with the females not
responding with elevated adrenaline as did the males. Other mechanisms appeared to underlie the females' increased responsiveness.

High Type A people often show greater autonomic arousal than Type B's in some situations (Williams, 1985). Men display more obvious cardiovascular responses to challenge and competition than women who react with lower increases in heart rate and blood pressure (Lawler & Schmeid, 1986). The type of challenge used experimentally, however, is important. Tasks such as mental arithmetic fail to produce measurable changes (Anderson, Williams, Lane, Haney, Simpson & Houseworth, 1986) yet MacDougall, Dembroski & Krantz (1981) found that Type A women reacted more strongly than Type B women to verbally challenging interactions (a history quiz). Thus the salience of the stressor to women is a factor influencing research outcomes. Finally Polefrone & Manuck (1988) report two further sources of possible sex differences in reactivity. The magnitude of differences between Type A and Type B women seems to be less than for men. Secondly hormonal changes may influence reactivity levels. Hastrup & Light (1984), in an earlier study, found that normally menstruating women in the middle to later follicular phase of their cycles showed lower heart rate and systolic responses to a stressful task than men. Women in the middle of the luteal phase were no different from men in their reactions.
Thoresen & Low (1990), in their review of sex differences, chose a number of personality variables in an analysis that will be partially summarised here owing to its pertinence to the present study. These authors firstly examined possible links between hostility and CHD in women but were unable to draw any definite conclusions. Hostility is defined as an attitudinal set consisting of suspiciousness, cynical distrust and resentful thoughts. Anger is the emotional expression of hostility. Thoresen & Low comment that the constructs "Anger-In" and Hostility from the Framingham Study appear confused although the study did find a positive relationship between Anger-In and CHD for women.

The issue of hostility, anger and sex differences in the TABP requires further clarification. How anger is expressed is an issue for high Type A's who, possessed of hostile attitudes (the cognitive component), become emotionally reactive (angry) and behave aggressively (insultingly or abusively), thus damaging relationships. Shope (1978) found that women use verbal aggression where men increase both physically and verbally aggressive responses to perceived insult. McCann, Woolfolk, Lehrer & Schwarcz (1987) reported that women turn anger inwards more than men and that a significant relationship existed for women between the TABP and suspicion.

At this stage it should be recalled that some authors argue that aggression is a central component of the TABP,
e.g., Weekes & Waterhouse (1990). Yet it is an area where evidence exists for a genuine sex difference, biologically determined (Henry & Stephens, 1977). To the extent that a measuring instrument taps into the aggressive component of the TABP it may yield a misleading result that men are more Type A than women.

Complicating hormonally determined sex differences in aggression is the issue of sex role norms, suggested by McCann et al (1987) as an important topic for future research. Price (1982) in her cognitive/social learning model sees women as equally subject to the internal beliefs that underlie Type A behaviour. Aggressive behaviour may therefore be more appropriately viewed as "masculine sex-role" determined rather than as a central, core TABP component. Auten, Hull & Hull (1985), in a study supportive of this argument, found that higher Type A scores were associated with a masculine sex-role orientation, as measured by the Bem Sex-Role Inventory, regardless of gender. The implication for a conceptualisation of the TABP is that aggressive behaviour is a "distractor", diverting attention from more important underlying (cognitive) mechanisms which determine beliefs and attitudes. The study of sex differences may have contributed to a clearer (more "pure") definition of the Type A Behaviour Pattern.

Earlier sections reviewed possible links between CD, stress and the TABP. Following Byrne & Byrne's (1990)
analysis it was noted that stress was too vague a term. Consequently the more widely accepted notions of anxiety, depression and neuroticism were discussed. Thoresen & Low (1990) use a similar approach in reviewing sex differences. They suggest the possibility of a stronger link between the TABP and anxiety, depression and neuroticism for women than for men. It is also possible that "fight or flight" reactions could contribute to CHD in highly aroused Type A people in that such a response is easily triggered in this population. A picture begins to emerge of the TABP as "disorder of arousal" with pathogenic implications for cardiovascular health if, as Thoresen & Low (1990) speculate, "the mechanism for atherosclerosis includes increased plasma catecholamine levels, increased blood pressure reactivity and greater changes in cardiac function (e.g., heart rate, stroke volume)" (p 125).

High Type A women report more stress, frustration and anxiety, poorer health, lower self-esteem, more nervousness and dysporia (Dearborn & Hastings, 1987; Haynes & Feinleib, 1980; Kelly & Houston, 1985; Waldron, 1978). Some cross-sectional studies, e.g., Bass (1984), Booth-Kewley & Friedman (1987), report links between CHD and these symptoms yet do not permit firm conclusions owing to the possible confounding effects of other variables as well as other methodological weaknesses (Thoresen & Low, 1990). Once again sex-roles enter the analysis with DeGregorio & Carver (1980) finding an association between the above symptoms and a
"feminine" sex-role orientation for high Type A women. This is scarcely a surprising result given the more general finding that women as a group report depression and anxiety more often than men (Henderson, Byrne & Duncan-Jones, 1981). The suppression of anger amongst Type A women is no less a health issue than amongst women generally.

Developmental research using child and adolescent samples serves to shed some light on the sex differences issue. In addition it should be noted that the disease process of atherosclerosis begins in childhood, developing slowly over time (Weidner, 1986). Bergman & Magnusson (1986) conducted a fourteen year longitudinal study and concluded that the TABP could be identified at a young age and was stable over time. Aggression was more applicable to the male sample and motor hyperactivity to the female sample. There were no sex differences in the adult Type A scores, leading the authors to conclude that different components of the TABP were reinforced for males and females early in life, ultimately leading to a similar outcome. Bergman & Magnusson concede, however, that a measure of the TABP was applied only at the conclusion of the study owing to the unavailability of a suitable measure at the study's outset, a fact which must bring the study's validity into some question.

Matthews (1984) reviewed the issue of the TABP and children. She concluded that the setting of escalating standards and parental disapproval play an important
aetiological role, at least for males. Matthews argues that the literature on achievement motivation emphasises sex differences more clearly, revealing different parent/child interaction patterns leading to the development of the TABP according to the child’s sex. Aggressive behaviour and hostility are not equally encouraged between males and females resulting in aggression becoming a fairly stable characteristic in males but not in females (Matthews, 1984).

In reviewing the issue of sex differences in the TABP Baker et al (1984) conclude that "the majority of studies suggest that adult females are no more or less Type A than males, especially when other identified correlates are controlled. As in male samples, clear-cut, positive correlations were repeatedly found between Type A behaviour and occupation, education and socio-economic status" (p 483). Thoresen & Low (1990) are more tentative, commenting that "a definitive coronary-prone behaviour pattern for women is yet to be identified and confirmed via controlled, prospectively designed studies" (p 127).

The importance of studying the TABP in the occupational setting has already been noted. Burke & Weir (1980) found that in male administrators there was a positive relationship between TABP scores and hours worked, levels of concentration, responsibility accepted, level of overload, rate of organisational change, stress in communicating and total stress from work conditions. Type A's also reported that their jobs negatively affected their home lives.
Research with women yields similar results (Kelly & Houston, 1985; Waldron, 1978) although a more recent study by Bedeian, Mossholder & Touliatos (1990) found a relationship between the TABP and working longer hours held only for men. Hartel & Chambless (1989) found that for both full-time and part-time working women prevalence rates for the TABP were the same as for men. Byrne & Reinhart (1990) reported no sex differences in a sample of health workers except on the Job Involvement sub-scale of their measure, the JAS. Controlling for occupational status, however, reduced the sex difference substantially owing to the over-representation of men at higher levels. The Type A Pattern may have similar psychological and behavioural correlates in women as it does in men (Greenglass, 1990) although further research is needed before firm conclusions can be drawn (Bedeian et al, 1990).

Waldron (1977) found that women who enter the workforce score more highly on the TABP than those at home. Price (1982) states that women at home may be subject to pressures that promote Type A behaviour in that domestic duties lack clear, unambiguous performance criteria. Women who are also in the workforce, however, are subject to further stressors which may enhance a Type A predisposition. While it may be, as Waldron (1980) points out, that high Type A women are more likely to enter the workforce as an expression of their Type A status, pressures associated with the workplace are likely to exacerbate the pattern (Greenglass, 1990). Two
likely sources of pressure are the reduced amount of free time available and the demands imposed through performing multiple roles (Greenglass, 1990).

The issue of role conflict-induced stress and sex differences needs to be viewed within a broader context of the changing pattern of female participation in the workforce. More women work outside the home than ever before (LaCroix & Haynes, 1987). Women are entering the job market at levels previously occupied by men. Patterns of female participation in the workforce are changing with women taking on a greater variety of roles (Lawler, 1987). More women are aspiring, for example, to supervisory positions, raising issues such as coping styles and the possibility of interactions between sex and the TABP in control decisions (Greenglass, 1987; Miller, Lack & Asroff, 1985). In consequence concern has been expressed not only for women's health in a period of rapid social change (Baker et al, 1984; Froberg et al, 1986) but also for such issues as discrimination and inequalities of access to promotion and higher status positions (LaCroix & Haynes, 1987; Gutek, 1988).

Issues of "equal employment opportunity" are especially relevant to a consideration of sex differences in the TABP in the workplace. Haynes & Feinleib (1980) found CHD rates to be double for women in clerical jobs than for housewives. Women, relative to men, are over-represented in lower status jobs characterised by tediousness and monotony (Price, 1982). They are often powerless, lacking in autonomy and control
and usually receiving little recognition for their efforts (Lawler & Schmeid, 1987). Even when women hold similar positions to men they are subject to added occupational stressors such as pay inequities and sex discrimination (Greenglass, 1987).

An examination of the part played by socio-economic factors yields some interesting conclusions. Shekelle, Schoenberger & Stamler (1976) found no sex differences in the TABP when socio-economic status was controlled. A more recent study by Moss, Dielman, Campanelli, Leech, Harian, Van Harrison & Horvath (1986) using the Structured Interview produced a similar result. Greenglass (1990) concluded that such factors as occupational and educational status should be included in any study of TABP sex differences as well as noting reported differences between women at varying occupational levels. Waldron (1977) found that women of higher educational status and working full-time versus part-time had higher TABP scores.

In summary, a number of conclusions may be drawn which serve to guide the direction of the present study:

1) The occupational environment, an important setting for the expression and manifestation of the TABP, may operate to reduce or eliminate any TABP sex differences that may have existed prior to employment.

2) The absence of sex differences is more readily apparent when major socio-economic variables are controlled.
The two most prominent variables are educational and occupational status.

3) Given the argument that control issues are very salient to high Type A individuals then the over-representation of women in low-control/high demand jobs becomes an important issue.

4) Women employed outside the home may be rendered more vulnerable to the development of psychological symptoms than men through the mechanism of a pre-existing Type A predisposition being aggravated in a setting that does not provide an outlet for the TABP's expression. It is also conceivable that a formerly Type B individual may develop more Type A reactions under the same circumstances.

5) To the extent that Type A reactions result in prolonged psychological distress symptoms which may in turn convey greater cardiovascular disease risk then concern for women's health in this context is appropriate. The suggestion that women may express themselves differently to men, for example the expression of anger, appears especially relevant in its implications for the development of symptomatology.

1.8 THE PRESENT STUDY AND ITS HYPOTHESES

Following Burke's (1988) concerns about the failure of field studies to confirm laboratory reports about the role of the TABP as a stress moderator in the occupational
setting the present study was designed as a field study but with two important differences from Burke's design. In keeping with the primary research aim of exploring sex differences a population with an even balance by sex was selected. In addition, it was thought desirable to avoid a population deemed to be excessively homogeneous in its composition. It may be argued, for example, that police officers as used in Burke's sample are relatively homogeneous in outlook and behaviour and operate in a fairly rigidly structured environment. The impact of these factors is difficult to determine yet it seemed intuitively desirable to focus on a population of greater diversity.

For the purposes of the present study measures of the following variables were required:

1) A measure of psychological distress owing to the possible links suggested in the literature between distress symptoms, the TABP, and cardiovascular risk. The presence of symptoms is in fact the primary outcome variable.

2) A measure of the TABP.

3) A measure of perceived control with the argued relevance of this variable to high Type A people, to the stress experience and relevance within the occupational setting providing the justification for its inclusion.

4) A measure of cardiovascular symptomatology.

The review of evidence provided in the preceding sections will now be used to derive a series of research hypotheses as follows:
1) Within the occupational setting there will be no sex differences in the TABP.

2) Following on from Hypothesis 1) there will be no sex differences in the TABP between subjects of equivalent occupational and educational status.

Given the relative lack of emphasis on the TABP in women it seemed appropriate to propose hypotheses about within-group differences for the female section of the sample as follows:

3) In the work setting women who are high on the TABP and low on control will report higher levels of psychological distress than women who are low on the TABP and high on control.

4) Women of an age at which stress from role strain might be expected to be at its greatest, 25 to 40, will have the highest TABP scores.
CHAPTER 2

METHOD

The population chosen for the study was the General (non-academic) Staff at the Australian National University. Interest in this population was triggered by the results of a survey conducted by the Equal Employment Opportunity Office (Kieboom, 1986). Concern was expressed by Kieboom about perceived inequities between male and female staff, both Academic and General. Female Academic staff, for example, were more likely to be part-time, to be on contract rather than tenured, to perform fewer higher duties and to be more junior in rank. Female General Staff were also more likely to be part-time, took more breaks for child care, were less likely to have superannuation, were less likely to occupy supervisory positions and had low rates of participation in workplace committees.

The population was considered to be relevant to the present study firstly for its heterogeneity and the near numerical balance by sex. Secondly the concerns expressed in Kieboom's report fitted well with the present study's interest in equal employment opportunity issues and how these might interact with the research variables of relevance, especially control, the TABP and psychological distress.
Data about the population were available from the ANU Statistical Handbook (1989). The ANU employed a total of 2253 General Staff of whom 1071 were male and 1182 were female. The following table presents a breakdown summary by sex of the population:

**TABLE 2.1**

<table>
<thead>
<tr>
<th>Female as Percentage of Total</th>
<th>Male</th>
<th>Female</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Technical</td>
<td>463</td>
<td>279</td>
<td>37.6</td>
</tr>
<tr>
<td>Admin (Research &amp; Depts)</td>
<td>176</td>
<td>408</td>
<td>69.9</td>
</tr>
<tr>
<td>Library</td>
<td>30</td>
<td>140</td>
<td>82.4</td>
</tr>
<tr>
<td>Computing</td>
<td>30</td>
<td>16</td>
<td>34.8</td>
</tr>
<tr>
<td>Audio Visual</td>
<td>20</td>
<td>4</td>
<td>16.7</td>
</tr>
<tr>
<td>Educ Development</td>
<td>2</td>
<td>4</td>
<td>66.7</td>
</tr>
<tr>
<td>Centre for Cont. Educ</td>
<td>6</td>
<td>12</td>
<td>54.5</td>
</tr>
<tr>
<td>Student Services</td>
<td>6</td>
<td>15</td>
<td>71.4</td>
</tr>
<tr>
<td>General Services</td>
<td>128</td>
<td>220</td>
<td>63.2</td>
</tr>
<tr>
<td>Buildings &amp; Grounds</td>
<td>110</td>
<td>24</td>
<td>17.9</td>
</tr>
<tr>
<td>Independent Traders</td>
<td>93</td>
<td>60</td>
<td>39.2</td>
</tr>
<tr>
<td>TOTAL</td>
<td>1071</td>
<td>1182</td>
<td>52.5</td>
</tr>
</tbody>
</table>
Despite the near numerical equality between the sexes certain key disparities are apparent. These are important for the study's hypotheses which rest on the observation that while women are entering the workforce in greater numbers they are tending to do so at lower occupational levels where their work is more likely to be of the high demand / low control kind (Lawler & Schmeid, 1987; Price, 1982). An examination of Table 2.1 was conducted to assess the validity of the selection of the population. Employment areas were classified according to their "male" or "female" orientation. Thus Technical, Computing, Audio-Visual, Building and Grounds were deemed to be "male" areas while Administration, Library, Student Services and General Services were deemed to be "female". Independent Traders and the Centre for Continuing Education were omitted as they were difficult to classify and were fairly small numerically in any case.

The "male" and "female" employment areas were grouped together to form two categories. Chi-square tests were conducted to test the hypotheses that females were under-represented in "male" occupations and vice versa. The hypotheses were strongly confirmed (H1: Chi-Square=47.6, df=1, p< .001 ; H2: Chi-Square=87.8, df=1, p<.001). The picture is overwhelmingly that of a substantial imbalance by sex.
Other results are pertinent to the research hypotheses. In the General Services area women are over-represented in the lower clerical grades, i.e., clerk/typist and administrative assistant (Chi-Square=26.75, df=1, p<0.01). At the higher grades, i.e., chief administrative and senior administrative officer, females are clearly under-represented (Chi-Square=5.5, df=1, p<0.01). In the Technical area incorporating research officers and assistants and technical officers and assistants the suspicion of female under-representation was confirmed (Chi-Square=6.34, df=1, p<0.01). Within this category a further imbalance is evident. Females outnumber males at the subordinate research assistant level (Chi-Square=2.75, df=1, p<0.05). At the research officer level, however, the numbers are more evenly balanced with no significant difference (Chi-Square=0.53, df=1, p<0.2).

The broad picture is in two parts: firstly women are concentrated in traditional "female" employment areas and secondly within those areas in lower grades and subordinate positions, particularly lower level clerical/administrative jobs where skills levels are relatively low as are opportunities for individual decision-making. The above information appears to justify the selection of this population for the purposes of the present study.
THE DEMOGRAPHIC VARIABLES

1. Sex

The question of sex differences in Type A Behaviour is central to the present study. Subjects were simply asked to place a tick in the appropriate box on the personal data page.

2. Age

Given the notion that people experience different stresses at different times of their lives it was appropriate to include age (Lawler & Schmeid, 1987; Nathanson, 1980). For women the demands of family and career fluctuate with children's ages and the stage of career development. Women in their thirties, for example, are subject to a greater range and intensity of stressors as children's needs compete with career aspirations (Froberg et al, 1986). As previously noted (Chapter 1, Section 1.7) age affects the incidence of the TABP, if anything more consistently for women than for men (Baker et al, 1984). Age is also an important factor in the incidence of Cardiovascular Disease, the older the population the higher the incidence (Byrne, 1987).

3. Full or Part-Time Work

The ANU Equal Employment Opportunity Survey (Kieboom, 1986) made specific reference to this issue in its analysis
of the status of women employees relative to men. The issue of working full versus part-time was addressed by Waldron (1978) in a sample of employed women. Waldron found that the TABP as measured by both the Structured Interview and the Jenkins Activity Scale (JAS) was positively related to, amongst other variables, working full-time rather than part-time.

The ANU Statistical Yearbook (1989) indicated that the organisation employed only a very small number of part-time people in any category. Methodologically this will clearly reduce the validity of comparisons with the full-time group.

4. Marital Status

For men marriage may act as a potential buffer against stress. A high Type A male may see his wife as a stress "absorber", easing the frustrations of his day (Price, 1982). For women, marriage may serve as an additional source of stress through role conflict and strain as they continue to assume primary responsibility for domestic matters despite working outside the home (Cooper & Davidson, 1981; Froberg et al., 1986). Marital status may interact with age, for example, to bring about changes in TABP status (Thoresen & Low, 1990). Marital status did not appear to be a frequently studied variable in the literature and, like age, as Thoresen & Low point out, may deserve more attention. For these reasons marital status was included as a demographic variable. Subjects were asked to identify
whether they were single, married, separated, divorced or widowed.

5. Education

Education is an important variable frequently measured in research on the TABP. It was assessed using a nine category system which reflected the local educational system and was broadly relevant to systems elsewhere in Australia. The classification system needed to capture the diversity of the ANU General Staff population which ranges from unskilled labourers of little formal education to people with postgraduate degrees performing complex tasks in laboratories and elsewhere.

6. Occupation

While the issue of a subject’s occupational status is central to the purpose of the study its measurement is a complex issue. Broom & Jones (1976) noted the elaborate classification systems used in successive Australian Commonwealth censuses since 1911. For the purposes of their own research Broom & Jones developed a hierarchical grouping of occupations into sixteen broad groupings compared with the six hundred and fifty four separate groups of job titles used in the 1911 Census. After reviewing the types of occupations existing within the target population a three part categorisation was chosen for the sake of simplicity, professional/managerial, skilled and unskilled.
1. Type A Behaviour

The most valid measure of the TABP is the Structured Interview (Meininger, 1984). The SI "has proven to be the most consistent behavioural predictor of illness events" (Byrne, Rosenman, Schiller & Chesney, 1985, p. 242). The SI is a time consuming instrument to administer and train people in its use thus rendering its utility in larger-scale studies often impractical. Finally, the desirability of the SI in a study of sex differences in the TABP is highly questionable owing to its alleged (male) gender bias as discussed in Chapter 1, Section 1.7.

Self-report measures of the TABP have been developed for use in epidemiological studies. They involve recognition of attitudes, attributes and activities rather than measuring behaviour (Byrne et al., 1985). [It should be noted that as the SI contains a significant self-report component as well as utilising interviewer observation it is technically more appropriate to refer to self-report measures as "self-administered" to differentiate them more properly from the Structured Interview.]

Of the various self-report instruments in existence the Jenkins Activity Scale (JAS) has been subjected to the most extensive psychometric analysis (Meininger, 1985) and is perhaps the most widely used questionnaire measure with people in a work setting (Bedeian, Mossholder & Touliatos, 1990). The most recent form (Form C) has been devised to
make its item content applicable to both employed men and women equally. Persons who score highly on the JAS are competitive, aggressive and achievement oriented (Matthews, 1982). Also, as Matthews points out, the JAS is a weak predictor of anger and hostility owing to the under-representation of such items in the scale. Given the criticism of gender bias levelled at the SI mentioned earlier such under-representation may be advantageous for the present study.

Jenkins, Zyzanski & Rosenman (1979) present information about the JAS' psychometric status. Internal consistency reliability coefficients derived by two different methods were .83 and .85 respectively. Validity data were derived firstly from correlation with the SI. In an early study Jenkins, Zyzanski & Rosenman (1971) reported 90% agreement for persons scoring one SD from the mean. They cited a later (1975) cross-cultural project in which an agreement level of 70% was achieved. Secondly Jenkins et al (1979) cited a number of studies, some cross-cultural, in support of a link between the TABP as measured by the JAS and CHD. High JAS scores predicted heart attacks, the likelihood of infarction recurrences and the severity of atherosclerosis. Meininger (1985) concluded, however, that the validity of the JAS for employed women had not been adequately established. Using a sample of 149 women employed full-time the JAS achieved an agreement level with the SI of 58.5%, a result little better than chance. Meininger concedes that her sample, hospital
employees with 54% nurses, may have contributed to this result owing to the high prevalence of the TABP and high educational levels of the group. This outcome notwithstanding, the JAS was selected as the best available measure within the researcher's resources.

The JAS consists of 52 multiple choice items and yields scores on a Type A Global Scale and three sub-scales: Speed and Impatience (SI), Job Involvement (JI) and Hard Driving/Competitiveness (HD). SI refers to a sense of time urgency, JI to dedication to one's work and HD to a sense of competitiveness, conscientiousness and responsibility.

The JAS items are assigned optimal weights generated by a series of discriminant function analyses predicting the Structured Interview classification for large groups of males in the Western Collaborative Study (Rosenman et al, 1975). Owing to the normal distribution of scores in the Western Collaborative Study the scales were converted via a linear transformation to a mean of 0 and a standard deviation of 10. Scores greater than 0 indicate the Type A direction and scores less than 0 the Type B direction.

The JAS Form C is best used with employed people between 25 and 65 years of age. It has been revised to make item content equally appropriate to both sexes. The results of the Chicago Heart Association Detection Project in Industry suggest that the items have similar meaning for both men and women (Waldron, Zyzanski, Shekelle, Jenkins and Tannenbaum, 1977).
2. Chest Pain

A measure of chest pain was included to reflect the concern referred to in the literature about women and atherosclerosis (Waldron 1983). The measure used was the Chest Pain Questionnaire of Rose, McCartney and Reid (1977). There are two versions, one for interviewer administration and the other for self administration. The latter differs from the former only slightly with a few small wording changes. The questionnaire's purpose is to identify individuals with angina of effort, a history of possible myocardial infarction and intermittent claudication.

As indicated by the test’s authors, a major concern for the self-administered version is the possibility of unacceptably high rates of false positive results. The test could conceivably pick up subjects prone to the inappropriate labelling of symptoms as an expression of a neurotic, hypochondriacal predisposition (Costa, 1986). For example, subjects high on neuroticism might react to the item "Have you ever had any pain or discomfort in your chest?" positively and accurately in the first instance but proceed to be influenced by later items in an effort to find a meaning or attribution for their symptoms.

The issue of false positives may be clarified by returning to the broader problem of the role of anxiety in the aetiology of Cardiovascular Disease. Llorente (1986), in a study designed to determine the relationship between
the TABP and the established dimensions of Neuroticism and Extroversion reported that Type A subjects as assessed by the JAS Global Scale scored more highly on the Neuroticism and Extroversion scales than did non-Type A’s (Type B’s). In Llorente’s sample of 1603 college students women scored more highly than men on both the Global and S scales. Llorente suggested that the female TABP manifestations depended more on neuroticism whereas the male scores related to competitive behaviour.

Llorente’s results are supported by Cramer’s (1991) finding that the TABP and neuroticism were positively correlated with the implication of a partly shared phenomenology. The question then arises as to whether neuroticism is in itself predictive of Cardiovascular Disease. Costa (1986) argues persuasively against the role of neuroticism as a CD predictor. He found that neuroticism influenced reports of chest pain but was not predictive of the presence of medically verified coronary artery disease (CAD). Only effort-induced pain positively predicted true CAD. The Chest Pain Questionnaire, while a self-report instrument in this project, "diagnoses" angina of effort rather than chest pain ("pseudo-angina"). It therefore represented an appropriate choice for the study. In accordance with Costa’s (1986) reasoning a measure of neuroticism was not considered.

While a false positive subject might conceivably be seen as a CD risk and should not be altogether excluded
there are the practical issues behind the allocation of expensive diagnostic procedures which are immediately relevant. Rose et al (1977) report that self-administration yielded about twice as many positives as the interviewers. ECG validation of both groups, however, did not support the view that self-administration yielded more false positives.

Finally the Chest Pain Questionnaire met the study’s requirements for ease of understanding and use and computer scoring. According to Rose et al it offers opportunities for comparing disease rates in different populations without being unduly influenced by cultural or educational differences.

3. The General Health Questionnaire (GHQ)

In Chapter 1, Section 1.3, possible links between the TABP and psychological distress were explored. Byrne & Byrne’s (1990) argument that affective distress is an important TABP component was noted and constitutes a crucial aspect of the present study’s design for which a measure of psychological distress is the major dependent variable.

A number of questionnaires have been used to identify subjects in both community and hospital settings. The GHQ, developed by Goldberg (1972), is one such questionnaire designed to help identify non-psychotic psychological impairment (Tennant, 1977). Henderson, Byrne & Duncan-Jones (1981) used the GHQ in a large-scale epidemiological study. They chose this instrument because of its validity as
demonstrated by Goldberg (1972) and particularly the work in Australia by Tennant (1977). Tennant presented validity data using a sample of 120 people in Australia, thus adding to overseas data. A structured clinical interview was used for validation purposes. As a screening instrument the GHQ in all four forms yielded correlations with clinical psychiatric ratings of symptom severity from 0.73 to 0.76.

The GHQ, a global measure of psychological distress, was used in preference to specific measures of depression, anxiety and hostility firstly because of its status as a widely used, highly respected and very valid measure. It furthermore correlates highly with specific measures of anxiety and depression while at the same time there is no evidence that these measures themselves uniquely predict coronary disease.

The GHQ is available in four forms with 12, 20, 30 or 60 items or questions about social activities and psychological symptoms with four response categories ranging from "Not at all" to "Much more than usual". All items are worded in the same direction with the first two response categories, "Not at all" and "Not more than usual" scoring 0 and the categories " Rather more than usual" and " Much more than usual" scoring 1. The higher the score the greater the symptomatology. Following Henderson et al (1981) the 30 item version with one item alteration by Henderson et al to allow for better understanding in an Australian sample was selected. This choice was also prompted by one of the GHQ's
weaknesses, the identification of false positives. In a non-clinical population the 30 item version was considered to be likely to minimise this problem.

4. The Mastery Questionnaire

Control, an independent variable in the present study, has been argued in Chapter 1 to be both linked to the development of stress symptomatology and relevant to the TABP. A measure of control was required which was pertinent to the issue of sex differences in a work setting. The concept of mastery, originated by Pearlin & Schooler (1978) and argued by them to be an important point of difference between males and females, was selected for the present study.

The Mastery Scale was developed for a study by Pearlin et al (1981) which used longitudinal data to observe how life events, chronic life strains, self concepts, coping and social supports converged to form a stress process. The Mastery Scale formed one of two dimensions of self concept, the other being self-esteem. It consisted of seven items in its original form. Braithwaite (1990) devised an additional item to balance the scale for positively and negatively worded items and it was this version that was selected for the present study.

Braithwaite (1990), in a study of stress in people caring for frail elderly relatives, found that mastery together with emotionality accounted for 42% of the variance
in a measure of psychiatric symptomatology. This finding fits well with the link between some personality traits and neurosis (Henderson et al, 1981; Kobasa, 1979). Braithwaite also reported a reliability co-efficient of .71. In an unpublished study Groube (1989) reported an alpha co-efficient of .75. The ease of use and simplicity of the Mastery Scale and its ready adaptability for computer scoring were important reasons behind its use. In addition, the present study would provide an opportunity to obtain further psychometric data for the scale. If somewhat limited in its use to date, the Mastery Scale has every prospect of proving itself as an effective measure and appears to possess good face validity.

Finally, the Mastery Scale consists of eight items arranged as a Likert Scale with three positively worded and five negatively worded items. Subjects were asked to rate their responses from Strongly Agree to Strongly Disagree on a four point scale. Items 1, 2, 4, 7 and 8 were scored in the reverse direction, i.e., Strongly Agree scored 4 and Strongly Disagree 1. The higher the score the lower the level of perceived control.
SUMMARY

A decision was made for three of the four measures to utilise better known and more frequently used instruments. The temptation to design a special purpose test was resisted in line with one of Weidner's (1989) criticisms of TABP research, namely the excessive use of such tests which has contributed to the many conflicting research results.
Procedure

The research proposal was approved initially by the Research and Ethics Committee before being submitted for approval to the University Secretary, the University officer responsible for the target population, General Staff. The target population and the survey population were nearly identical apart from any staff members who may have been on extended leave.

The sampling frame was arranged after consultation with the ANU Occupational Health and Safety Unit which provided valuable information about the distribution by sex of the many types of occupation contained within the target group. From there contact was made with section managers and, where these existed, with Occupational Health and Safety committees or individual safety officers. The researcher made only the minimum contact necessary with potential subjects to ensure that the project was publicised.

Owing to the practical limitations of time and being a lone researcher a non-probability sample using volunteers and chosen by human judgment to be "representative" (Schuman & Kalton, 1984) was taken. Contact was made with a full range of sections, some where males predominated and others where females were numerically superior. Overall an effort was made to obtain a heterogeneous "sample of
"convenience" in accordance with information available from ANU authorities and official publications.

A covering letter was written briefly describing the study's aims but in rather general terms. The letter invited contact with the researcher by phone should any questions arise. The voluntary nature of the study was made very clear in the covering letter and verbally. Both anonymity and confidentiality were assured as names were not requested at any stage. Compliance was facilitated by the inclusion of an envelope addressed to the researcher care of the Psychology Department. The completed questionnaires simply required sealing in the envelope and placing in the section's out-tray for collection by the postal courier.

Efforts were then made to obtain a heterogeneous sample of convenience representative of the population in accordance with information provided by University authorities. The A.N.U. Statistical Yearbook (1989) provided guidance as to the location and distribution of employees by sex and occupation.

Given the nature of the independent variables and their likely means and standard deviations within the target population a sample size estimate in excess of 200 would be indicated. Accordingly 450 questionnaire packages were distributed to allow for a non-response rate of up to 50%. This was a conservative estimate based on the information provided by Schuman & Kalton (1984) which indicated that a non-response rate in excess of 30% for a non-governmental
survey should be expected. In addition the researcher was aware of the lack of control in the situation and the need to depend on the co-operation of other people to encourage compliance with the research aims.
CHAPTER 3

RESULTS

3.1. INITIAL CHARACTERISTICS OF THE SAMPLE

The final sample consisted of 118 males and 129 females for a total of 247 subjects. The response rate was 54.9%, or conversely the non-response rate was 45.1%. Schuman & Kalton (1984) comment that non-response rates for surveys conducted by non-government agencies in the USA vary around 25 to 30 per cent and are generally increasing. For the present study the rate is somewhat disappointing but acceptable given the limitations on access to potential subjects explained in the Procedure. The distribution by sex closely reflected that of the population. The mean age of the sample was 41.12 years (S.D.=9.6), for the population 41.23 years (S.D.=10.89). For males the mean age was 41.35 (S.D.=11.28), for the population 40.54 (S.D.=9.91). For females the sample mean age was 40.76 (S.D.=10.52), for the population 41.78 (S.D.=10.71). Thus the age distribution of the sample closely resembles that of the population. There were clearly no sex differences in the age distributions.

The great majority of the subjects were employed full-time, with 20 (8.2%) employed part-time. Of these 20 part-
time subjects 18 were female, indicating a significant over-representation (Chi-square(1)=12.24, p<.001).

Around two-thirds of the sample (66.8%) were married with no overall difference in the distribution of marital status between males and females. Combining the categories Divorced, Separated and Widowed, however, revealed more females than males in this group (Chi-square(4)=9.29, p<.05, one-tailed test).

Educationally there were significant imbalances by sex. Males had more post-secondary and post-graduate qualifications although females had more Bachelor's degrees. Overall, more males possessed higher qualifications than females (Chi-square(10)=29.34, p<.001, one-tailed test).

Further sex differences were evident in the occupational categories. While the numbers were nearly equal in the Professional/Managerial category, 73.9% of females were classified as Unskilled and 36.5% as Skilled versus 26.1% and 63.5% respectively for males (Chi-squared(2)=2.57, p<.001, one-tailed test). Females were significantly over-represented in the lower occupational categories.

In summary, males and females in the sample were of similar age and (mostly) similar marital status. Occupationally and educationally, however, females tended towards employment at lower levels and possessed lower levels of formal qualifications than males.
3.2. THE GENERAL HEALTH QUESTIONNAIRE

Henderson et al (1981), in their justification of the GHQ’s use in their study, point out that the GHQ may be conveniently split into "non-cases" (scores of 0-5) and "cases" (scores of 6 and above). The higher the GHQ score the more likely it is that a subject will have a psychiatric disorder as described in the International Classification of Diseases. A logit regression equation was used to relate GHQ scores to the probability of being a "case", i.e. anyone with a score of 6 or more on the index of definition as follows:

\[ \text{logit}(p) = -3.63 + .23 \times \text{GHQscore}, \]

where \( p \) is the probability of having an Index of Definition of 6 or more on the Present State Examination and \( \text{logit} (p) = \frac{p}{1-p} \).

Table 3.1 summarises the results for the whole sample and males and females separately.

**TABLE 3.1: General Health Questionnaire-Whole Sample, Males and Females**

<table>
<thead>
<tr>
<th></th>
<th>Whole Sample</th>
<th>Males</th>
<th>Females</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>3.83</td>
<td>4.06</td>
<td>3.51</td>
</tr>
<tr>
<td>S.D.</td>
<td>5.54</td>
<td>5.37</td>
<td>5.61</td>
</tr>
</tbody>
</table>
For the whole group, a substantial proportion (41%) scored 0, as did 37% of males and 44% of females, resulting in a strongly negatively skewed distribution. This finding is consistent with Henderson et al's (1981) observation regarding the presence of non-psychotic symptoms in a general population. In the non-case range the sex difference was not significant (Chi-square=0.71, df=1, p<.2). In the case range there was also no significant sex difference (Chi-square=0.5, df=1, p<.2). This finding is surprising only if compared with the results of most surveys outside the Canberra area. It is quite comparable with Henderson et al's finding in a previous Canberra-based survey and, as they suggest, probably a reflection of higher male GHQ scores. A t-test of the differences between the means for each sex was not significant (t=0.78, p<.43, df=246, two-tailed test).
3.3. THE CHEST PAIN QUESTIONNAIRE (CPQ)

The CPQ was used to examine the frequency of chest pain in the sample. It was scored strictly in accordance with the published instructions of Rose, McCartney & Reid (1977) so as to yield an accurate diagnosis of Angina Pectoris. A positive diagnosis was made in six cases or 2.5% of the sample and was equally divided between males and females. It is unlikely to be inflated by false positives owing to the low level of psychiatric symptomatology for the sample in any case.

The National Heart Foundation’s Risk Factor Prevalence Surveys in 1980 and 1983 provide data regarding Angina incidence (Heart Facts Report, 1988). For males aged 25 to 64 the prevalence was 3.0%. For females the rate was 1.8%. Thus the sample rates are slightly lower for males and slightly higher for females. Overall the rates are comparable with national figures but lower than the result reported by Byrne & Reinhart (1989a) in a Canberra study using public servants as subjects. Byrne & Reinhart speculated that their sample was contaminated by false positives. Given the relative youth of the present study’s sample and the fact that the incidence of Angina Pectoris increases with age the result seems reasonable. The low numbers, however, may
limit their usefulness for the purposes of statistical analysis.

3.4. THE MASTERY SCALE

The Mastery Scale was the study's measure of control. The mean score for males was 15.26 (s.d.=3.65) and for females the mean was 15.62 (s.d.=3.34). There was no significant sex difference [t(239)= -0.81, p<.41] and the scores were normally distributed around the mean.

Some comparative data is available from Braithwaite (1990) who reported a mean of 21.57 (s.d.=4.67) in a sample of 132 people caring for frail, elderly relatives at home. The higher mean in Braithwaite's study may reflect the nature of her sample, a group of care-givers under chronic stress. It was also noted that Mastery scores correlated significantly with psychiatric symptoms (r= .50,p<.001) as they did in the present study (r= .36,p<.001).

Groube (1989) reported a mean for her sample of 16.7 and a standard deviation of 3.1. Groube's sample was also of people caring for others but was substantially smaller than Braithwaite's sample at N=35. There were other differences in the composition of Groube's sample that may have contributed to the outcome.

The present study yielded an alpha reliability score of 0.78, a level consistent with both Braithwaite and Groube's findings. In summary it appears that the Mastery Scale may
be a useful predictor of distress and is easy to use in a larger-scale survey. The current sample may be considered to be an "average" one in that its scores were normally distributed.

3.4 THE JENKINS ACTIVITY SCALE

Table 3.2 provides a summary of the results for the whole sample and the percentage of subjects presenting as Type A or Type B based on a split at the arbitrary standard score mean of 0.

<table>
<thead>
<tr>
<th></th>
<th>B</th>
<th>A</th>
<th>Mean</th>
<th>S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Type A</td>
<td>52.1%</td>
<td>46.9%</td>
<td>-0.96</td>
<td>9.89</td>
</tr>
<tr>
<td>Speed and Imp.</td>
<td>62.4%</td>
<td>37.6%</td>
<td>-1.74</td>
<td>9.98</td>
</tr>
<tr>
<td>Job Involvement</td>
<td>62.1%</td>
<td>37.9%</td>
<td>-3.29</td>
<td>10.02</td>
</tr>
<tr>
<td>Hard Driving</td>
<td>64.6%</td>
<td>35.4%</td>
<td>-2.24</td>
<td>9.74</td>
</tr>
</tbody>
</table>

The overall results indicate for the whole sample a tendency towards the Type B end of the dimension on all four
subscales. Standard deviations were consistent with the normative data provided in the instrument’s manual (Jenkins et al, 1979).

At this point it is appropriate to draw comparisons with outcomes from other studies, particularly field surveys in an occupational setting. Byrne & Reinhart (1989a) obtained similar results with a Canberra sample of 1113 public servants. In another smaller study (n=432) of senior Canberra public servants differences were found in that this group was higher on Job Involvement, lower on Hard-Driving and with higher frequencies on the Type A range generally, an expected result given the available data on professional/managerial subjects. A third recent Australian study by Byrne & Reinhart (1990), although hampered by a low response rate and an over-representation of female subjects, found a clustering around 0 for the Global and Speed and Impatience Scales and a Type B tendency for the other two scales.

Overall, the present sample was selected to include a variety of workers at different levels ranging from blue-collar skilled and unskilled people to white-collar professionals and senior managers. It is not surprising, therefore, that the JAS results are on average rather more Type B than Type A.

The hypothesis that there would be no sex differences in Type A behaviour was tested using t-tests of differences between group means. The results were as follows: Global
Type A $t(241) = 1.03, p < .30$: Speed and Impatience $t(241) = 0.79, p < .43$; Job Involvement $t(242) = -0.20, p < .84$; Hard-Driving $t(242) = -0.02, p < .98$). There were no significant sex differences, thus confirming the hypothesis. McCann et al (1987) studied sex differences in hostility and the TABP in a sample of 208 college students. They found a sex difference with the Framingham Scale but, as did the present study, not with the JAS. They explained this outcome by arguing that the JAS does not tap into hostility. Bedeian et al (1990), on the other hand, found a significant gender difference with males scoring more highly in a sample of accountants. Both the two foregoing studies used homogeneous samples unlike the present study thus making comparisons more difficult.

It was further hypothesised that there would be no sex differences in the TABP if educational and occupational status were controlled. This hypothesis was transformed into the research question: Does being male or female differentially affect TABP scores after adjusting for education and occupation?

The hypothesis was tested using a one-way analysis of covariance. One-way ANCOVA is designed to assess the effects of one independent variable (sex) on a single dependent variable (TABP scores) after the effects of one or more potential independent variables (education and occupation) are controlled (Tabachnik & Fidell, 1983). Tables 3.3 and 3.4 present the results of this analysis.
TABLE 3.3
Analysis of Covariance-Job Involvement by Sex with Occupation

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>SS</th>
<th>DF</th>
<th>MS</th>
<th>F</th>
<th>Sig. of F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Covariates</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Occupation</td>
<td>5277.99</td>
<td>1</td>
<td>5277.99</td>
<td>67.81</td>
<td>.00</td>
</tr>
<tr>
<td>Main Effects</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>303.19</td>
<td>1</td>
<td>303.19</td>
<td>3.89</td>
<td>.05</td>
</tr>
<tr>
<td>Explained</td>
<td>5581.14</td>
<td>2</td>
<td>2790.57</td>
<td>35.85</td>
<td>.00</td>
</tr>
<tr>
<td>Residual</td>
<td>18447.23</td>
<td>237</td>
<td>77.83</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>24028.37</td>
<td>239</td>
<td>100.53</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Table 3.3 indicates a (barely) significant main effects by sex for the Job Involvement sub-scale and occupation. No other sub-scale for this variable or education attained significance. Thus for Job Involvement being male or female does differentially affect one aspect of the TABP when occupational differences are partialled out. While there were no sex differences in the TABP overall it is clear that in this sample a small but significant difference emerges amongst subjects of equal occupational status.

3.5 DIFFERENCES WITHIN THE FEMALE SAMPLE

Further hypotheses were generated regarding possible differences within the female sample which reflected concerns about the health of employed women. These were as follows:

1. Women who are high on the TABP and low on control will report higher levels of psychological distress and more chest pain than women who are low on the TABP and high on control.

2. Women in the lower age groups will have higher Type A scores, lower perceived control and higher levels of distress owing to their exposure to higher levels of role conflict and role strain than older women.

A test of these hypotheses is provided by multiple regression analysis which looks at the effects of all possible explanatory variables to determine whether these account for statistically significant amounts of variation.
in a dependent variable. In the present study both GHQ scores and chest pain are dependent variables. Given the very low absolute number of positive chest pain subjects (six or 2.5% of the whole sample) it was decided not to include chest pain in any further data analysis. Table 3.4 summarises the results of the multiple regression analysis with GHQ scores as the dependent variable.

**TABLE 3.4**

Multiple Regression Analysis with GHQ Scores
as the Dependent Variable

<table>
<thead>
<tr>
<th>Estimate of Regression</th>
<th>s.e.</th>
<th>t</th>
<th>Co-efficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-4.87</td>
<td>1.57</td>
<td>-3.22</td>
</tr>
<tr>
<td>Type A</td>
<td>0.09</td>
<td>0.03</td>
<td>2.80</td>
</tr>
<tr>
<td>Mastery</td>
<td>0.57</td>
<td>0.09</td>
<td>5.97</td>
</tr>
</tbody>
</table>

The result indicates that of all the possible explanatory variables only Type A and Mastery (control) had a significant impact on GHQ. An increase in Type A scores of one standard score unit leads to an increase in GHQ scores of almost 0.1. A one unit increase in Mastery scores (recalling that for the Mastery Scale a higher score means lower control) produced an increase of 0.57 in GHQ scores. There were no sex differences in that neither the relationships between the variables nor their means differed between the sexes. Thus for women (and men) the variables of
age and occupation had no impact on GHQ scores. The two hypotheses were both rejected.

3.6 The Effects of the TABP on Psychological Symptoms

In view of the suggested link between the TABP and psychological distress a decision was made to examine the utility of the research variables in the prediction of GHQ scores. The GHQ provides information on a continuous scale. For both research and clinical purposes it is more meaningful to classify subjects into mutually exclusive groups in order that decisions such as the allocation of treatment resources may be made.

The present study provides a situation which comprises a number of variables measured in a graduated fashion that need to be combined into a total score to distinguish between two groups, psychiatric "caseness" and "non-caseness" as measured on the GHQ. As stated by McNemar (1962) the "question arises as to how best weight the variables so as to obtain maximum difference between the total score means for the two groups" (p.205). Discriminant Function Analysis is able to perform this function and was selected for the data analysis as it is the technique most frequently used to address such problems (Norusis, 1985). Linear combinations of the independent (predictor) variables are formed and used as the basis for classifications. Independent variables are entered into the discriminant function in a stepwise procedure according to the extent to
which their entry reduced Wilks' Lambda, an index of the amount of variability in the dependent variable that cannot be explained by the entered variables. The results of the analysis are summarised in Table 3.5.

**TABLE 3.5**

**Discriminant Function Analysis using Psychiatric "Caseness" versus "Non-casesness" as the Dependent Variable**

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable Entered</th>
<th>Wilks' Lambda</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Speed</td>
<td>0.88</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>2</td>
<td>Mastery</td>
<td>0.83</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>3</td>
<td>Sex</td>
<td>0.82</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>4</td>
<td>Type A</td>
<td>0.81</td>
<td>&lt;.001</td>
</tr>
<tr>
<td>5</td>
<td>Education</td>
<td>0.80</td>
<td>&lt;.001</td>
</tr>
</tbody>
</table>

Canonical Correlation = 0.45

Actual Group No. of Subjects

<table>
<thead>
<tr>
<th>Predicted Group</th>
<th>Membership</th>
<th>Membership</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Case</td>
<td></td>
<td>1 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group 1 (Non-Case)</td>
<td>179</td>
<td>129 (72.1%)</td>
</tr>
<tr>
<td>Group 2 (Case)</td>
<td>68</td>
<td>17 (25.0%)</td>
</tr>
</tbody>
</table>

Percentage of Cases Correctly Classified = 72.87%

The results indicate that the Discriminant Function correctly predicted 129/179 non-cases and 51/68 cases with the combination of Speed and Impatience, Mastery, Sex,
Global Type A and Education, an acceptable overall classification rate of nearly 73%. Thus being high on two JAS sub-scales, low on control, of a higher educational status regardless of gender is predictive of GHQ scores in more than 7 instances out of 10. In the occupational setting such information would not be difficult to gather and has implications for employee well-being in that "at risk" people may be identified.
CHAPTER 4

DISCUSSION

The major purpose of the research was to conduct a field study of sex differences in Type A behaviour, their interaction with perceived control and the consequences for psychological adjustment in an occupational environment. A heterogeneous environment was chosen where both men and women worked in a variety of occupations. Finally, the objectives of an adequate sample size with a numerical balance of men and women were both achieved.

Given the deliberate efforts to obtain a heterogeneous sample the results indicated that in at least some respects the sample was representative of the larger population. The age distribution and the percentage of people employed part-time both reflected the population characteristics reported by the A.N.U. Statistical Handbook and the Statistics Section of the Personnel Department.

The initial characteristics of the sample give rise to concerns regarding the position of women educationally and occupationally relative to men. The report issued by the Equal Opportunity Office of the A.N.U provided much of the early impetus for the study. It raised concerns regarding the position of women employees relative to men which at least some of the present study’s results confirm as valid.
The sample characteristics showed that women were for the most part of lesser educational and occupational status than men. Educational and occupational status are both regarded as important TABP correlates.

The first hypothesis predicted the likely absence of sex differences in the TABP in the work setting and this was confirmed. It was also noted that the sample as a whole was skewed towards the Type B end of the dimension on all four subscales. It is conceivable that the heterogeneity of the sample, spread as it was across a wide range of occupational groups and educational levels, produced this "Type B" result. Had the study confined itself to a narrower range of both these variables the outcome may have been different. Greenglass (1988) compared male and female supervisors performing the same duties and found that females with a mean score of 3.00 had significantly higher TABP scores than the male sample with a decidedly "Type B" mean of -0.48. Greenglass proposed in explanation of this result that women strive harder to prove themselves in the face of prejudice and discrimination.

The present study's result, however, is consistent with some recent findings, e.g., Hartel & Chambless (1989) and Byrne & Reinhart (1990). In addition one of the early surveys important for its prospective design, the Framingham Study (Haynes & Feinleib, 1980), found that average Type A scores for employed women were very similar to the Type A scores for men. While it is possible that women already high
on the TABP may be more likely to seek outside employment it is equally likely that, as Price (1982) argues, the occupational setting may exacerbate at least some features of the Type A pattern through the Type A person's striving for achievement. Employed women are subject to the same work-related pressures triggering the TABP as men although as Price points out "differential socialisation may moderate the influence of these variables" (p 236). Women may not, for example, see success at work as central to their self-esteem as men do. It is regrettable that sex differences in Type A manifestation were outside the scope of the present study as research on this issue may be more revealing than simple comparisons across occupational groupings.

The second hypothesis predicted the absence of sex differences in the TABP for subjects of equal educational and occupational status and was largely confirmed. The contrary finding for the Job Involvement subscale by Occupation which produced a significant main effect for sex requires some explanation. It may possibly reflect higher status women striving to "prove their competence", one of the additional sources of stress to which some authors argue women are subject (Price, 1982; Greenglass, 1988). The ANCOVA yielded information additional to the t-tests of differences between group means which had shown no significant sex differences on any JAS subscale. Overall the findings were consistent with those reported in

The third hypothesis proposed that women who are high on the TABP and low on control will report higher levels of psychological distress and more chest pain than women who are low on the TABP and high on control. The regression analysis provided some support for a general relationship between these variables for both sexes in that GHQ scores were increased by being more Type A and lower on perceived control. This outcome lends support to the notion of control issues being highly salient to high Type A people. It will be recalled that in Chapter 1 a preference was expressed for a conceptualisation of the TABP as including as a fundamental core component "an attempt ... to assert control over environmental demands and requirements" (Glass & Carver, 1980). The implication is that the combination of high TABP status and low perceived control is related to the development of psychological symptoms with their suggested link to CD. That aspect of the hypothesis dealing with chest pain was unfortunately disregarded owing to the small absolute numbers of angina positives (only three female subjects and three males). As previously stated the low result may reflect the relative youth of the sample as angina pectoris incidence increases with age.

The rejection of the fourth hypothesis, that women in the "intermediate" age group (age 30 to 50) will have the
highest Type A scores, was a surprising result given the literature findings that working women in their thirties and forties are more Type A as a result of being subject to a greater range and number of stressors (Waldron, 1977; Moss et al, 1986). Older as well as younger women are less Type A than their "intermediate" counterparts. Greenglass (1990), on the other hand, studied a group of female academics and reported a regression analysis which showed that age was not a significant predictor of Type A behaviour when other variables were controlled although there was a decline in the TARP with age. CHD rates for older women, however, reflect disease process established earlier in life, hence it may not be appropriate to ignore high Type A levels in earlier life. The fact that the whole sample was on average rather more Type B may be significant in that the ANU work environment may not generally stimulate frequent Type A responses. It is also conceivable that in a regional (Canberra) population known to be more educated and better paid than the national average that female employees in this target population have been more successful in organising such coping mechanisms as better spouse participation in child care and other domestic duties. What limited evidence on this subject there is, however, does not support this suggestion. Greenglass (1990) and Price (1982) have both studied highly educated women (academics and doctors respectively) and found a worrying determination on the part of their subjects to maintain high standards in the various
roles they believed they had to play. Information available from the present study does not permit any clarification of this issue other than speculation on the nature of the sample itself.

Discussion will now turn to methodological issues in order to pinpoint any weaknesses which may serve to limit the generalisability of the study’s results. To begin with the study’s cross-sectional design is an obvious limitation in that it represented only a static view of subjects at one point in their experience. The study could not report changes in any of the measured variables over time, a limitation with both theoretical and practical implications. As an example the GHQ as a measure of distress may reflect transitory symptoms only rather than a significantly prolonged state, the latter of more interest to the study for its longer term implications for cardiac health. Additionally, at the theoretical level some authors argue that the TABP is a dynamic response to environmental factors and not in any real sense a fixed personality trait. Furthermore, the study could not draw any conclusions about subjects’ scores at for example their point of entry to the system. Should the Type A concept come to be seen more routinely as predisposing an employee to ill-health under certain conditions then a measure of the TABP at the point of entry might be useful information to both occupational and clinical psychologists for the purposes of both prevention and treatment. An issue for modern organisations
is to recognise formally that in so far as the TABP owes historical allegiance to the Protestant Work Ethic of the 19th Century it is far less likely to remain an adaptive response to organisational goals and expectations. As Van Egeren (1990) points out, modern organisations frequently value a "facilitative" interpersonal style rather than the abrasive manner likely nowadays to be judged aggressive or hostile that often characterises high Type A people.

Just as the issue of the nature of the TABP and its possible links with stress and ill-health have generated much research and discussion so the issue of altering Type A behaviour has occupied researchers and practitioners. This issue attains importance if Van Egeren's account of life in a modern industrial economy is to be taken seriously. The individual clearly needs to develop at the very least a flexible outlook and interpersonal style to match. Yet efforts at modifying existing Type A responses have not always been successful (Roskie, 1990) despite some earlier reports, e.g., Price's (1982) work is of particular interest in her application of the "scientist/practitioner" model to these issues. The control issue's theoretical status is combined with its accessibility to cognitive/behavioural interventions as the TABP is deemed to originate from a network of ingrained beliefs. The refractory nature of the TABP as lamented by Roskie may well reflect the "chronicity" of the habits involved, lending
credence to Sul's (1988) suggestions about the almost subliminal character of the relevant cognitions.

The study's choice of measures requires some discussion in that alternative choices may have produced different outcomes. Self-report instruments are subject to intrinsic weaknesses such as "effort after meaning" (National Heart Foundation Stress Working Party, 1988) and other defects reflecting their essential subjectivity. Yet in measuring the TABP the more observation-based measure, the Structured Interview, is seen as containing a strong element of gender bias in favour of males. Finally, in a survey study the choice of measures is dictated by considerations that are as much to do with practicality as science. The time required to administer the Structured Interview having first trained in its use renders it a "luxury" item in the TABP researcher's repertoire.

The issue of sampling must be acknowledged as the study relied on volunteers frequently recruited by an intermediary such as a section's Occupational Health and Safety Officer after a necessarily brief discussion between that officer and the researcher. The sample could have comprised a self-selecting group of subjects interested in occupational health issues who chose to find the time to reply. Such a group is unlikely to be high Type A as the latter are characterised by a strong sense of time pressure and therefore less likely to volunteer. Thus the Type B nature
of the sample may partly reflect the unwillingness of high Type A subjects to participate.

Future research may on reflection be better directed at more homogeneous populations to assess whether women performing the same tasks as men react differently. There may also be a danger, as some authors, e.g., Thoresen & Low (1990) point out, of maintaining too narrow a view of the TABP concept at the expense of obtaining further valuable information concerning possible links between human beliefs and attitudes on the one hand and the development of maladaptive responses to environmental events on the other. Yet the notion of control as a core component of the TABP had considerable appeal in the present study in that it provided a conceptual focus in place of distracting controversy which does little to convince the more conservative professions of the essential value of psychosocial accounts of ill-health in human beings.


Australia's Health (1992). Survey conducted by the Department of Community Services and Health, Canberra.


Rahe, R.H. (1974). The pathway between subjects' recent life changes and their near future illness reports:


Dear Staff Member,

I am a postgraduate student in Clinical Psychology at the University. I would very much appreciate your participation in a research project which I believe will interest you and possibly contribute to the welfare of General Staff. The project has the support of both the union and the ANU Administration.

The general area of interest is occupational stress and its implications for employee health. More specifically I want to know whether there are any differences between men and women in how they view themselves and their environment and what implications there may be for their health adjustment. Finally, I am particularly interested in the effects of stress on cardiovascular risk. Most of you will be aware of the role played by smoking, lack of exercise and cholesterol in causing heart disease. Some researchers believe that stress and personality factors are also important. While most of their research has concerned men only I wish to investigate this area by looking carefully at how women fare in relation to men doing the same work.

Agreeing to participate involves completing four questionnaires, one fairly long and taking about 20 to 30 minutes to complete. The other three are quite brief. The results will be absolutely confidential as I am not interested in your name or workplace.

Please begin by completing the information sheet first, then the questionnaires and returning them in the envelope provided. Please phone me on 2472590 if you have any questions or comments.

Yours sincerely

Neil Woodger
Please answer the following questions. Put a tick in the box where you see them.

1. Sex  Male  or Female  

2. Age  

3. Do you work full-time or part-time?
   - Full-time  or Part-time  

4. Are you
   - single  
   - married/de facto  
   - divorced  
   - separated  
   - widowed  

5. What is the highest level of education you have reached?
   - Intermediate Certificate  
   - Leaving Certificate  
   - School Certificate  
   - Higher School Certificate  
   - College Diploma  
   - College Certificate  
   - Trade Certificate  
   - Bachelor’s Degree  
   - Master’s Degree  
   - Doctorate  
   - Other  

If none of the above please explain  

8. Please describe your precise job classification and briefly describe what you do.
   e.g., Laboratory Technician - responsible for maintaining and repairing equipment.

Thank you. Now move on to the questionnaires.
Mastery Questionnaire:

Here are some statements about the way people behave and feel and do things. How strongly do you agree or disagree with these statements? Please circle the appropriate responses.

1. STRONGLY AGREE
2. AGREE
3. DISAGREE
4. STRONGLY DISAGREE

1. I often feel helpless in dealing with the problems of life.
   1  2  3  4

2. I have little control over the things that happen to me.
   1  2  3  4

3. What happens to me in the future mostly depends on me.
   1  2  3  4

4. There is really no way I can solve some of the problems I have.
   1  2  3  4

5. I can do just about anything I really set my mind to do.
   1  2  3  4

6. I feel that I have control over the direction my life is taking.
   1  2  3  4

7. Many times, I feel that I have little influence over the things that happen to me.
   1  2  3  4

8. There is little I can do to change many of the important things in my life.
   1  2  3  4
**GENERAL HEALTH QUESTIONNAIRE**

WE SHOULD LIKE TO KNOW IF YOU HAVE HAD ANY MEDICAL COMPLAINTS, AND HOW YOUR HEALTH HAS BEEN IN GENERAL, OVER THE PAST FEW WEEKS. PLEASE ANSWER ALL QUESTIONS ON THE FOLLOWING PAGES SIMPLY UNDERLINING THE ANSWER WHICH YOU THINK MOST NEARLY APPLIES TO YOU. REMEMBER THAT WE WANT TO KNOW ABOUT PRESENT AND RECENT COMPLAINTS, NOT THOSE THAT YOU HAVE HAD IN THE PAST.

It is important that you try to answer ALL questions.

<table>
<thead>
<tr>
<th>HAVE YOU RECENTLY:</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Been able to concentrate whatever you are doing?</td>
<td>Better than usual</td>
<td>Same as usual</td>
<td>Less than usual</td>
<td>Much less than usual</td>
</tr>
<tr>
<td>Lost much sleep over worry?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been having restless disturbed nights?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been managing to keep yourself busy and occupied?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Rather less than usual</td>
<td>Much less than usual</td>
</tr>
<tr>
<td>Been getting out of the house as much as usual?</td>
<td>Much more than usual</td>
<td>Same as usual</td>
<td>Less than usual</td>
<td>Much less than usual</td>
</tr>
<tr>
<td>Been managing as well as most people would in your shoes?</td>
<td>Better than most</td>
<td>About the same</td>
<td>Rather less well</td>
<td>Much less well</td>
</tr>
<tr>
<td>Felt on the whole you were doing things well?</td>
<td>Better than most</td>
<td>About the same</td>
<td>Less well than usual</td>
<td>Much less well</td>
</tr>
<tr>
<td>Been satisfied with the way you've carried out your task?</td>
<td>More satisfied</td>
<td>About the same</td>
<td>Less than usual</td>
<td>Much less well</td>
</tr>
<tr>
<td>Been able to feel warmth and affection to those near you?</td>
<td>Better than usual</td>
<td>About the same</td>
<td>Less well than usual</td>
<td>Much less well</td>
</tr>
<tr>
<td>Been finding it easy to get on with people?</td>
<td>Better than usual</td>
<td>About same as usual</td>
<td>Less well than usual</td>
<td>Much less well</td>
</tr>
<tr>
<td>Spent much time chatting with people?</td>
<td>More time than usual</td>
<td>About same as usual</td>
<td>Less than usual</td>
<td>Much less than usual</td>
</tr>
<tr>
<td>Felt that you are playing a useful part in things?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Less useful than usual</td>
<td>Much less useful</td>
</tr>
<tr>
<td>Felt capable of making decisions about things?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Less so than usual</td>
<td>Much less capable</td>
</tr>
<tr>
<td>Felt constantly under strain?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>HAVE YOU RECENTLY:</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>-------------------</td>
<td>---</td>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td>Felt that you couldn't overcome your difficulties?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been finding life a struggle all the time?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been able to enjoy your normal day-to-day activities?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Less so than usual</td>
<td>Much less than usual</td>
</tr>
<tr>
<td>Tended to lose interest in your day-to-day activities?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been getting scared or panicky for no good reason?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been able to face up to your problems?</td>
<td>More so than usual</td>
<td>Same as usual</td>
<td>Less able than usual</td>
<td>Much less able</td>
</tr>
<tr>
<td>Found everything getting on top of you?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been feeling unhappy and depressed?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been losing confidence in yourself?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been thinking of yourself as a worthless person?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Felt that life is entirely hopeless?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Been feeling hopeful about your own future?</td>
<td>More so than usual</td>
<td>About same as usual</td>
<td>Less so than usual</td>
<td>Much less than usual</td>
</tr>
<tr>
<td>Been feeling reasonably happy all things considered?</td>
<td>More so than usual</td>
<td>About same as usual</td>
<td>Less so than usual</td>
<td>Much less than usual</td>
</tr>
<tr>
<td>Been feeling nervous and strung up?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Felt that life isn't worth living?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
<tr>
<td>Found at times you could not do anything because your nerves were too bad?</td>
<td>Not at all</td>
<td>No more than usual</td>
<td>Rather more than usual</td>
<td>Much more than usual</td>
</tr>
</tbody>
</table>
CHEST PAIN QUESTIONNAIRE

Question 1.

a) Have you ever had any pain or discomfort in your chest?

   YES.....1
   NO.....2 (IF NO go to Question 2)

b) Do you get this pain or discomfort when you walk uphill or hurry?

   YES.....1  NO.....2

(c) Do you get it when you walk at an ordinary pace on the level?

   YES.....1  NO.....2

(d) When you get any pain or discomfort in your chest what do you do?

   Stop.........................1
   Slow down....................2
   Continue at the same pace.....3

(e) Does it go away when you stand still?

   YES.....1  NO.....2

(f) How soon?

   10 minutes or less............1
   More than 10 minutes.........2

(g) Where do you get this discomfort?

   Mark the place(s)
   with X on the diagram

Question 2.

a) Have you ever had a severe pain across the front of your chest lasting for half an hour or more?

   YES.....1  NO.....2

CHEST PAIN QUESTIONNAIRE

Question 1.

a) Have you ever had any pain or discomfort in your chest?
   - YES...1
   - NO...2 (IF NO go to Question 2)

b) Do you get this pain or discomfort when you walk uphill or hurry?
   - YES...1
   - NO...2

(c) Do you get it when you walk at an ordinary pace on the level?
   - YES...1
   - NO...2

d) When you get any pain or discomfort in your chest what do you do?
   - Stop..........................1
   - Slow down.....................2
   - Continue at the same pace....3

e) Does it go away when you stand still?
   - YES...1
   - NO...2

f) How soon?
   - 10 minutes or less..........1
   - More than 10 minutes.......2

g) Where do you get this discomfort?
   - Mark the place(s)
     with X on the diagram

Question 2.

a) Have you ever had a severe pain across the front of your chest lasting for half an hour or more?
   - YES...1
   - NO...2
Question 3.

a) Do you get any pain in either leg on walking?
   YES.....1
   NO.....2 (IF NO go to question 4)

b) Does this pain ever begin when you are standing still or sitting?
   YES.....1
   NO.....2

c) Do you get this pain in your calf (or calves)?
   YES.....1
   NO.....2

d) Do you get it when you walk uphill or hurry?
   YES.....1
   NO.....2

e) Do you get it when you walk at an ordinary pace on the level?
   YES.....1
   NO.....2

f) Does the pain ever disappear while you are still walking?
   YES.....1
   NO.....2

g) What do you do if you get it when you are walking?
   Stop.............................1
   Slow down.........................2
   Continue at same pace............3

h) What happens to it if you stand still?
   Usually continues more than 10 minutes ...1
   Usually disappears in 10 minutes or less...2
Question 4.

Have you ever been bothered by shortness of breath when climbing stairs?

YES..............1
(IF YES, complete a and b)

NO................2
(IF NO, go to question 5)

a) How often?  
Every few days........1

b) Does it bother you?  
Quite a bit........3

Question 5.

Have you ever been bothered by shortness of breath while doing physical work or exercising?

YES..............1
(IF YES, complete a and b)

NO................2
(IF NO, go to question 6)

a) How often?  
Every few days........1

b) Does it bother you?  
Quite a bit........3

Question 6.

Have you ever been bothered by shortness of breath when you were NOT doing physical work or exercising?

YES..............1
(IF YES, complete a and b)

NO................2
(IF NO, go to question 7)

a) How often?  
Every few days........1

b) Does it bother you?  
Quite a bit........3
Health Questionnaire

PERSONAL ACTIVITY QUESTIONNAIRE 1-4

THIS SECTION ASKS ABOUT ASPECTS OF YOUR BEHAVIOUR AND THE WAYS IN WHICH YOU ORGANISE YOUR LIFESTYLE WHICH HAVE BEEN FOUND HELPFUL IN MEDICAL DIAGNOSIS. EACH PERSON IS DIFFERENT AND SO THERE ARE NO RIGHT OR WRONG ANSWERS BUT SIMPLY THOSE WHICH TELL US HOW YOU THINK OR FEEL OR ACT.

FOR EACH QUESTION, CHOOSE THE ANSWER WHICH IS TRUE FOR YOU AND TICK THE SPACE IN FRONT OF THAT ANSWER. TICK ONLY ONE ANSWER FOR EACH QUESTION AND IF IN DOUBT, CHOOSE THE ONE WHICH IS MOST TRUE FOR YOU.

1. Do you ever have trouble finding time to get your hair cut or styled?
   A. [ ] Never
   B. [ ] Occasionally
   C. [ ] Almost always

2. How often does your job "stir you into action"?
   A. [ ] Less often than most people's jobs
   B. [ ] About average
   C. [ ] More than most people's jobs

3. Is your everyday life filled mostly by
   A. [ ] problems needing a solution?
   B. [ ] challenges needing to be met?
   C. [ ] a rather predictable routine of events?
   D. [ ] not enough things to keep me interested or busy?

4. Some people live a calm predictable life. Others find themselves facing unexpected changes, frequent interruptions, inconvenience, or "things going wrong". How often are you faced with these minor (or major) annoyances or frustrations?
   A. [ ] Several times a day
   B. [ ] About once a day
   C. [ ] A few times a week
   D. [ ] Once a week
   E. [ ] Once a month or less
5. When you are under pressure or stress, what do you usually do?
   A. [ ] Do something about it immediately
   B. [ ] Plan carefully before taking any action

6. Ordinarily, how rapidly do you eat?
   A. [ ] I'm usually the first one finished
   B. [ ] I eat a little faster than average
   C. [ ] I eat at about the same speed as most people
   D. [ ] I eat more slowly than most people

7. Has your spouse or a friend ever told you that you eat too fast?
   A. [ ] Yes, often
   B. [ ] Yes, once or twice
   C. [ ] No, never

8. How often do you find yourself doing more than one thing at a time, such as working while eating, reading while dressing, or figuring out problems while driving?
   A. [ ] I do two things at once whenever practical
   B. [ ] I do this only when I'm short of time
   C. [ ] I rarely or never do more than one thing at a time

9. When you listen to someone talking, and this person takes too long to come to the point, how often do you feel like hurrying the person along?
   A. [ ] Frequently
   B. [ ] Occasionally
   C. [ ] Almost never

10. How often do you actually "put words in the person's mouth in order to speed things up?"
    A. [ ] Frequently
    B. [ ] Occasionally
    C. [ ] Almost never
Health Questionnaire

11. If you tell your spouse or a friend that you will meet somewhere at a definite time, how often do you arrive late?
   A. [ ] Once in a while
   B. [ ] Rarely
   C. [ ] I am never late

12. How often do you find yourself hurrying to get places even when there is plenty of time?
   A. [ ] Frequently
   B. [ ] Occasionally
   C. [ ] Almost never

13. Suppose you are to meet someone at a public place (street corner, building lobby, restaurant) and the other person is already 10 minutes late. What will you do?
   A. [ ] Sit and wait
   B. [ ] Walk about while waiting
   C. [ ] Usually carry some reading matter or writing paper so I can get something done while waiting

15. When you have to "wait in line" at a restaurant, a store, or the post office, what do you do?
   A. [ ] Accept it calmly
   B. [ ] Feel impatient but not show it
   C. [ ] Feel so impatient that someone watching can tell I am restless
   C. [ ] Refuse to wait in line, and find ways to avoid such delays

15. When you play games with young children about 10 years old (or when you did so in past years), how often do you purposely let them win?
   A. [ ] Most of the time
   B. [ ] Half the time
   C. [ ] Only occasionally
   D. [ ] Never
Health Questionnaire

16. When you were younger, did most people consider you to be
   A. [ ] definitely hard-driving and competitive?
   B. [ ] probably hard-driving and competitive?
   C. [ ] probably more relaxed and easygoing?
   D. [ ] definitely more relaxed and easygoing?

17. Nowadays, do you consider yourself to be
   A. [ ] definitely hard-driving and competitive?
   B. [ ] probably hard-driving and competitive?
   C. [ ] definitely more relaxed and easygoing?

18. Would your spouse (or closest friend) rate you as
   A. [ ] definitely hard-driving and competitive?
   B. [ ] probably hard-driving and competitive?
   C. [ ] probably relaxed and easygoing?
   D. [ ] definitely relaxed and easygoing?

19. Would your spouse (or closest friend) rate your general level of activity as
   A. [ ] too slow - should be more active?
   B. [ ] about average - busy much of the time?
   C. [ ] too active - should slow down?

20. Would people you know well agree that you take your work too seriously?
   A. [ ] Definitely yes
   B. [ ] Probably yes
   C. [ ] Probably no
   D. [ ] Definitely no

21. Would people you know well agree that you have less energy than most people?
   A. [ ] Definitely yes
   B. [ ] Probably yes
   C. [ ] Probably no
Health Questionnaire

22. Would people you know well agree that you tend to get irritated easily?
A. [ ] Definitely yes
B. [ ] Probably yes
C. [ ] Probably no
D. [ ] Definitely no

23. Would people who know you well agree that you tend to do most things in a hurry?
A. [ ] Definitely yes
B. [ ] Probably yes
C. [ ] Probably no
D. [ ] Definitely no

24. Would people who know you well agree that you enjoy a "contest" (competition) and try hard to win?
A. [ ] Definitely yes
B. [ ] Probably yes
C. [ ] Probably no
D. [ ] Definitely no

25. How was your temper when you were younger?
A. [ ] Fiery and hard to control
B. [ ] Strong but controllable
C. [ ] No problem
D. [ ] I almost never got angry

26. How is your temper nowadays?
A. [ ] Fiery and hard to control
B. [ ] Strong but controllable
C. [ ] No problem
D. [ ] I almost never get angry
27. When you are in the midst of doing a job and someone (not your boss) interrupts you, how do you usually feel inside?
   A. [ ] I feel O.K. because I work better after an occasional break
   B. [ ] I feel only mildly annoyed
   C. [ ] I really feel irritated because most such interruptions are unnecessary

28. How often are there deadlines on your job?
   A. [ ] Daily or more often
   B. [ ] Weekly
   C. [ ] Monthly or less often
   D. [ ] Never

29. These deadlines usually carry
   A. [ ] minor pressure because of their routine nature
   B. [ ] considerable pressure, since delay would upset my entire work group
   C. [ ] Deadlines never occur on my job

30. Do you ever set deadlines or quotas for yourself at work or at home?
   A. [ ] No
   B. [ ] Yes, but only occasionally
   C. [ ] Yes, once a week or more

31. When you have to work against a deadline, what is the quality of your work?
   A. [ ] Better
   B. [ ] Worse
   C. [ ] The same (pressure makes no difference)

32. At work, do you ever keep two jobs moving forward at the same time by shifting back and forth rapidly from one to another?
   A. [ ] No, never
   B. [ ] Yes, but only in emergencies
   C. [ ] Yes, regularly
33. Are you content to remain at your present job level for the next five years?
   A. [ ] Yes
   B. [ ] No, I want to advance
   C. [ ] Definitely no; I strive to advance and would be dissatisfied if not promoted in that length of time

34. If you had your choice, which would you rather get?
   A. [ ] A small increase in pay **without** a promotion to a higher level job
   B. [ ] A promotion to a higher level job **without** an increase in pay

35. In the past three years, have you ever taken less than your allotted number of leave days?
   A. [ ] Yes
   B. [ ] No

36. In the last three years, how has your personal yearly income changed?
   A. [ ] It has remained the same or gone down
   B. [ ] It has gone up slightly (as the result of cost-of-living increases or automatic raises based on years of service)
   C. [ ] It has gone up considerably

37. How often do you bring your work home with you at night, or study materials related to your job?
   A. [ ] Rarely or never
   B. [ ] Once a week or less
   C. [ ] More than once a week

38. How often do you go to your place of work when you are not expected to be there (such as nights or weekends)?
   A. [ ] It is not possible on my job
   B. [ ] Rarely or never
   C. [ ] Occasionally (less than once a week)
   D. [ ] Once a week or more
39. When you find yourself getting tired on the job, what do you usually do?

A. [ ] Slow down for a while until my strength comes back
B. [ ] Keep pushing myself at the same pace in spite of the tiredness

40. When you are in a group, how often do the other people look to you for leadership?

A. [ ] Rarely
B. [ ] About as often as they look to others
C. [ ] More often than they look to others

41. How often do you make yourself written lists to help you remember what needs to be done?

A. [ ] Never
B. [ ] Occasionally
C. [ ] Frequently

or questions 42-46, compare yourself with the average person in your present designation/classification, and mark the most accurate description.

2. In amount of effort put forth, I give

A. [ ] much more effort
B. [ ] a little more effort
C. [ ] a little less effort
D. [ ] much less effort

3. In sense of responsibility, I am

A. [ ] much more responsible
B. [ ] a little more responsible
C. [ ] a little less responsible
D. [ ] much less responsible

4. I find it necessary to hurry

A. [ ] much more of the time
B. [ ] a little more of the time
C. [ ] a little less of the time
D. [ ] much less of the time
Health Questionnaire

45. In being precise (careful about detail), I am
   A. [ ] much more precise
   B. [ ] a little more precise
   C. [ ] a little less precise
   D. [ ] much less precise

46. I approach life in general
   A. [ ] much more seriously
   B. [ ] a little more seriously
   C. [ ] a little less seriously
   D. [ ] much less seriously

For questions 47-49, compare your present work with your work setting of five years ago. If you have not been working for five years, compare your present job with your first job.

7. I worked more hours per week
   A. [ ] at my present job
   B. [ ] five years ago
   C. [ ] cannot decide

8. I carried more responsibility
   A. [ ] at my present job
   B. [ ] five years ago
   C. [ ] cannot decide

9. I was considered to be at a higher level (in prestige or social position)
   A. [ ] at my present job
   B. [ ] five years ago
   C. [ ] cannot decide
Health Questionnaire

50. How many different job titles have you held in the last 10 years? (Be sure to count shifts in kinds of work, shifts to new employers, and shifts up and down within a firm).
   A. [ ] 0-1
   B. [ ] 2
   C. [ ] 3
   D. [ ] 4
   E. [ ] 5 or more

51. How much schooling did you receive?
   A. [ ] 0-4 years
   B. [ ] 5-8 years
   C. [ ] Some high school
   D. [ ] Completed high school
   E. [ ] Trade school or business college
   F. [ ] Some tertiary education
   G. [ ] Degree from a university/CAE
   H. [ ] Post-graduate work at a college or university

52. When you were in school, were you an officer of any group, such as a student council, school clubs and societies, or captain of an athletic team?
   A. [ ] No
   B. [ ] Yes, I held one such position
   C. [ ] Yes, I held two or more such positions
### ADDITIONAL RESULTS OF MULTIPLE REGRESSION ANALYSIS

Estimates of regression co-efficients

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