

**Type A Behaviour Pattern and Occupational Stress
Among Public Sector Workers
in Papua New Guinea and Australia**

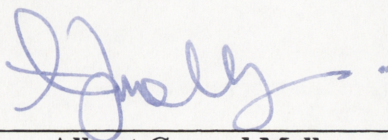
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Doctor of Philosophy
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I declare that this doctoral thesis reports my original work and that no part of this thesis has been accepted or submitted for a degree or diploma in any University. To the best of my knowledge, no published or written material has been included in this thesis without due citations.



Albert Conrad Mellam

ABSTRACT

This thesis describes a cross-cultural study assessing the prevalence of the TABP, and its association with stress experienced at work among employed individuals in Papua New Guinea and Australia. The study was based on a major theory on the TABP as a constellation of human behaviours elicited by the challenges unique only to the Western industrialised work culture. Participants for this cross-cultural study were selected from 2 large public sector organisations in PNG and a similar organisation in Australia. The two samples were matched on the socio-demographic markers of age, educational qualifications and occupational status, and were given a number of instruments to complete in the form of survey. The instruments central to this cross-cultural study were the Jenkins Activity Survey as a measure of the TABP, and the Work Activities Questionnaire which assessed self-reported experience of stress at work. The two central issues underpinning this thesis were firstly, the nature and prevalence of the TABP among employed individuals in both countries, and secondly, the association between the reported expression of the TABP and the experience of job stress. The results showed overall that PNG participants, on average, self-reported much more as Type Bs than Type As compared with Australian participants. However, the results on the effects of socio-demographic factors, and job stress on the expression of the Type A behaviour revealed greater consistency with normative data and with expectations based on the research literature. Overall, the results on the effects of socio-demographic markers, and stress on the expression of the TABP seemed to minimise cultural considerations in favour of the theory that, the ambient situation in which an individual dwells in exerts stronger influence on the positive expression of the TABP.

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LIST OF ACRONYMS

AFPS	Australian Federal Public Service
AMIS	Aspirin, Myocardial Infarction
ANU	The Australian National University
ANOVA	Analysis of Variance
AP	Angina Pectoris
AusAID	Australian Overseas Aid
BRS	Bortner Type A Rating Scale
CHD	Coronary heart disease
CVD	Cardiovascular Disease (Disorder)
ECG	Electrocardiogram
ELCOM	Electricity Commission
FTAB	Framingham Type A Behaviour Scale
Global Scale	Global Type A behaviour scale
HBP	High Blood Pressure
H scale	Hard Driving and Competitiveness scale
ISSI	Interview Schedule for Social Interaction
JAS	Jenkins Activity Survey
J scale	Job Involvement scale
MI	Myocardial Infarction
MMPI	Minnesota Multiphasic Personality Inventory
MRFIT	Multiple Risk Factor Intervention Trial
MSI	Miami Structured Interview
NHFA	National Heart Foundation of Australia
NHLBI	National Heart, Lung and Blood Institute
PNG	Papua New Guinea
PTC	Post & Telecommunication (Telikom) Corporation (PNG)
SI	Structured Interview
S scale	Speed and Impatience scale
TABP	Type A behaviour pattern
UPNG	University of Papua New Guinea
WCGS	Western Collaborative Group Study

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Chapter One

Introduction and Theory

1.1 Introduction to the Research Problem

The empirical underpinning of the construct of the Type A behaviour pattern (TABP) is its function as a coronary heart disease (CHD) risk factor. However, this role remains controversial because of conflicting statistical and clinical data produced on the pathogenic nature of the Type A behaviour pattern (Rosenman, Brand, Jenkins, Friedman, Straus & Wurm, 1975; Haynes, Feinleib & Kannel, 1980; Shekelle, Gale & Norusis, 1985; Ragland & Brand, 1988). For example, in a prospective study of men clinically free of CHD or its symptoms, Rosenman et al., (1975) found men who were classified as Type A reported twice the risk of CHD compared with men reporting the Type B behaviour at follow-up. Using the same sample of men in that prospective study, Ragland and Brand (1988) found that the mortality rate for Type A men was much lower than that reported for Type B men. This result was not consistent with conventional expectation of the risk associated with Type A behaviour pattern.

Some critics are highly sceptical of the pathogenic risk of the TABP arguing that the predictive value of the TABP is doubtful and may be quite useless (Eysenck, 1990). For example, Eysenck argued that the TABP is merely part of the basic personality traits like neuroticism and extraversion, and it is the effect of these personality factors that is linked to the risk of CHD and not TABP *per se* (Eysenck, 1990). Others continue to maintain that there is also equally convincing evidence demonstrating a link between the TABP and

CHD, and therefore it is premature to ignore the TABP as a CHD risk factor, or even contemplate the idea of discarding the construct (Ganster, 1986; Matthews, 1988). Efforts have been taken to search for alternative pathways such as identifying single elements of the TABP like hostility as risk markers (Williams, 1987; Spicer, Jackson & Scragg, 1993) or considering the sum effects of psychosocial factors (Byrne & Reinhart, 1994; Byrne, 1996) to help explain the risk attributed to the TABP, or better define the pathogenic elements of the construct itself. One area that has attracted research attention in recent years is that of the possible mechanisms through which the TABP may contribute to the risk of major coronary events such as angina pectoris (AP) and myocardial infarction (MI). Here, consideration has been given to the mediating role of a host of psychosocial factors (Byrne & Reinhart, 1994; Byrne, 1996), the excessive physiological reactivity in individuals displaying the TABP (Ivancevich & Matteson, 1984; Harbin, 1989), and the socio-cultural and environmental antecedents of the Type A behaviour (Price, 1982; Margolis, McLeroy, Runyan & Kaplan, 1983). The interactive pathways between the TABP and these factors offer a potential prospect of ascertaining and establishing the nature of the risk exerted by the Type A behaviour.

This present study is based on a major theoretical view that the TABP is elicited and reinforced by challenges from the external environment (Friedman & Rosenman, 1974; Byrne & Rosenman, 1986; Matthews & Haynes, 1986; Byrne & Reinhart, 1989; Rosenman, 1993). In particular, occupational environment featured prominently as a precipitant for the origins and expression of the Type A behaviour pattern. The evidence supporting this view has emerged mainly from data collected in Western industrialised

countries (Chesney & Rosenman, 1980; Matthews & Haynes, 1986; Byrne & Reinhart, 1989; Rosenman, 1993), and this has led to one important conceptual argument that the TABP is encouraged and rewarded almost exclusively by some settings prominent in Western cultures such as occupational and educational environments (Price, 1982; Van Egeren, 1991). This raises an interesting empirical issue; can the expression of the TABP be generalised to people of other cultures who also confront similar challenges and stress at work (Shankar & Famuyiwa, 1991; Renault De Moraes, Swan & Cooper, 1993). This issue has received very little empirical attention in Non-Western developing countries (Cohen & Reed, 1985; Stockwell, Zyzanski & Yodfat, 1985; Thoresen & Powell, 1992) yet it remains an important area in explaining the construct of the Type A behaviour.

1.2 Statement of the Problem

Occupational challenge associated with the work structure and culture of the Western world has emerged as a reliable predictor of the TABP, and there is a wealth of evidence in Western societies that demonstrated an association between occupational stress and the expression of the Type A behaviour. However, not much is known about the construct of the TABP in Non-Western countries, and there is very little data on the relationship between job stress and the Type A behaviour pattern. In addition, what may be of greater significance is that there is a vacuum of data on the risk of CHD associated with the TABP in Non-Western developing countries. These problems represent a serious gap in knowledge on the universality of the TABP as a human behavioural expression and on the generalisability of the TABP as a CHD risk factor in different societies.

1.3 Aims of the Study

This study involves a cross-cultural assessment of the TABP among public sector workers in Papua New Guinea (PNG) and Australia. It attempts to ascertain if workers in PNG will express the TABP in a similar manner as is reported by workers in Western industrialised countries (Jenkins, Zyzanski & Rosenman, 1979; Byrne & Reinhart, 1989; Byrne & Reinhart, 1990, 1994). In addition, this study also addresses the question of whether stress experienced at work will correlate with, and predict the expression of the Type A behaviour. These are the underlying problems addressed in this cross-cultural study on the Type A behaviour pattern.

1.4 Research Hypotheses

In view of the problems described, it is hypothesised that:

- (1) The prevalence of the TABP will be similar among PNG and Australian workers.**

This hypothesis is based on the observation that the work environment serves as the primary stimulus for the expression of the Type A behaviour (Friedman & Rosenman, 1974; Rosenman, 1993). It is therefore logical to assume that, PNG and Australian workers will express similar patterns of the Type A behaviour, and the stress common to all work settings (Shankar & Famuyiwa, 1991; Renault De Moraes et al., 1993) will play an important influencing role as a predictor of the Type A behaviour.

(2) The prevalence of the TABP will be similar among male and female workers.

Evidence have shown that males and females do not differ in their expression of the Type A behaviour (Waldron, 1978; Moss, Dielman, Campanelli, Leech, Harian, Van Harrison & Horvath, 1986), and it is also suggested that when place in a situation where they (females) are not constrained from expressing the TABP such as at work they will do so in a similar manner as males (Byrne & Reinhart, 1995). The hypothesis on gender effect on the TABP is based on these observations.

(3) High occupational and educational status will be positively linked to the Type A behaviour pattern.

It is well established that the TABP is associated with high occupational positions, higher education and high income (Boyd, 1984; Rosenman, 1990; Greenglass, 1991; Byrne & Reinhart, 1995) therefore it is logical to assume that a similar result will be observed in this study in view of these evidence.

(4) Evidence of job stress will correlate with the expression of the Type A behaviour pattern.

One aspect of the work environment that is associated with the expression of the TABP is reported stress at work (Ivancevich & Matteson, 1984) and there is empirical evidence strongly implicating job stress as a precursor of the Type A behaviour pattern (Keenan & McBain, 1979; Jamal, 1990). It is therefore expected that where TABP and job stress are reported, these variables will correlate significantly with each other.

(5) Evidence of the TABP will correlate positively with reported job distress symptoms.

There is some evidence showing an association between the TABP and reported experiences of job distress symptoms (Keenan & McBain, 1979; Jamal, 1990), and the evidence produced on the association between the TABP and psychological distress symptoms have also raised one possibility that the CHD risk associated with the TABP could be better explained by considering a confluence of psychosocial factors (Byrne & Rosenman, 1986; Byrne & Reinhart, 1995; Byrne, 1996). In view of these observations, it is predicated that a positive association will be established between reported evidence of the TABP and job distress.

The theoretical underpinning of these hypotheses are based on the thesis that the TABP is elicited and sustained by challenges from the occupational environment (Friedman & Rosenman, 1974; Byrne & Byrne, 1991; Rosenman, 1993), and they also reflect established data on the distribution of the TABP across key socio-demographic markers like, gender, education, and occupational status in Western societies (Byrne & Reinhart, 1994).

1.5 Theoretical Background to the Study

Aspects of work life and in particular job stress are viewed as an important environmental precursor of the Type A behaviour pattern. Job stress, it is assumed, creates the contingencies that shape and reinforce the Type A behaviour pattern. The inclusion of this aspect of work life as a mediating psychosocial variable can be attributed to two notable

empirical observations. One relates to the question of the origins of the TABP and the other to the pathogenic nature of Type A behaviour. Job stress has been linked positively with the TABP and the various components of the TABP like sustained drive towards poorly defined goals, preoccupation with deadlines, competitiveness, and desire for advancement and achievements are synonymous with the commonly perceived challenges from occupational settings in Western societies (Chesney & Rosenman, 1980; Byrne & Reinhart, 1989). Work demands therefore appear as a logical choice of psychosocial factors that might influence the expression of the Type A behaviour. The second issue has to do with the pathogenic nature of the TABP and job stress. The two psychosocial factors acting independently have generated conflicting evidence as coronary risk markers, (Karasek & Theorell, 1990; Kristensen, 1995) raising the prospect that an interactional effect between the TABP and job stress may offer a more promising empirical model in examining the predictive power of psychosocial factors on coronary diseases (Byrne & Reinhart, 1990, 1994). The conflicting body of evidence emerged from both stress and the TABP as CHD risk markers. As alluded to, both factors have generated evidence supporting as well as questioning their pathogenic influence on the risk of coronary heart disease. It is therefore more probable that their explanatory power as risk factors may increase if these factors were considered within an interactional model. Through this type of interactional pathway, some insights on the mechanism through which the TABP contribute to the risk of CHD can be accounted for (Byrne, 1990; Byrne & Byrne, 1990). This interactionist position also offers an interesting empirical

opportunity to assess the TABP across societies and especially in Non-Western developing countries.

Two theoretical views have been formulated on the relationship between the TABP, job stress and other aspects of work life. One view suggests that certain occupational stimuli evoke the characteristic behaviours associated with Type A behaviours (Ganster, Sime & Mayes, 1989). In other words, the TABP is elicited by challenges at work such as deadlines, competition, loss of personal control over job task and decision making process, or frustration because of hindrance in performance or achievements of work goals. Conversely, the Type A behaviour itself could be the factor that determines one's exposure to stress at work. In particular, Type A individuals may put themselves into more stressful occupations, or even re-define their jobs, an action which can potentially lead to increased job stress experience (Byrne & Rosenman, 1986; Ganster & Fusilier, 1989; Byrne & Reinhart, 1994). Consistent with this view is this possibility that Type A individuals may take on high daily task loads in their jobs and this action may create an increasingly competitive work situation, hence, increasing the likelihood of triggering the expression of the Type A behaviour pattern (Byrne & Rosenman, 1986; Byrne & Reinhart, 1994). In addition, the Type A person may self-select into occupations where intense involvement is rewarded by high responsibilities, high income and prestige. In this case, the expression of the TABP is in itself the factor that leads to exposure to stress at work (Byrne & Reinhart, 1994). The relationship between TABP and job stress, and the interaction between the two psychosocial factors and the risk of CHD is illustrated in a simple model in Figure 1.1.

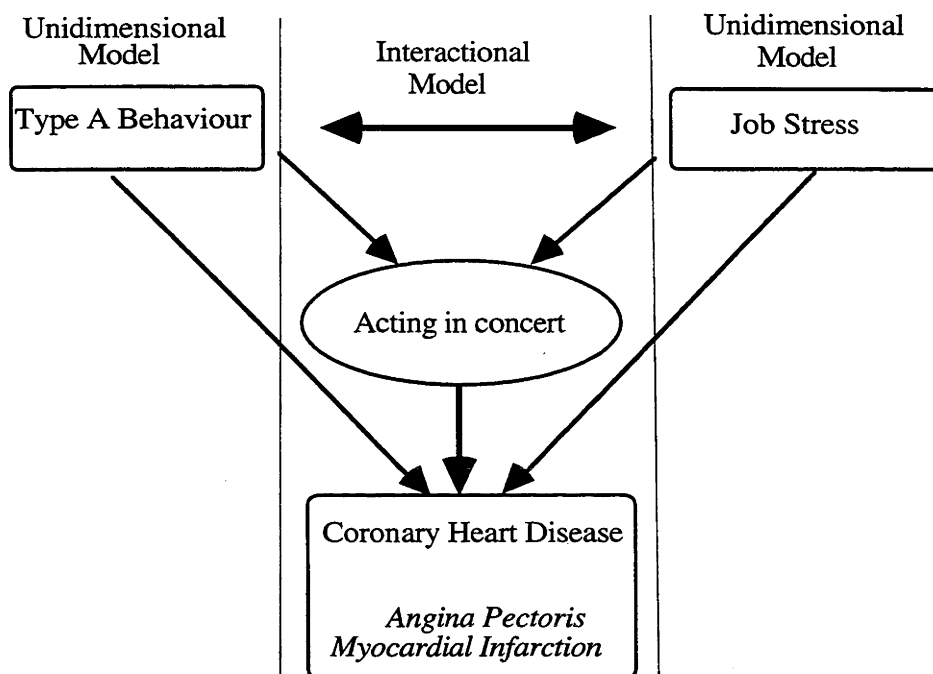


Figure 1 A simple model of the interaction between the Type A behaviour and Job Stress, and the risk of Coronary heart disease

It is still not well established as to which of the two theories best explain the link between the TABP and the challenges of the work environment. This demonstrates the need to further address this issue empirically. In this case, if aspects of the work ethos in Western countries are responsible for eliciting the TABP, can the challenges of the occupational environment in Non-Western developing countries also impose a similar positive effect on the Type A behaviour?

1.6 Significance of the Study Problem

The need to examine the TABP within a cross-cultural context deserves particular attention for three reasons. Firstly, if the TABP is reported by all working individuals regardless of their cultural backgrounds, this data will provide some evidence on

universality of the expression of the Type A behaviour pattern, and especially the role of the environment as an influential factor in triggering the expression of the Type A behaviour. In addition, this data will also demonstrate the robustness of instruments designed to measure this psychological construct. Secondly, given that the TABP is strongly implicated as a CHD risk factor, it is a worthwhile exercise to establish the status of the TABP in diverse societies to provide some information on the generalisability of the TABP as an explanatory concept in CHD epidemiology. On an equally important issue, it is hoped the data will alert health policy planners in developing countries to consider seriously the potential influence of psychosocial risk factors in the development of CHD and other diseases. Thirdly, the construct of the TABP has been linked with urbanisation and industrialisation, and has become synonymous with the challenges associated with these societal developmental processes (Rosenman, 1993; Van Egeren, 1991). Similarly, the TABP has been closely identified with the work ethos of Western societies (Landy, 1989; Berry & Houston, 1993; Schultz & Schultz, 1994). A cross-cultural study of this sort may provide useful information on the cross-cultural antecedents of the Type A behaviour like job stress in contrasting societies as well as an explanation of the general work ethic and work behaviours of workers in developed and developing countries.

Chapter Two

Review of Relevant Literature

2.1 INTRODUCTION

Cardiovascular disease (CVD) is still the main cause of premature deaths in many industrialised countries. This is despite a reported decline in CVD in some technologically advanced countries like Australia, Japan and the United States (Osmond, 1995; Traven, Kuller, Ives, Rutan & Perper, 1995). For example, the death rate from CVD among men and women aged 20 to 69 years old in Australia has fallen since the mid - 1960s (see Figure 2.1) (NHFA, 1996). However, despite this encouraging trend, it is still of no comfort to know that CVD continues to claim a life every ten minutes in Australia (NHFA, 1996).

Figure 2.2 illustrates the death rates in CVD in 28 selected countries. The death rates for Australian women and men rank 21st and 24th respectively among these industrialised countries. The countries of Eastern Europe recorded the highest death rates compared with these other industrialised countries and Japan retained the lowest death rate for both men and women. With CHD (see Figure 2.3) the death rates for men and women in the age group of 25 to 74 years in Australia ranked 17th and 14th respectively compared with the other countries listed in Figure 2.3. Countries in Europe recorded the highest death rates from CHD in both men and women, and Japan recorded the lowest death rates.

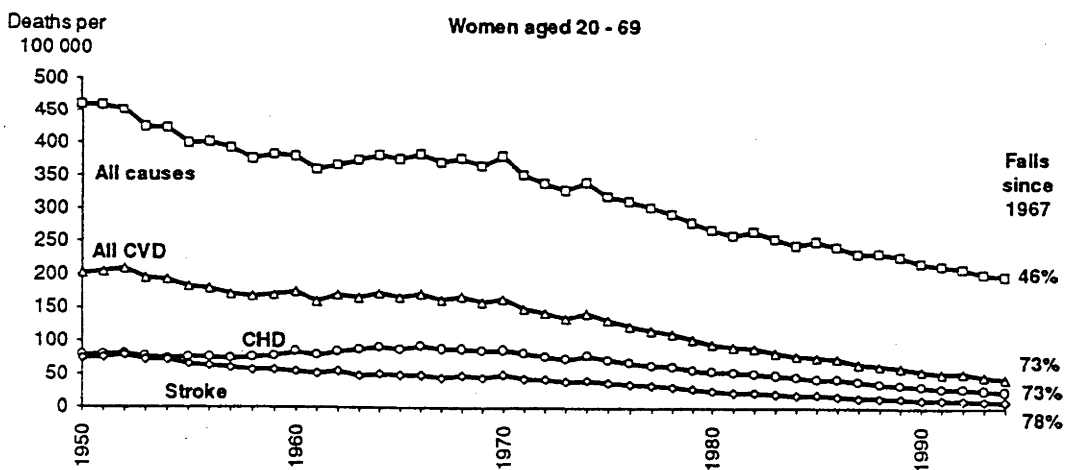
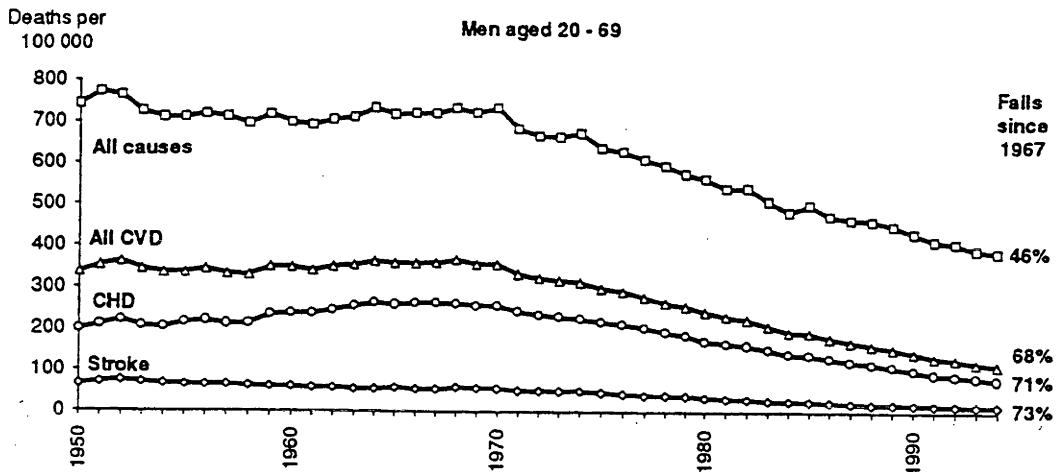


Figure 2.1 Age-adjusted death rates 1950-1994, and falls since 1967 (redrawn from NHFA Heart and Stroke Facts, 1996).

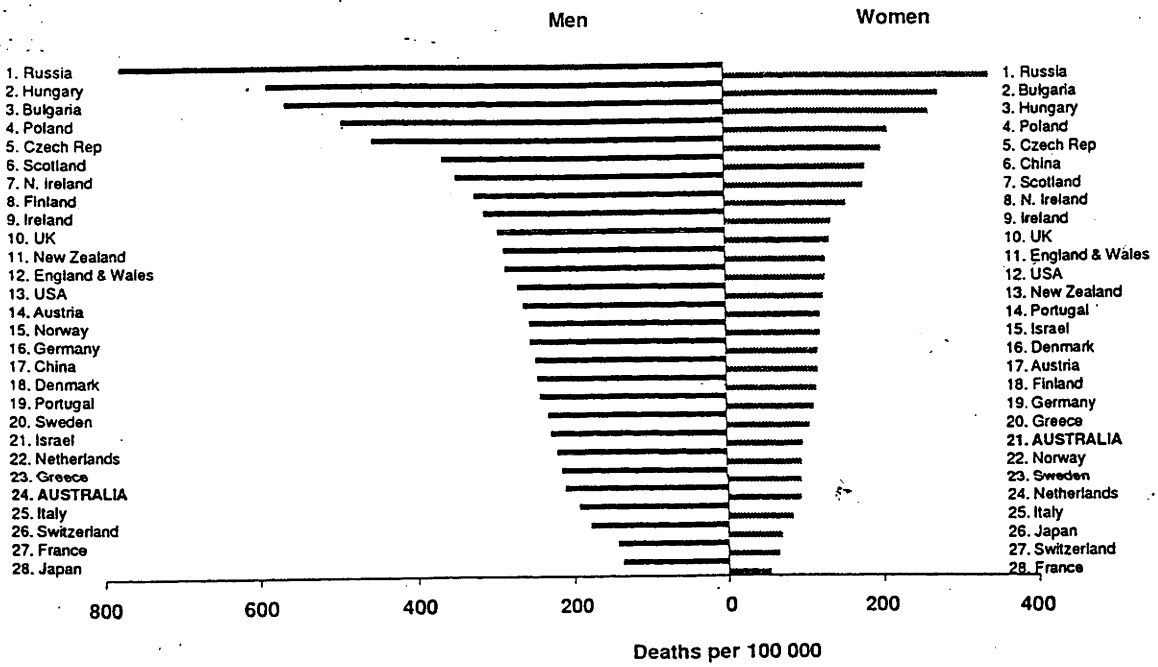


Figure 2.2 Cardiovascular death rates in 28 countries, 1993 25 to 74 year age group (redrawn from NHFA Heart and Stroke Facts, 1996).

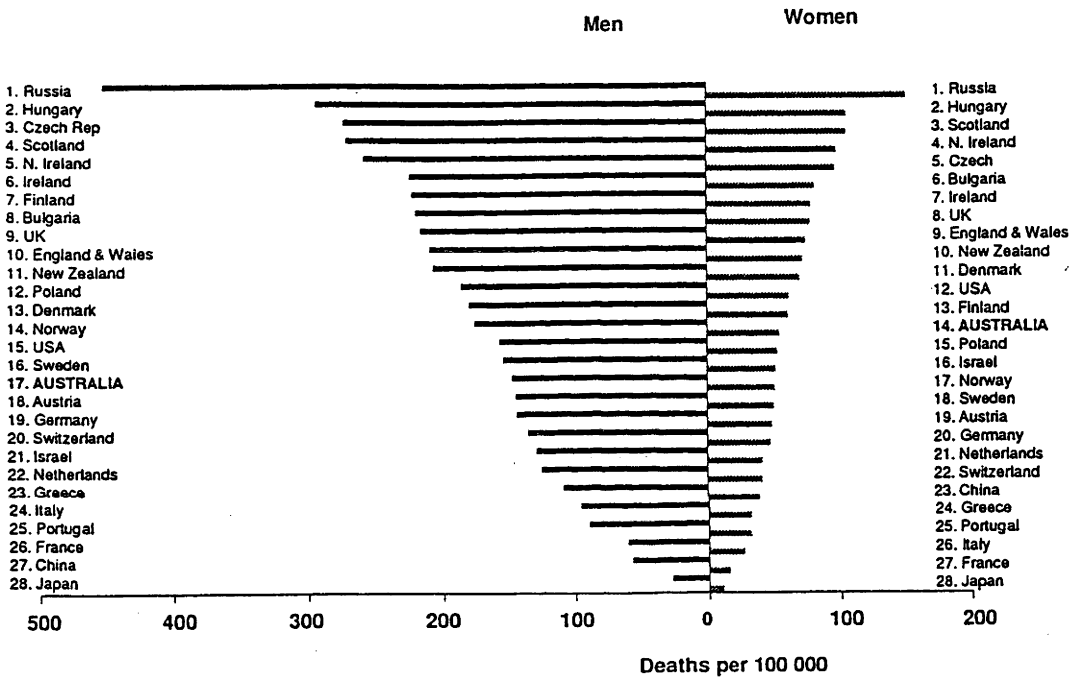


Figure 2.3 Coronary heart disease death rates in 28 countries, 1993
 25 to 74 year age group (redrawn from NHFA Heart and Stroke Facts,
 1996).

In developing countries, the annual mortality statistics associated with CVD can only be approximated because of the absence of reliable data systems. However, some data seemed to suggest strongly that in recent times many developing countries have witnessed a deterioration in the cardiovascular health of their urban affluent population (Kevau, 1990; Wielgosz, 1993). The PNG experience is a case that can be used to demonstrate the rise in CVD in some developing countries. Some forms of CVD like hypertension and CHD, which have been previously reported to be absent in PNG (Sinnet, 1973; Sinnet & Whyte, 1973, 1978) are now being recognised with increasing frequency among the urban educated population (Gee, 1983; Kevau, 1990). As a way of illustration, the first recorded case of coronary artery surgery in an indigenous Papua New Guinean male was carried out recently in an Australian hospital (Fletcher, McCaughan & Kevau, 1990). The factors linked to the reported increase in CHD cases in PNG and other developing countries are still obscure but urbanisation and westernisation of the lifestyle of the population have been implicated as possible sources that might explain the increase in reported cases of CHD witnessed in developing countries (Gee, 1983; Kevau, 1990; Wielgosz, 1993).

The statistics on death rates from CHD demonstrate a need to research the various facets of this disease to better understand it and to develop preventative measures to reduce the risk associated with this disease. One area at the forefront of research is the search for risk factors and as many as 250 factors have been identified as potential CHD risk factors (Hopkins & Williams, 1981). Physical and biochemical markers such as age, hypertension, smoking, physical inactivity, genetic predisposition and serum cholesterol

continue to dominate the classification of CHD risk factors (Wise, Graham-Clarke with Magnus & Nutbeam, 1994), however only 40-50 per cent of variance in CHD mortality can be explained by these traditional risk factors (Krantz, Contrada, Hill & Friedler, 1988). In addition, combinations of two or more of these established risk factors have been reported to predict only a small percentage of new clinical cases (Jenkins, 1971; Kringlen, 1986) leaving the variance from CHD largely unexplained. This shortfall has prompted researchers to broaden the scope of the search for risk factors by considering the potential pathogenic influence of some controversial psychosocial and behavioural factors like negative stress (Tennant, Langeluddecke & Byrne, 1985; Steptoe, 1991; Holt, 1993) and the Type A behaviour pattern (Tennant et al., 1985; Friedman, Thoresen, Gill, Ulmer, Powell, Price et al., 1986; Holt, 1993).

For over 3 decades now the TABP has received close scrutiny as a CHD risk marker. However, like most psychosocial variables the TABP too is plagued by controversies despite being established as an independent CHD risk factor.

This chapter contains a review of relevant literature on the TABP and CHD, the conflicting evidence produced on the pathogenic nature of the TABP and the proposed alternative avenues through which the TABP might exert its influence on coronary heart disease. The emphasis is on the interaction between the TABP and occupational stress, demonstrating one recent theoretical model developed to address the mechanisms through which the TABP might contribute to coronary heart disease (see Figure 1.1). The

influence of job stress also offers some explanations on the role of the external environment as a precipitant for the Type A behaviour pattern.

This review has several sections. The first section describes the characteristics and definitions of the Type A behaviour pattern. The second section describes the measurement techniques of the Type A behaviour pattern. The third section describes some data supporting and questioning the link between the TABP and coronary heart disease. The final section describes the interaction between occupational stress and the Type A behaviour pattern. This review is not an exhaustive discussion of all the issues on the TABP such as the interaction between emotion, physiological reactivity and the TABP (May & Kline, 1987; Harbin, 1989; MacLulich & Mardon, 1991; Walsh, Eysenck, Wilding & Valentine, 1994; Deary, Bertolotti, Sanavio, Angelino, Seghizzi et al., 1995), or the controversy over whether the TABP is one aspect of the personality trait such as neuroticism or extraversion (Eysenck & Fulker, 1983; Orent, 1988; Eysenck, 1990). Instead, it focuses on key longitudinal and cross-sectional evidence on the pathogenesis of the Type A behaviour. Set against this background, the discussion focuses on some possible explanations for the conflicting data produced on the TABP and describes one current alternative pathway in re-addressing the potential mechanisms that may enhance the predictive power of the Type A behaviour pattern. This empirical pathway is the interaction between the TABP and occupational stress. The influence of job stress on the TABP demonstrates one current approach used in addressing the confusing body of evidence produced on the Type A behaviour pattern.

2.2 BRIEF HISTORY OF THE TYPE A BEHAVIOUR PATTERN

The term "Type A behaviour pattern" was coined by two cardiologists Meyer Friedman and Ray Rosenman (Friedman & Rosenman, 1959). This concept was first used to describe a set of overt behaviours suspected of contributing to CHD in a group of white middle-aged employed men in the United States. Many tales are linked to the discovery of this construct and its influence on coronary heart disease. For example, an upholsterer who upon maintenance inspection of the furniture in Friedman and Rosenman's private clinic remarked:

...the doctors must treat a lot of worried people. When they questioned the basis of his opinion, he pointed out the excessive wear on the leading edges of the couches and chairs. This was a sign to him that many of the doctors' clients were literally "on the edge" (Rice, 1992, p.92).

Friedman and Rosenman addressed systematically this observation resulting in the creation of the term "Type A behaviour pattern" (Cohen, Matthews & Waldron, 1987; Thoresen & Graff Low, 1991). Historical records also revealed that the TABP or at least some of its components were long ago recognised in patients diagnosed with coronary heart disease. Von Dusch around 1868 reported that people with notably loud vocalising and excessive work involvement were predisposed to coronary heart disease (Ivancevich & Matteson, 1984). William Osler observed in 1892 an association between hard-driving behaviour and CHD (Rosenman, 1993; Atchison & Condon, 1994) and described the patients diagnosed with CHD:

... not the delicate neurotic person ... but the robust, the vigorous in mind and body, the keen and ambitious man, the indicator of whose engines was also at full speed (Osler, 1892 - cited in Byrne, 1987, p.122.).

William Osler also wrote in 1897: "I believe that the high pressure at which men live and the habit of working the machine to its maximum capacity are responsible for (arterial degeneration) rather than excesses in eating and drinking ..." (Osler, 1982, cited in Rosenman, 1993, p.451). These early recognitions of the influence of behavioural dispositions on CHD are remarkably similar to the construct of the TABP as was coined by Friedman and Rosenman.

2.3 MEANING OF THE TYPE A BEHAVIOUR PATTERN

The TABP is a constellation of behaviours and according to Byrne (1981), the TABP is characterised:

...by a sense of time urgency, a high need for achievement and excessive ambition, impatience and intolerance of frustration, an unusual degree of job involvement, and overt hostility and aggression (p.12).

Friedman and Rosenman (1959) described the Type A behaviour in the following way:

(1) an intense, sustained drive to achieve self-selected but poorly defined goals, (2) profound inclination and eagerness to compete, (3) persistent desire for recognition and advancement, (4) continuous involvement in multiple and diverse functions constantly subjected to time restrictions or deadlines, (5) habitual propensity to accelerate the rate of execution of many physical or mental functions, and (6) extraordinary mental and physical alertness (p.1286).

The meaning of the TABP has been described as broad and variable (Byrne, 1987; 1990) and this observation is reflected by a range of the TABP definitions. For example,

Friedman (1978a) defined the TABP as:

a relative specific type of continuous emotional disquiet that is initiated and sustained in an individual by (1) his abnormally intense, chronic struggle to achieve more and more objectives or to participate in more and more events in less and less time, or (2) his exaggerated hostile reactions to various activities of other human beings. (p.137).

Rosenman (1990) defined the Type A behaviour as:

..an action-emotion complex involving behavioural predispositions such as ambitiousness, aggressiveness, competitiveness, and impatience; specific behaviors such as muscle tenseness, alertness, rapid and emphatic vocal stylistics, and accelerated pace of activities; and emotional responses such as irritation, hostility, and increased potential for anger (p.2).

These definitions encompass the major components of the TABP like hard-driving behaviour, competitiveness, time urgency, impatience, anger and hostility and explosive speech. (Matthews & Haynes, 1986). The definitions also illustrate that the TABP is a complex multidimensional construct that entails both the behavioural and emotive aspects of human behaviour (Friedman & Rosenman, 1974). Recently a cognitive component was added to the construct of the Type A behaviour pattern (Price, 1982, 1982). Price proposed that the human belief system form the core of the TABP and this belief system acting in concert with associated human fears promote the expression of the Type A behaviour pattern. Price's cognitive component of the TABP is discussed in chapter 3 for its implications on the cross-cultural consideration of the Type A behaviour pattern.

The converse of the TABP is the "Type B behaviour pattern". The Type B behaviour pattern denotes an absence of the Type A behaviour characteristics. The Type B individuals are not at all aggressive, are relaxed and easy going, are less likely to do two things simultaneously are considerably less hostile, and generally content with their lifestyles (Jenkins, 1982; Landy, 1989). Type B individuals generally display a unique way of interaction and coping in their environment, which prevents them from expressing the Type A behaviour (Rosenman, 1993). What is perhaps most important is

that they are less likely to develop CHD compared to individuals expressing the Type A behaviour pattern.

Labels like "Type A Coronary-prone behaviour" and the more controversial labels of "Type A Personality" are continually being used as substitute labels for the Type A behaviour pattern. The label "Type A behaviour pattern" and "Type A behaviour" are used interchangeably in this review and elsewhere in the thesis to describe this pattern of behaviour. The debate on whether the TABP is a personality trait (Eysenck, 1990) or exactly what it is - a pattern of behaviour as originally conceptualised is a controversy in itself (Orent, 1988). The context of the controversy as illustrated by these different labels can be seen from Eysenck's views on the construct of the TABP and its pathogenic properties. In brief, according to Eysenck (1990) a combination of neuroticism and depression is more likely to predict the risk of CHD than the Type A behaviour, and the TABP is merely a combination of the underlying basic personality traits such as neuroticism and extraversion. This position represents one empirical pathway in addressing the conflicting data produced on the TABP as well as, the controversies surrounding the construct of the Type A behaviour pattern. It is stressed here that it is beyond the intention of this review to discuss this conceptual approach in explaining the TABP and the conflicting data produced on its pathogenic nature (see Eysenck & Fulker, 1983; Eysenck, 1990 for details of these issues).

2.4 MEASUREMENT OF THE TYPE A BEHAVIOUR PATTERN

The TABP can be measured through a Structured Interview (SI) and self-administered questionnaires (Byrne, Rosenman, Schiller & Chesney, 1985; Booth-Kewley & Friedman, 1987). Various versions of the SI have been developed since it was first used in the Western Collaborative Group Study (WCGS). For example, the SI has an original version (Rosenman, Friedman, Straus, Wurm, Kositchek, Hahn & Werthessen, 1964), a video-taped version (Powell, 1987) and some studies have also designed various versions of the SI of the Type A behaviour pattern (see for example, Scherwitz, 1989; Gerace, Smith, Kafatos, Trakas & Osterweis-Stangos, 1990). There is also a range of questionnaires designed to measure all or some components of the TABP assessed by the Structured Interview. The most commonly used self-administered questionnaires are the Jenkins Activity Survey (JAS), the Framingham Type A Scale (FTAB) and the Bortner Type A Rating Scale (BRS). These questionnaires are generally accepted as more reliable and valid measures as opposed to the numerous ad hoc assemblies of test items designed to measure this behaviour pattern (see for examples, Everly & Girdano, 1980; Herman, Blumenthal, Haney, Williams & Barefoot, 1986; Bo-yuan, 1988; Bennett, Gallacher & Johnston, 1990).

2.4.1 Structured Interview (SI)

The SI consists of 30 questions assessing drive and ambition, past and present aggressive competitive hostile feelings and time urgency (Powell, 1987; Rosenman, 1990). These components of the TABP are also mimicked in many questionnaires. The SI

is designed with a specific aim to elicit specific verbal and non-verbal cues typical of the Type A behaviour pattern (Matthews & Haynes, 1986). The protocol of the SI rests on the pacing and mannerism of the interviewer to elicit responses indicative of the Type A behaviour pattern. For example, some questions are presented in a slow and hesitant manner to stimulate a challenging reaction from a Type A individual. Under this condition, it is anticipated that a typical Type A person will intervene and complete the question, as well as, providing a response before the interviewer has had the opportunity to complete the question (Powell, 1987). The interjection by the interviewee offers the interviewer the opportunity to observe instances of behavioural modes indicative of the TABP throughout the interview. In addition, attention is also given on the speech stylistics and motor behaviours of the respondent (Powell, 1987; Edwards, 1991). The SI therefore is actually a behavioural test in that voice and psychomotor mannerisms are used as much as the verbal content to classify the person as Type A or Type B. The characteristics of these behaviours include loud, explosive, rapid and accelerated speech, verbal responses indicative of hostility and facial and bodily expressions indicating heightened tension or arousal (Rosenman, 1978). It is also important to emphasise that because the notion of "challenge" is so central in the SI as a means of eliciting the TABP responses, the interviewer must be consistent with his or her vocal style such as speed, volume and intonation, the length of the interview, question content and interview behaviour. The interviewer's behaviour must also be consistent between different interviews and where more than one interviewer is used, a degree of consistency must be maintained in vocal styles, length of the interviews, question contents and interview

behaviour between interviewers (Byrne, 1987). The potential short fall of this criterion is corrected by using agreement ratings of the SI between independent raters.

The SI uses a binary classification to classify the Type A behaviour pattern. One is a Global A or B dichotomy where the person is classified as either Type A or Type B. The other classification is refined with the TABP classified on a five-point scale (Matthews, 1982; Matthews & Haynes, 1986; Byrne, 1987, 1992). These categories are:

- A1: fully developed Type A;
- A2: incomplete developed Type A;
- X: an equal representation of Type A and the Type B behaviours;
- B3: incomplete developed Type B;
- B4: fully developed Type B.

The SI has been claimed (Powell, 1987; Rosenman, 1990) as the ideal method for assessing the TABP because it has relatively good psychometric properties in comparison with most of the self-reported measures (Matthews, 1982). For example, the power and robustness of the SI in measuring reliably the TABP across a time period has been demonstrated in the Western Collaborative Group study. In addition, the predictive value of the SI has been given greater credence based on consistent evidence favouring the TABP measured by the SI as a reliable predictor of heart diseases (Matthews & Haynes, 1986; Bernard & Krupat, 1994). The evidence of the risk associated with the TABP was first established in the Western Collaborative Group Study. Men initially free from CHD symptoms but classified as Type As were more than twice as likely than the Type B men to develop CHD at follow-up 8.5 years later (Rosenman, et al., 1975). The other psychometric properties of the SI have been better researched and accepted. For example,

the test-retest reliability of the SI was found to be evident in 80.4 per cent of the WCGS participants who reported the TABP 12 to 20 months later (Powell, 1987). However, it must also be noted that this figure only reflected the A and B classifications of the Type A behaviour. The stability dropped to about 64.4 per cent when the refined five-point classification scales were used. Similar results have been reported in other studies (Keith, Lown & Stare, 1965). The SI also serves as the bench mark against which other Type A measures are evaluated and in this regard, the construct validity of the SI has come under some criticism. The issues surrounding the construct validity of the SI are discussed next.

Despite being claimed as the preferred method of measuring the TABP, the SI also has several disadvantages limiting its usefulness. Firstly, conflicting evidence has been reported on its predictive validity and this problem is attributed to the binary classifications it produces. Evidence favours the A and B classification as a more reliable approach in classifying the TABP than the refined five-point scale (Powell, 1987). Secondly, questions have been raised on its construct validity (Yarnold & Bryant, 1988). The construct validity of the SI would ordinarily be evaluated by agreement with other validated measures. However, since the SI was developed for use in the WCGS, it serves as the bench mark and reliance on a single criterion against to which the SI is compared limits its usefulness thus raising concerns over its construct validity (Powell, 1987; Yarnold & Bryant, 1988). The issues underpinning the construct validity of the SI are best described by Yarnold and Bryant (1988):

If we use only one measure to define a particular construct, then we cannot be sure how much of what we are measuring is related to the underlying conceptual variable and how much is related to the way we have measured it. But if we use multiple measures to define a particular construct, then we can be more confident that we are measuring what we intended to and not something that is unique to one particular operational definition. Thus, relying exclusively on a single operation definition would reduce our ability to describe Type A behavior clearly in theory-relevant terms (p.411).

Thirdly, the SI requires training and this is only available from its developers in the United States (Yarnold & Bryant, 1988). The training requirement limits an open access of the use of the Structured Interview. Finally, the SI is costly and time-consuming to administer and is not particularly suitable in studies with large sample sizes (Byrne & Reinhart, 1989). The interview generally takes 1 hour to conduct and score, and only one person at a time can be assessed compared to self-reported measures. It also appears that there is very little data on the TABP measured by the SI across different cultural groups, therefore, it is possible that the generalisability of the TABP assessed by the SI may only be limited to Western societies. These problems generally restricted the use of the SI as a preferred choice for assessing the TABP compared to self-administered questionnaires.

2.4.2 Jenkins Activity Survey (JAS)

The JAS was designed to duplicate the SI assessment of the Type A behaviour pattern (Jenkins, et al., 1979). The current version of this instrument (Form C) contains 52 multiple choice items forming four scales and assessing four components of the Type A behaviour. The four scales are the Global Type A scale (21 items) (Global), Speed and Impatience scale (S scale) - speed in activities such as eating or conversation, impatience - generally strong temper (21-items), Job involvement scale (J scale) - devoted commitment to occupational activities (24-items) and Hard-driving and competitiveness

scale (H scale) - highly socialised but display intensive drives (20-items) (Powell, 1987).

The Global Type A scale consists of items recoded from the three sub-scales. The three sub-scales are best described by Byrne (1987):

Speed and Impatience denote undue haste and rapidity in motor and cognitive activities, a self-imposed time pressure, an intolerance of slowness in others, and inordinate degree of irritability and distractibility; Job Involvement - identified specifically with work place and describe behaviours to do with acceptance or establishment of difficult and challenging deadlines, the tendency to extend work past normal hours, the acceptance and, indeed, soliciting of work in excess of personal capacity, and the conviction that job demands should take precedence over all other considerations, and the Hard-driving behaviour is concerned with task commitment, expenditure of effort, and the perception of activities and interactions as challenges to be accepted and dominated (p. 123).

The items and scoring of the JAS were established through discriminant function analysis based on the SI classification used in the WCGS and scaled so that a mean is set at an arbitrary zero with a 10-point standard deviation. Scores are set on a scale ranging from about + 30 to -30 standard scores. A positive (+) score denotes evidence of the TABP and a negative (-) score indicates evidence of the Type B behaviour pattern (Jenkins et al., 1979).

The JAS was validated in the WCGS and was found to achieve about 71 to 73 per cent agreement with the SI classification of the Type A behaviour pattern (Jenkins, Zyzanski & Rosenman, 1971). Other studies have also produced similar results for example, an agreement rating as high as 70 per cent was reported for the Belgian factory workers (Kittel, Kornitzer, Zyzanski, Jenkins, Rustin & Degre, 1978). The power of the JAS to predict CHD was initially established in the WCGS in a sample of 2,750 men followed over a four year period (Jenkins, Rosenman & Zyzanski, 1974; Jenkins Zyzanski & Rosenman, 1978) and other studies have also produced similar findings (Zyzanski,

Jenkins, Ryan, Flessas & Everist, 1976; DeBacker, Kornitzer, Kittel & Dramaix, 1983). However, the literature also shows that not all studies have replicated the results on the predictive value of the TABP assessed through the Jenkins Activity Survey. For example, studies investigating high risk groups have failed to establish the TABP assessed by the JAS as a precursor of coronary heart disease (Case, Heller, Case, Moss, et al., 1985; Cohen & Reed, 1985; Shekelle, Gale, Norusis et al., 1985). The reasons for the inconsistent findings are discussed in detail when the evidence linking the TABP with manifestations of CHD is discussed. The internal reliability of the four JAS scales has been reported to range from 0.73 to 0.85 and the test - retest reliability has been found to range from 0.54 to 0.82 (Jenkins et al., 1979; Johnston & Shaper, 1983; Carmelli, Rosenman & Chesney, 1987). Overall, the JAS compared well with the SI on psychometric properties. This observation is impressive given that the psychometric properties of the JAS were established from the sample which initially undertook the Structured Interview.

2.4.3 Framingham Type A Scale (FTAB)

The FTAB scale was designed from items selected from a psychosocial questionnaire by a "panel of experts" (Haynes, Levine, Scotch, Feinleib & Kannel, 1978a). This questionnaire elicits primary information about self as hard-driving, achievement-oriented and dominant, and time urgency - that is being pressed for time and about worries following a day's work. Each item contains a 'YES or NO' response. Individuals are asked to indicate the extent to which each item describes them and the responses are

scored on a scale of 0 to 1 - with 1 meaning complete presence of the Type A behaviour pattern. Different versions of this measure have been designed for specific population groups such as employed individuals, students, and males and females (Haynes et al., 1978a).

The evidence for the concurrent validity of the FTAB is generally weaker than that reported for the SI and the JAS, and the same is true for the Bortner Rating Scale (Powell, 1987). The predictive validity of the FTAB was demonstrated in the Framingham study (Haynes, et al., 1980) where a positive relationship was established between the TABP and subsequent evidence of CHD and angina pectoris in women aged 45 to 64 years and total CHD and MI for white-collar men aged 45 to 64 years. The test-retest reliability of the FTAB has been reported to range from 57 to 80 per cent (Matthews & Haynes, 1986). Haynes and co-researchers (1978a) reported a reliability coefficient of .71 for the male version of the FTAB measure and a reliability coefficient of .70 for the female version. The construct validity of the FTAB measure has been examined against the SI and the Jenkins Activity Survey. For example, an agreement rating with the SI of 58 to 76 per cent has been reported in different samples such as adult men and undergraduate students (Haynes, Feinleib & Kannel, 1980). The FTAB measures have been reported to correlate significantly with the Global and S scales of the JAS (Chesney, Black, Chadwick & Rosenman, 1981), and a correlation of about .53 has been reported between the FTAB scale and the JAS in adult men (Byrne et al., 1985).

2.4.4 Bortner Type A Rating Scale (BRS)

The BRS (Bortner, 1969) consists of 7 and 14 items bipolar scales. Each scale contains two phrases separated by a 1.5 inch line. The pair of phrases represent two contrasting behaviors reflecting either the Type A or Type B behaviours. Some examples are, *Never late*- Casual about appointments, *Not Competitive*-*Very Competitive*, *Easy going*-*Hard driving* and *Satisfied with Job*-*Ambitious*. The italicised descriptors reflect the Type A behaviour pattern. Participants are required to draw a vertical line between the two extreme poles on the 1.5 inch line to indicate where they fall between the two phrases. A score is calculated by measuring to the nearest sixteenth of an inch from the beginning of the non-A end of the 1.5 inch line to the point marked by the participants. A higher score indicates evidence of the TABP characteristics. Ratings of the 14 items are totalled to obtain a Global Type A score (Bortner & Rosenman, 1967; Bortner, 1969).

The psychometric properties of the BRS are reported to be less well defined (Edwards, 1991). For example, evidence generated on its concurrent validity is somewhat obscure, with some studies reporting a higher prevalence of CHD among men with access TABP scores (Powell, 1987; Edwards, 1991). Other studies (French-Belgian Collaborative Group, 1982; Koskenvuo, Kaprio, Rose, Kesaniemik, Sarna, et al., 1988) have found no relationship between the prevalence of CHD and high TABP scores. The test-retest reliability of the BRS has been reported to range from 0.68 to 0.84 for the full scale (14 items) version (Johnston & Shaper, 1983) and from 0.72 to 0.74 for the short seven-item version (Price, 1979). However, the scale was not correlated with the JAS but was

reported to have a 66 % agreement rating with the TABP classification by the Structured Interview (Byrne, 1987). There is also very little prospective data linking the TABP measured by the BRS with evidence of CHD (Mann & Brennan, 1987) and this shortfall has been criticised as one of the fundamental limitations of the usefulness of this instrument as a Type A measure (Byrne, 1987).

2.4.5 Summary

The literature documents a range of TABP measurement techniques with the SI being claimed as the ideal choice of assessing the Type A behaviour. However, the SI also has several practical limitations curtailing its usefulness as a measure of the Type A behaviour. It is an expensive technique in terms of training for its appropriate administration and interpretation. The SI requires expertise, time and resources for a proper use of this approach in assessing the Type A behaviour. In addition, it is generally unsuitable for large-scale population studies. These shortfalls have subsequently led to the development of self-administered measures of the Type A behaviour as substitute for the Structured Interview. The most commonly used instruments are the JAS, FTAB and Bortner Rating Scale. The JAS and FTAB have been validated in prospectively designed studies and both measures have been linked to the risk of CHD compared with the Bortner Rating Scale. However, when considering in totality the psychometric properties of these self-administered Type A questionnaires, the JAS appeared to be psychometrically superior to the FTAB and Bortner Rating Scale (Powell, 1987; Edwards, 1991). For example, the concurrent validity of the FTAB and BRS is generally

weaker than the JAS (Powell, 1987; Edwards, 1991) and a lack of sufficient prospective data linking the BRS with CHD has been criticised for its usefulness as a measure of the Type A behaviour pattern (Byrne, 1987). Overall, there is more evidence linking the TABP measured by the JAS with major coronary events than the other questionnaires combined (Chesney & Rosenman, 1983). Another consideration must surely rest on the use of the JAS across cultures (Cohen & Reed, 1985; Wilson, Mutero, Doolabh & Herzstein, 1989; Schaubroeck & Williams, 1993). The JAS appears to be widely used in different societies apart from the US and other similar Western countries and the psychometric properties of the JAS have been assessed in some of these societies with the findings reported as comparing acceptably well with the US norms (Zyzanski, Wrzesniewski & Jenkins, 1979; Appels, Jenkins & Rosenman, 1982). The evidence on the risk of CHD provided by using some of these instruments are described in the next section.

2.5 THE TYPE A BEHAVIOUR AS A RISK MARKER

The TABP is now established as a CHD risk marker. A panel of eminent medical and behavioural scientists (National Heart, Lung and Blood Institute (NHLBI), 1981) after carefully reviewing prospective evidence on the association between the TABP and CHD made the following statement:

The review panel accepts the available body of scientific evidence as demonstrating that Type A behaviour... is associated with an increased risk of clinically apparent CHD in employed, middle-aged US citizens. The risk is greater than that imposed by age, elevated values of systolic blood pressure and serum cholesterol, and smoking and appears to be of the same order of magnitude as the relative risk associated with the latter three of these other factors (p.1200).

This formal acceptance confirmed the TABP as an independent risk marker that is greater than, or in the same order of magnitude as the relative risk imposed by the classical coronary risk factors. However, over the last 3 decades several major studies have also failed to replicate the data supporting the coronary risk associated with the Type A behaviour. The conflicting findings have raised serious questions about the pathogenic nature of the Type A behaviour and have also led to a re-think of the alternative conceptual models in assessing the Type A behaviour pattern. The discussion in this section focus on some data supporting and questioning the risk attributed to the Type A behaviour pattern.

2.5.1 Positive Prospective Evidence

Several population and cross sectional studies have investigated the risk attributed to the Type A behaviour pattern. The findings of at least two studies using rigorous methodologies, namely the WCGS and Framingham study have formed the basis upon which the TABP was formally endorsed as a CHD risk marker. The two studies and some cross-sectional studies are described to illustrate some of the positive evidence produced on the risk linked to the Type A behaviour pattern.

The WCGS was initiated in 1960 to provide some confirmatory data on previous cross-sectional evidence linking the TABP with coronary heart disease (Friedman & Rosenman, 1959). A cohort of 3,411 men aged 39 to 59 years and clinically free of CHD were assessed in this prospective study spanning about 8.5 years (Rosenman et al., 1964). These men were employed in 11 corporate organisations in Los Angeles and San-Francisco-Oakland areas in the United States. A baseline profile of a host of risk factors

were established in this study. The risk factors examined included the TABP assessed through the SI, serum lipids and lipoproteins, blood coagulation, blood pressure, presence of arcus senilis, personal history and illness history, diet and weight, parental history of CVD and longevity, habits such as physical activity at work, smoking, exercise and data on socio-economic status of participants.

The original sample consisted of 3,524 men. After detailed assessments of the risk factors, 113 men were eliminated from the WCGS because evidence of CHD was detected in these men. The remaining 3,411 men free from known CVD or symptom and other serious illnesses took part in this study (Rosenman, et al., 1964). Based on the SI, 1,771 men (52.0 %) were classified as Type A and 1,640 men (48.0 %) were classified as Type Bs. These men were followed over a period of 8.5 years.

The profiles of the 113 men with CVD are worth discussing to highlight the importance of the TABP as a CHD risk factor. Retrospectively, a higher percentage of these 113 men occupied jobs with a high degree of responsibility, had a positive parental history of CHD, smoked more cigarettes and had a history of high blood pressure (HBP) compared with the 3,411 men free from coronary heart disease. The observation of relevance here is that evidence of the TABP was reported by 80 (70.9 %) of these 113 men.

The first follow-up was conducted at the end of 1963 about 2.5 years after the initial assessment of the risk factors (Rosenman, Friedman, Straus, Wurm, Jenkins & Messinger, 1966). Several changes were recorded in this study. Firstly, 78 men were

subsequently found to be either above or below the cut-off ages of 39 and 59 years so they were omitted from further follow-ups. Secondly, 106 men were dropped because one organisation declined to continue on with the study. Finally, 45 participants were lost to follow-up due to deaths from non-cardiac diseases or re-location. These changes meant only 3,182 men were available for examination at this juncture. The results revealed that 70 of these 3,182 participants subsequently suffered an episode of coronary heart disease. Fifty-two of these 70 men (74.3%) had MI confirmed by electrocardiographic changes or autopsy data and 18 men experienced for the first time classical symptoms of angina pectoris. These 70 men reported greater prevalence of parental history of CHD, had higher mean serum cholesterol and triglyceride levels, and 85 per cent of the 39 to 49 year's age group and 72 per cent of 50 to 59 year's age group exhibited the TABP compared with the total group of men at risk. The Type A men in the age group of 39 to 49 years had 6.5 times the incidence of CHD and men in the age group of 50 to 59 years reported a rate of 1.9 times' risk of experiencing coronary disease complications.

The second follow-up about 4.5 years later also produced similar findings as previous follow-up (Rosenman, Friedman, Straus, Jenkins, Zyzanski & Wurm, 1970). A higher incidence of CHD was reported in all the Type A men. Adjusted annual rate of CHD for the Type A men was 8.9 per 1000, whereas the Type B men recorded a rate of 4.0 per 1000 individuals. Other results of relevance were, firstly the TABP, parental history of CHD, blood pressure and serum cholesterol were independently related to the risk of coronary heart disease. Secondly, the Type A men reported twice the risk of CHD than the Type B men when serum lipids, blood pressure, smoking, obesity and other risk

factors were statistically controlled. Thirdly, whilst the risk of CHD remained high for all the Type A men, the difference between older Type A and Type B men diminished statistically when other risk factors were held constant. As expected, the results also revealed that men who reported parental history of CHD, high level of education, HBP, smoking habits, higher levels of serum cholesterol, and triglyceride and beta-lipoproteins also reported significantly more evidence of CHD symptoms.

The final follow-up was carried out 8.5 years after the initial study of 1960. The results in this study remained consistent with the findings of previous follow-ups (Rosenman, et al., 1975). In this study, 257 men free of CHD at entry had suffered a major coronary event and 50 of these cases were reported to be fatal. Men classified as Type A recorded 2.92 times the risk of a fatal episode of CHD compared with a reported rate of 1.32 times for those classified as Type Bs. This result was maintained when statistically adjusting for the influence of other CHD risk factors. This study re-affirmed previous follow-ups that the TABP does produce a significant influence on the various manifestations of CHD, and that the link between the TABP and CHD is not an artefact of the interaction between the TABP and other CHD risk factors. In the words of Rosenman et al., (1975) ... "it seems that behavior pattern A indicates a pathogenic force operating in addition to, as well as in conjunction with, the classical risk factors" (p.877).

The Framingham Heart Study (Haynes, et al., 1978a; Haynes, et al. , 1978b) was initiated to study the effects of psychosocial factors (including TABP) in the development of CHD in men and women employed in white and blue-collar jobs. Unlike the WCGS,

this study included women in its sample. A cohort of 1, 822 men and women aged between 45 and 77 years were examined in this study. The main question addressed was whether certain psychosocial and behavioural factors will lead to CHD either independently of, or mediated through blood pressure, cholesterol and smoking. The TABP was assessed by the FTAB scale. This scale as previously described consisted of 10 items and was developed for men and women. In the case of women, a distinction was made between those employed and housewives. Housewives were given a similar questionnaire like the one given to working men and women with one alteration and that was, job related questions were directed at housework.

Several diagnostic criteria were used to ascertain the association between psychosocial and behavioural markers, and the manifestations of coronary heart disease. The diagnostic criteria included angina pectoris, uncomplicated angina and coronary heart disease. Individuals in these diagnostic categories scored consistently higher as Type As' on the FTAB scale. This result was particularly significant among men and women aged 45 to 64 years. The data also revealed that working women scored significantly higher on the Type A scale compared with housewives. Multivariate statistical analyses of the data revealed the Type A behaviour as an independent predictor of MI prevalence in men, and of total CHD prevalence in women when adjusting statistically the confounding influence of other risk markers such as age, blood pressure, serum cholesterol and cigarette smoking.

After 8 years, a follow-up (Haynes, et al., 1980) was carried out to assess prospectively the effects of psychosocial and behavioural factors on the incidence of CHD in the Framingham sample. The results were consistent with those reported earlier (Haynes et al., 1978b). Univariate data analysis showed men aged 55 to 64 years who reported high Type A behaviour score experienced workload, suppressed hostility and frequent promotions were at an increased risk of developing coronary heart disease. The most important observation for men was that those aged 45 to 64 years in white-collar jobs reported a twofold risk of angina and CHD compared with the Type B men. Adjusting for the effects of other risk factors and other psychosocial factors, the Type A behaviour remained an independent and statistically significant predictor of MI and total coronary events. In addition, females aged 45 to 54 years who scored significantly higher on the FTAB and tension scales also reported a twofold risk of CHD and a threefold risk of angina compared with women classified as Type B. The results also showed that tension, anxiety and suppressed hostility were positively associated with the incidence of CHD in women aged 55 to 64 years. Multivariate analyses controlling for the effects of other risk factors established the TABP as an independent predictor of CHD in women aged 65 and under.

Both the WCGS and Framingham studies provided unequivocal evidence on the pathogenic nature of the Type A behaviour. The two studies employed rigorous methodologies, and with the use of non-clinical population, these studies were able to show that men and women clinical free of coronary symptoms but displaying the TABP were twice as likely to experience CHD symptoms at follow-ups compared with those

classified as Type Bs. What was absolutely crucial about the results in these studies was that the risk attributed to the TABP was independent of the influences of other traditional CHD risk factors like serum cholesterol and smoking. As previously described, these prospective studies were conducted in light of the cross-sectional evidence showing a link between behaviour and the risk of coronary heart disease (Friedman & Rosenman, 1959). Many more cross-sectional studies over the years have replicated these initial findings of the predictive value of the Type A behaviour adding further support to the TABP as a CHD risk factor. Some of these studies are described next to illustrate the data from positive cross-sectional studies on the link between the TABP and the risk of various forms of coronary heart disease.

2.5.2 Positive Cross-Sectional and Case Control Evidence

The Belgian Heart Study (Kornitzer, Kittel, De Backer & Dramaix, 1981) is one major population based study that has provided some retrospective evidence supporting the relationship between the TABP and coronary heart disease. This study surveyed 380 males aged 40 to 59 years working in 30 factories in Belgium. The factories were paired off and each pair of factories was assigned an intervention group and a control group. Participants in the intervention groups, as well as 10 per cent of the control groups were invited for an assessment of the CHD risk factors. Eighty-seven per cent of the participants responded and were assessed for the self-reported cardiovascular symptom of angina, smoking habits, educational qualification, socio-economic status, marital status, serum cholesterol and the Type A behaviour pattern. The 1969 version of the JAS was

completed by participants in the intervention groups and 10 per cent of control groups. The SI was also administered to the 10 per cent of the control groups and the classification of the TABP was validated by 3 independent reviewers who produced an agreement rating of 70 per cent.

The results reported in the Belgian Heart Study (Kornitzer et al., 1981) were based on 6,112 participants in the intervention groups, which represented 93 per cent of participants screened for CHD risk factors. Participants without the clinical symptoms of CHD reported the lowest score on the Global and S scales, whereas participants without angina but also classified in the category of an unknown ECG abnormality reported access TABP scores on the J and H scales. Further examination of the results between participants reporting evidence of angina and those with ECG abnormalities revealed that participants with angina reported high TABP scores on the Global, S and H scales. Overall, the TABP assessed by the JAS was related to the reported evidence of coronary heart disease. More specifically, men who scored significantly higher on the Global scale also reported evidence of CHD symptoms such as angina pectoris and ECG abnormalities. The TABP also remained an independent risk marker after adjusting for the influence of the other risk factors.

In a another study (Jenkins, Zyzanski & Rosenman, 1976), 267 men who were diagnosed with at least one CHD either during or before the WCGS was initiated and who could be followed prospectively were assessed along with the non-clinical sample in the Western Collaborative Study. At follow-up, 67 reported symptoms of MI and further

statistical analyses showed that Type A scores from the JAS emerged as significant predictors of recurrent MI events after controlling for other risk factors measured in the Western Collaborative study.

2.5.3 Coronary Angiography Evidence

Zyzanski, et al. (1976) reported a positive correlation between the TABP and arterial obstruction in two or more coronary arteries of 94 men aged 26 to 68 years. These men were requested to complete several tests assessing the TABP, anxiety, depression and neuroticism before undergoing diagnostic coronary angiography because they reported a variety of CHD manifestations such as angina, ECG changes and congestive heart failure. The TABP was assessed by the Jenkins Activity Survey. The degree of obstruction in four major coronary arteries was assessed independently by cardiologists. The results revealed that patients with the greatest coronary obstructions scored positively as Type As on the JAS than those with less coronary obstruction. Those diagnosed with serious coronary obstruction also scored significantly higher on the anxiety and depression scales, but not the neuroticism scale. Multivariate data analyses revealed that the relationship between the JAS scales and the extent of atherosclerosis were independent of the influence of other factors such as anginal pain or congestive heart failure.

Frank, Heller, Kornfeld, Sporn and Weiss (1978) reported a positive link between the TABP and atherosclerosis obstruction in the coronary arteries of 124 male and 23 female patients aged between 25 and 26 years. This study aimed to further confirm the findings of a previous study (Zyzanski, et al., 1976) of a positive association between high JAS

scores and evidence of arterial obstruction in patients reporting clinical manifestations of heart disease. Patients in this study (Frank et al., 1978) were assessed on a number of CHD risk factors, namely serum cholesterol, smoking, hypertension, sex, age and the Type A behaviour pattern. The Type A behaviour was assessed by the SI and patients were classified as Type As or Type Bs using the five refined SI classifications. Over 50 per cent of patients reported themselves as Type As and the results showed that all the risk factors including the TABP was significantly correlated with disease severity. Correlation between the TABP and severity of the diseased arteries were in the same order as the other risk factors assessed except serum cholesterol. However, when all these risk factors were entered in a multiple regression equation, the TABP accounted for a significant proportion of the disease variance above and beyond the cumulative effects of all the other risk factors including serum cholesterol on the severity of disease arteries. Inclusion of serum cholesterol in the regression analysis failed to eliminate the effects of the TABP as an independent predictor of coronary heart disease.

Blumenthal, Williams, Kong, Schanberg and Thompson (1978) examined whether the reported link between the TABP and CHD outcome will also include coronary atherosclerotic process. One hundred and fifty-six patients referred for diagnostic coronary angiogram also underwent assessments for CHD risk factors, as well as, an assessment of the TABP using the Structured Interview. The SI classification of the TABP was validated by independent reviewers with an agreement rating of 84 per cent. The data on other risk factors such as history of cigarette smoking, serum cholesterol and history of CHD were collected independently by staff who had no knowledge of the

behavioural status of the patients. A positive correlation was established between the TABP and severity of atherosclerosis in the coronary arteries and the TABP remained statistically significantly related to arteriographical evidence of atherosclerosis when adjusting for the influence of gender, age, blood pressure, cholesterol level and history of cigarette smoking. In addition, the TABP was also associated with lipid metabolism and a positive history of hyperlipidemia. This study concluded that the TABP may contribute to the risk of CHD through the atherosclerotic process, independently of other risk factors.

2.5.4 Summary

The positive evidence generated from prospective and cross-sectional studies have demonstrated a clear link between the TABP and the risk of coronary heart disease. The NHLBI (1981) after reviewing carefully the positive prospective evidence generated on the pathogenic nature of the TABP confirmed this psychosocial factor as an independent CHD risk factor. However, despite this support for the TABP as a risk factor some longitudinal and cross-sectional studies in the 1980s have also failed to further confirm the predictive value of the Type A behaviour. Evidence from these studies has created some doubts as well as controversies about the pathogenic nature of the Type A behaviour. The debate generated from these conflicting data on the TABP has led some to question seriously the pathogenic nature of the TABP (Eysenck, 1990), whereas others have argued the importance of re-addressing the pathways through which the predictive value of the TABP can be explained (Ganster, 1986; Matthews, 1988; Byrne, 1996). In this case, the possible mechanisms through which the TABP exerts its pathogenic

influence on CHD have emerged to play a pivotal role in the debate on the conflicting data on the Type A behaviour pattern. Some of the null findings that have generated controversies on the TABP as a precursor of the CHD are described next.

2.5.5 Negative Prospective Evidence

The Multiple Risk Factor Intervention Trial (MRFIT, 1982) is one notable prospective study that failed to replicate the evidence on the risk associated with the Type A behaviour. This study assessed the effects of a multi-factor intervention program on mortality from coronary heart disease. Twelve thousand eight hundred and sixty-six men aged between 35 and 57 years were recruited and assessed over a period of 7 to 8 years. These men were randomly assigned into a usual health care group and the other a special care group for this study with approximately equal number of men in each group. The special care group underwent interventions designed for some risk factors such as cholesterol levels and cigarette smoking, and the health service group was also taken as controls. Participants in both groups were assessed on the TABP at entry in this study by the SI and Jenkins Activity Survey. The SI was limited to some clinics because of the sample size, and the cost and time involved in carrying out the interview. The results showed that the TABP assessed by the SI was not significantly associated with the risk of first coronary death or definite nonfatal MI at follow-up. The results also failed to further confirm the TABP as a predictor of major coronary events when statistically adjusting for other risk factors in the study group. Similar results were obtained for the TABP measured by the Jenkins Activity Survey. The Type A behaviour scores on the JAS scales

were not significantly associated with major coronary events. Similarly, multivariate analyses of the TABP with other risk factors failed to uphold statistically the predictive value of the TABP as measured by the Jenkins Activity Survey. The limitations of this study are described next (see Case, Heller, Case, Moss et al., 1985).

The Multicenter Post-Infarction Program (Case, et al., 1985; MRFIT, 1982), which is part of the MRFIT study was designed to measure the risk factors that influenced long term survival after myocardial infarction. This study tested the hypothesis that Type A patients reporting the TABP would suffer a higher mortality rate than the Type B patients. The Type A behaviour was assessed by the JAS in 516 patients who undertook the study within two weeks after an acute episode of MI and followed over 3 years. This study failed to further confirm an association between the TABP measured by the JAS and various outcomes, namely total mortality, cardiac mortality, time to death for non survivors, left ventricular ejection fraction, or duration of stay in hospital. The negative findings remained unaltered when men aged 60 and below were considered separately in the statistical analysis to approximate more closely the JAS norms in the Western Collaborative Group study. Further statistical analysis using patients with extreme Type A and B scores on the JAS produced no predictive value on coronary outcomes. In addition, when adjusting for the potential confounding effect of beta-blocker therapy (given to 30 per cent of patients) on the expression of the TABP, this effort also failed to alter the negative findings. The negative results may have been the artefacts of a "behaviourally selected population", or "left ventricular dysfunction" instead of the Type A behaviour *per se*. With the first explanation, it could be that because the JAS was administered after

infarction, it may be possible that, patients with the TABP may have experienced increased fatality rate, thus, the population that survived infarction and undertook this study may have been expressing the Type B behaviour instead of the Type A behaviour. In fact, the results did show that patients scored as Type Bs on all the JAS scales except the H scale. It would have been ideal to use a control group in this study to cross validate the results produced. The second plausible explanation is based on the influence of left ventricular dysfunction. According to the authors (Case et al., 1985), this dysfunction in the cavity of the heart can be a dominant factor in influencing post infarction mortality. It is therefore likely that this dysfunction may have blocked out any effect the TABP may have on long-term mortality. Apart from these specific potentially confounding factors, problems associated with self-reported measures could have contributed to the results produced in this study. The results produced through JAS may have reflected the limitations of self-reported measures as opposed to the Structured Interview (Powell, 1987; Bernard & Krupat, 1994).

The Aspirin Myocardial Infarction Study (AMIS) (Shekelle, et al., 1985) also tested the hypothesis that the TABP is associated with the risk of recurrent major coronary events of nonfatal MI and coronary death. Four thousand five hundred and twenty-four individuals who had suffered an episode of MI and were attending 30 clinics in the US were recruited and randomly assigned to two treatment conditions - one with aspirin and the other placebo. They were monitored for fatal and nonfatal coronary events over a 3 year period. Two thousand three hundred and fourteen participants in 18 of these clinics were requested to complete the JAS as part of the study. Participants completed the JAS

after they were randomly selected into the conditions designed for the study. Participants who had a history of employment completed Form E of the JAS and the rest were given Form N. The study failed to replicate the evidence linking the TABP with coronary heart disease. The JAS scores reported by 244 women, 2, 070 men and a subgroup of 671 men employed full-time in professional, technical and managerial positions were not statistically related to the risk of recurrent coronary events. Instead, patients with the lowest Type A scores had the highest CHD risks. Statistical adjustments of the established risk factors such as age, serum cholesterol and triglyceride did not alter the negative findings between the TABP and the risk of coronary heart disease. The Type A behaviour remained a poor predictor of the risk of recurrent major coronary events in patients scoring high on the JAS scales. It may just be possible that 14 per cent of the patients who did not take the JAS may have biased the results, or it may be possible that individuals in the aspirin group may have differed systematically in personality from those in the observational group and this potential difference may have modified the link between the TABP and coronary heart disease (Shekelle et al., 1985). One other criticism of this study (which has similar implications for other negative studies), is that the predictive value of the TABP did not appear to be the central focus of this study, but an inclusion as an afterthought (Byrne & Reinhart, 1995). This could have influenced the predictive value of the Type A behaviour. For example, patients diagnosed with CHD and educated about potential risk factors may have modified their high risk habits leading to a reduced risk of future coronary events. Knowledge gained on risk factors may have reduced the likelihood of these patients expressing the Type A behaviour pattern.

Ragland and Brand (1988) examined the relationship between the TABP assessed by the SI and subsequent CHD mortality using 257 men diagnosed with CHD from the 8.5 years' follow-up of the Western Collaborative Group Study. One hundred and thirty-five men were diagnosed with myocardial infarction and of these, 26 men died suddenly or within 24 hours of the onset of coronary symptoms. No reported association was established between the TABP and mortality in these 26 men. Seventy-one men were diagnosed with silent MI based on electrocardiogram evidence and 51 men reported classic angina symptoms. For data analysis, these patients were divided into two groups; those who died suddenly or within 24 hours of the onset of symptoms, and those who survived their initial symptoms for at least 24 hours. The reason for classifying patients into these time categories was to establish whether short-term and long-term outcomes related differently to the risk factors. The findings were unexpected because the Type A patients died at a rate substantially lower than the Type Bs among patients who survived for at least 24 hours. The mortality rate for the Type A men was reported as 19.1 per 1000 person-years averaged over 12.7 years, whereas the rate for the Type B men was 31.7 per 1000 person-years averaged over 11.5 years. The rate for the Type A men was most certainly lower and not consistent with the conventional expectation of the risk associated with the Type A behaviour. On the question of short-term outcome, that is within 24 hours, almost identical CHD mortality rates were established between the Type A and Type B men. The results showed that the Type A men reported a 19.0 per cent mortality rate from CHD compared to 19.4 per cent rate for the Type B men. These findings remained constant after adjusting for other risk factors examined in the Western

Collaborative Group Study. Careful statistical examination of these findings were upheld. The inverse results described remained statistically significant. In addition, there was no significant relationship between the TABP and other risk factors to compound the unexpected results of a negative association between the TABP and CHD case fatality rate.

The criticisms of this study (Ragland & Brand, 1988) are similar to those described in other negative studies. For example, it is possible that the Type A patients may have responded to their problem by taking a more positive approach in reducing future risk of coronary events as opposed to the Type B patients. This could have been achieved by way of compliance to treatment or changes to lifestyle. Secondly, the protective effect of the TABP could also have been due to differences in the identification of CHD among the Type A and Type B men in the WCGS sample. It may be possible that the Type A men sought treatment for their symptoms whereas the Type B men did not, leading to the Type A men reporting better prognoses compared with the Type B men. Thirdly, the temporal changes may have produced the negative effect of the Type A behaviour reported in this study. It is also possible that the Type As who also expressed various manifestations of CHD in the WCGS may have far lower future risk of CHD as was witnessed in this study compared to the Type B men. One final problem linked to this study was that, the TABP was measured 4.5 years prior to the assessment of CHD symptoms and it was not ascertained whether the TABP and the Type B behaviour have spontaneously changed before the coronary event was recorded and correlated with the Type A behaviour pattern. All these problems may have influenced the unexpected results

of a negative association between the Type A behaviour and CHD witnessed in this study (Ragland & Brand, 1988).

The negative results produced in prospective studies were replicated in studies based on cross-sectional designs. The negative cross-sectional and prospective evidence on the pathogenic nature of the TABP has become the subject of much controversy in recent years. Some cross-sectional evidence is described next to represent the sorts of negative data produced from some cross-sectional studies.

2.5.6 Negative Cross-Sectional Evidence

Dimsdale, Hackett, Hutter, Block and Catanzano (1978) examined the predictive value of the TABP in 109 patients aged between 18 and 70 years awaiting cardiac catheterisation in a General hospital. Patients were excluded from the study if they reported evidence of other symptoms of CVD such as valvular heart disease or cardiogenic shock, or presence of other major problems such as malignancy. These screenings were conducted prior to patients taking Form B of the JAS as part of a large baseline assessment of risk factors. Part of the intention of this study was to test the hypothesis that the TABP is associated with an increased risk of coronary artery disease. The results revealed that the TABP was not related to CHD using the index of a 50 per cent narrowing of coronary arteries. A follow-up a year later revealed the Type A behaviour as a poor predictor of increased morbidity compared with other factors such as severity of angina pectoris, history of MI, family history of heart disease and fatigue (Dimsdale, Gilbert, Hutter, Hackett & Block, 1981).

Barefoot, Peterson, Harrell, Jr., Hlatky, Pryor et al., (1989) examined the association between the TABP measured by the SI and survival from CHD in a group of patients. The TABP was assessed by the Structured Interview. Patients were interviewed and recruited in the study if they were found to have CHD symptoms. Several markers were used as indicators of CHD symptoms. These were 75 per cent narrowing of at least one coronary artery, admissions for first cardiac catheterisation and absence of unstable angina. Outcomes of empirical interests were cardiovascular deaths and total coronary events. Total coronary events included deaths and non fatal myocardial infarction. These categories were used to assess the ability of the TABP to predict nonfatal coronary heart disease. The independent variables were the TABP, disease severity and the interaction effect between the TABP and disease severity. Severity of the disease was assessed by two scores given the label "hazard" scores to reflect the degree of disease severity. The results showed that disease severity reflected by the hazard scores emerged as an excellent predictor of survival (Barefoot et al., 1989). Patients with the highest hazard scores, that is the most severe disease and high Type A scores reported better survival than the Type B patients. The Type A behaviour did not predict subsequent incidence of nonfatal myocardial infarction. These results were inconsistent with the expectation of a positive link between the TABP and CHD, and the authors (Barefoot et al., 1989) cautioned that these conflicting results could be due to several possible confounding factors. Firstly, there is this possibility that the SI assessment of the TABP was invalid because the assessment was taken in proximity to the coronary event. It is possible that the coronary event may have altered the patients' behaviours resulting in misclassification producing

the negative findings in this study. Secondly, the Type A patients may have reacted differently than the Type B patients by adopting superior psychological coping strategies, or they may have complied strictly to their intervention strategies such as effectively changing their risk habits. This action may have decreased their future risk of experiencing coronary events. The third explanation was that the Type As may have had a better survival advantage because mortality may have eliminated those who were less fit from the population. This may have resulted in a group of CHD patients with the TABP who are "biologically" harder than the Type Bs who have not been subjected to such intensive selection (Barefoot et al., 1989). The fitness advantage of the Type A patients may have produced the observed differences in survival. The only problem with this explanation is that it has not been empirically verified.

Langeluddecke, Fulcher, Jones and Tennant (1988) reported a negative association between the TABP and coronary atherosclerosis. The relationship between the TABP and atherosclerosis was assessed in a sample of 519 coronary angiography patients. The TABP was assessed by the SI and the Framingham measure. Forty-five per cent of the sample were classified as Type As on the SI classification (A1 or A2), and the SI and Framingham Type A scores was positively correlated. In addition, data were collected on other risk factors, namely family history of premature CHD, diabetes, history of hypertension, obesity, high serum cholesterol levels, high serum triglyceride levels and smoking. Seventy-eight per cent of patients had severe diseased arteries in at least one of the four major coronary vessels and the majority of these patients also reported experiencing angina. The results failed to demonstrate a significant relationship between

the TABP and severity of atherosclerosis at coronary angiography (Langeluddecke, et al., 1988). It was likely that these results could have been influenced by a number of factors (Langeluddecke et al., 1988). For example, the differences between the SI and Framingham measures may have contributed to the findings in this study. Alternatively, the use of various angiographic indices such as the thresholds of 50 vs 75 per cent occlusions and the classification of CHD disease in broad categories of mild, moderate, or severe coronary disease may have influenced the negative outcome produced in this study.

2.5.7 Summary

The evidence generated from early prospective and some recent cross-sectional studies have produced unequivocal support for the TABP as a CHD risk marker. This has led to the acceptance of the TABP as a reliable and independent predictor of coronary heart disease (NHLBI, 1981). However, the risk attributed to the TABP has also been questioned by the conflicting data produced on the TABP through some equally methodologically rigorous studies in recent years. These negative data on the pathogenic nature of the TABP has led to criticisms and doubts about the predictive value of the Type A behaviour. For example, host of issues ranging from a poor understanding of the pathogenic properties of this construct to measurement errors have been raised in relation to the contradictory evidence generated on the Type A behaviour. However, of equal importance as well, studies that have failed to replicate the positive association between the TABP and CHD could have been flawed for example by sampling only individuals

who are aware of their risk potentials and who may have taken corrective risk prevention strategies, or the lack of a relationship could have been associated with the limitations of self-reported measures as opposed to behavioural measures like the Structured Interview. Generally, the factors that may have contributed to the conflicting evidence on the Type A behaviour are not well known or established. However, efforts have been made to identify some potential explanations for these negative results. The next section attempts to provide an overview of some issues linked to the unsupportive findings produced on the pathogenic nature of the Type A behaviour.

2.6 EVALUATION OF CONFLICTING EVIDENCE

As yet, there are no entirely satisfactory explanations provided on the conflicting data produced on the Type A behaviour and the risk of coronary heart disease. However, some of suggestions have been offered to account for the contradictory results. One of the major concerns raised relates to the use of clinical samples, or high-risk groups to establish the predictive effect of the Type A behaviour. Many of the negative studies consisted mostly of patients diagnosed with various forms of cardiovascular disorders. A problem with the use of clinical samples as opposed to non-clinical samples is the potential buffering effect the TABP may have on future risk of coronary heart disease (Miller, Turner, Tindale, Posavac & Dugoni, 1991). For example, in some studies (Ragland & Brand, 1988; Barefoot et al., 1989), it was possible that individuals diagnosed with CHD and classified as Type A may have adopted and adhered to risk prevention strategies, which may have increased their survival prospects. The expression

of the Type A behaviour may have exerted a protective instead of a risk effect on the development of coronary problems. Another central issue is based on the possibility of measurement errors (Byrne, et al., 1985; Matthews & Haynes, 1986). For example, it has been reported (Byrne et al., 1985; Rosenman, 1990) that self-report questionnaires tended to measure attitudes rather than behaviours unlike the Structured Interview. In addition, some questionnaires failed to assess some of the crucial components of the Type A behaviour such as hostility and aggression, which have been claimed to exert far greater risk effect than the Global Type A behaviour (Thoresen & Powell, 1992; Miller, Smith, Turner, Guijarro & Hallet, 1996). A related issue is based on the argument that the SI developed primarily from middle-aged males employed in white-collar occupations may not be as useful a measure of the TABP in other population groups (Langeluddecke & Tennant, 1986; Langeluddecke et al., 1988). A further criticism of the negative results relate specifically to studies assessing the risk associated with the TABP and the extent of the arteriosclerosis. The use of refined outcome measures such as the degree of stenosis in diseased arteries have the advantage of a concise measure of the association between the TABP and CHD relative to the crude outcomes, such as angina pectoris. However, despite this major advantage, several methodological difficulties are linked to coronary angiographic studies limiting their usefulness. Firstly, many angiographic studies are cross-sectional in design, therefore, it is almost impossible to determine the temporal association between the risk factors and coronary heart disease (Matthews & Haynes, 1986). Secondly, suspected CHD is so crucial to angiogram studies and as such, the results cannot be generalised to the groups without clinical symptoms. Thirdly, there is

this possibility for referred patients to express other cardiac diagnoses and medical history such as cardiomyopathy or coronary artery bypass surgery together with CHD, and the combination of diagnoses may confound the actual association between CHD and the Type A behaviour. Apart from these problems, a host of other issues have been raised on these contradictory findings (see for example, Matthews, 1988). For example, the demographic variables such as culture and gender, may mediate the strength of the association between the TABP and CHD (Rosenman, 1986), or the TABP may only predict some manifestations of CHD such as angina pectoris and not myocardial infarction (Ragland & Brand, 1988).

In an attempt to clarify these conflicting data, individual components of the TABP have been considered as potential risk factors. Attempts at isolating individual components to identify the most toxic element of the TABP also represents a major epidemiological pathway in the research on this construct and its pathogenic nature. Some evidence linking the different components of the TABP with CHD is discussed in the next section.

2.7 TOXIC ELEMENTS OF THE TYPE A BEHAVIOUR

Some researchers have questioned if the single components of the TABP instead of the Global Type A are responsible for coronary heart disease (Thoresen & Powell, 1992). Studies have focused on some components of the TABP such as chronic anger and hostility (Williams, 1987; Spicer, et al., 1993; Kneip, Delamater, Ismond, Milford, Salvia & Schwartz, 1993), time urgency (Mueser, Yarnold & Bryant, 1987), and

expressive vocal behaviour (Seigman, Feldstein, Tomasso, Ringel & Lating, 1987) as potential toxic elements of this pattern of behaviour.

Evidence provided on the single components of the TABP has not been clear-cut nor consistent. For example, Keltikangas-Jarvinen and Raikkonen (1989) found hard-driving behaviour to correlate significantly with CHD whereas aggressive-competitiveness was moderately related to coronary heart disease. Impatient behavioural tendencies had no pathogenic influence on CHD, and a component of the TABP described as "engagement-involvement" had a protective effect on coronary heart disease. A meta-analysis by Booth-Kewley and Friedman (1987) of several studies on psychological predictors of CHD also found that the hard-driving and competitiveness behaviour measured by the JAS was significantly linked with CHD, whereas job involvement was negatively related to the risk of this disease. Speed and Impatience were only modestly linked to CHD and that the effect size of the Global Type A behaviour was much lower than was theoretically expected.

Evidence presented on the risk associated with the components of the TABP is somewhat obscure. However, one component of the TABP, namely anger and hostility, has been extensively investigated compared to the other components. Evidence generated on hostility is described to highlight the pathogenic risk linked to it.

2.7.1 Hostility as a Risk Marker

Hostility is given some emphasis because it has received more extensive research attention compared with other components of the TABP combined. At the outset it should also be

emphasised that data on the pathogenic potential of anger and hostility (thereof as hostility) are promising but controversial.

Hostility was first described as a component of the TABP by Friedman and Rosenman (1974). It was later isolated as a potential pathogenic element of the TABP by Williams and colleagues (Williams, Haney, Lee, Kong, Blumenthal & Whalen, 1980). Both persuasive and conflicting evidence has emerged on the risk attributed to hostility (Shekelle, Gale, Ostefeld & Paul, 1983; Barefoot, Dodge, Peterson, Dahlstrom & Williams, 1989, Dembroski, MacDougall, Costa & Grandits, 1989; Julkunen, Idanpaan-Heikkila & Saarinen, 1993). For example, Booth-Kewley and Friedman (1987) found hostility to be the strongest predictor of CHD compared to other components of the Type A behaviour.

A re-analysis of data from the WCGS also revealed that hostility was linked with the incidence of coronary heart disease (Hecker, Chesney, Black & Frautschi, 1988). Part of the results in the Framingham study also showed that "anger-in" (not discussing or expressing anger) was predictive of CHD in both men and women and this association was independent of the influence of the Type A behaviour pattern (Haynes et al, 1980).

Hostility was reported as a significant predictor of the incidence of CHD in 255 physicians studied over a period of 25 years (Barefoot, Dahlstrom & Williams, 1983). The results revealed high hostility scores as predictive of the incidence of CHD and total mortality. When adjusting for other risk factors such as hypertension, hostility scores remained significantly related to the manifestation of coronary heart disease. This

prospective evidence of an association between hostility scores in healthy men and the incidence of CHD led the authors (Barefoot et al, 1983) to conclude that hostility seemed to exert some sort of pathogenic influence on major coronary events.

As previously stated, not all studies have confirmed the positive link between hostility and the risk of coronary heart disease (Seeman & Syme, 1987). Evidence questioning the pathogenic influence of hostility has been produced in some equally good methodologically designed studies. For example, Barefoot, Peterson, Harrell, Hlatky, Pryor, et al., (1989) did not find any evidence confirming the Global Type A and hostility as predictors of non-fatal myocardial infarction. Siegman, Dembroski and Ringel (1987) reported a negative association between hostility and severity of CHD in 51 males and 21 females aged 31 to 79 years and educated from 5 to 21 years. Patients scheduled for coronary angiography were also assessed on other risk factors such as smoking habits, weight, family history of CHD, and blood pressure. Of relevance here was the results on hostility scores. Neurotic hostility was significantly inversely associated with the severity of CHD whereas the non neurotic hostility scores were positively related to the extent of the disease.

2.7.2 Summary

Overall, a similar conclusion arrived at on the pathogenic nature of the Global Type A can also be made on the single components of the Type A behaviour. This conclusion is that the single elements of the TABP offer an interesting prospect of addressing the risk associated with the TABP, however available evidence to date remains inconclusive due

to issues similar to those linked to the conflicting data produced on the Global Type A behaviour. Against this background, the potential interactive influence of other factors have been considered to resolve some of the issues surrounding the TABP and its components as CHD risk markers. In this regard, a host of environmental, cognitive, psychosocial and physiological factors have taken on greater importance in the search for alternative explanations of the predictive power of the Type A behaviour pattern. This has represented a major shift from the epidemiological models on the pathogenic nature of the TABP to more complex and multidimensional approaches in assessing the risk associated with the Type A behaviour. The underlying view is that other psychosocial and physiological factors could be acting in concert with the TABP to increase its predictive power as a CHD risk factor. One such psychosocial marker that offers some promise is the influence of occupational stress. The next section describes the evidence produced on the link between occupational stress and the expression of the Type A behaviour.

2.8 OCCUPATIONAL STRESS AND THE TYPE A BEHAVIOUR

Occupational stress has emerged as a promising mediating psychosocial variable in mapping the pathway between the TABP and coronary heart disease. At least two sets of empirical data have strongly implied the influence of occupational stress in the risk equation between the TABP and coronary heart disease. The first is associated with the characteristics of the TABP at work (Friedman & Rosenman, 1974; Rosenman, 1993). Chesney and Rosenman (1980) best captured a typical Type A person at work in the following ways:

(a) Type A persons experience time pressures because they underestimate the time required to do tasks. (b) Type A persons tend to work quickly and to show impatience and decreased work performance if forced to work slowly. (c). Type A persons ignore, suppress or deny physical or physiological symptoms while working under pressure, and report symptoms only when the work is finished. (d). Type A persons work harder and experience physiological arousal when a task is perceived as challenging. (e). Type A persons, along with hard-driving and competitive behaviours, express hostility and irritation in response to challenge or threat. (f). Type A persons need to be in control of the immediate environment to such an extent that a lack of control may elicit a hostile, competitive response. (g). Type A behaviour is generally related to occupational prestige, education, and income. (h). Type A persons describe their jobs as having more responsibility, longer hours and heavier workloads than do Type B persons. (i). Type A persons in general report the same levels of job satisfaction, anxiety, and depression as Type B persons (pp. 451-452).

It is therefore more probable that the TABP acting in concert with occupational demands may exert a greater influence on the risk of coronary heart disease (Chesney & Rosenman, 1983; Byrne & Reinhart, 1989, 1994). The second reason has to do with the conflicting data produced on job stress as a CHD risk factor. There is a wealth of evidence supporting as well as questioning job stress as a predictor of CHD (Cooper & Marshall, 1976; Rosch, 1994). Given this contradictory scenario, it is likely that the interactive effect between the TABP and job stress offers a more logical empirical pathway in addressing the pathogenic effect of psychosocial factors, especially the TABP as a predictor of coronary heart disease. To help clarify the relationship between job stress and the TABP, it is important that some background on the link between job stress and CHD are discussed to clarify this complex and somewhat loosely defined interactive empirical model.

2.8.1 Occupational Stress and General Health.

Stress reported at work evolves from a multitude of sources broadly classified under physical and subjective stressors (Sharit & Salvendy, 1982). Some examples of physical stressors are noise levels, poor lighting and illumination, poor thermal conditions, pollution, constant unprotective exposure to biological and chemically toxic agents and poorly designed work stations (Mackay & Bishop, 1984; Lindstrom & Mantysalo, 1987; Sutherland & Cooper, 1988; Carayon, 1993). Some subjective job stressors are experiences of workload, lack of job control, poor relationships with co-workers and family conflicts (Cooper & Marshall, 1976; Kelly & Cooper, 1981). It is well documented that human health can be severely affected from stress experienced at work. Some examples of health outcomes linked to job stress are HBP, CHD, ulcer, depression and anxiety. Job stress can also manifest itself in negative behavioural forms such as excessive drinking, job dissatisfaction, absenteeism or ideas about quitting employment (Holt, 1993; Repetti, 1993).

Margolis, Kroes and Quinn (1974) reported an association between job overload, low self esteem, low work motivation and increased alcohol consumption. Frankenhaeuser and Johansson (1986) reported an increased incidence of job distress symptoms in a sample of workers as a result of a combined effect of workload and the workers inability to control their pace of workload. Work underload, for example, boredom from daily work routine, having too little to do at work and not given the opportunity to use one's

skills, to develop full potential, can lead to increased levels of anxiety and depression (Wright, Bonett & Sweeney, 1993).

Ambiguous and conflicting job roles are reliable indicators of job stress (Holt, 1993). Role ambiguity denotes the extent of uncertainty workers have about their rights, responsibilities, methods, status, or accountability in their jobs. Experience of role conflict denotes inconsistent, incompatible, or inappropriate demands experienced by workers in their jobs. Role conflicts often emerged from over promotion, under promotion, lack of job security and thwarted ambition (Sutherland & Cooper, 1988). Studies have reported that individuals reporting role ambiguity and role conflicts have also experienced low levels of performance and productivity; job dissatisfaction, thoughts about quitting one's job and increased levels of anxiety (Moch, Bartunek & Brass, 1979; Greenhaus, Bedein & Mossholder, 1987; Barling & Macintyre, 1993).

Stress at work can also emerge from other less obvious markers of job stress like poor networks of co-workers' relationships and support system, career development such as over promotion, under promotion, status incongruence, lack of job security and issues associated with income (Cooper & Marshall, 1976; Kelly & Cooper, 1981; Sutherland & Cooper, 1988). Organisational atmosphere manifested as office politics, lack of effective consultation and communication, and restriction or non-participation in decision-making process can be stressful experiences (Cooper, 1983). Stress outside of work such as family problems, major life events and dual responsibilities of employed family members can affect the person's well-being and his or her ability to perform effectively at work

(Cooper, 1983). These forms of occupational stressors have been reliably linked with negative emotional well-being (Margolis et al, 1974; Wright et al., 1993), physical problems like hypertension (Kasl & Cobb, 1970) and muscular complaints (Sutherland & Cooper, 1988).

2.8.2 Summary

Some aspects of work can be stressful and it is well documented that a host of factors within and outside the work environment can contribute to stress experienced at work. Some factors linked to job stress experience are work roles, income, family conflict and dual roles of some workers. Work stress can manifest into negative outcomes like increase alcohol consumption, absenteeism and a deterioration in physical and psychological health. It is well documented now that job stress does correlate strongly with a host of health problems such as increased anxiety and depression, somatic symptoms such as fatigue and headache, and some serious diseases such as cancer and coronary heart disease. The association between CHD and job stress, which is the focus of this review, is described next.

2.8.3 Occupational Stress and Coronary Heart Disease

The link between CHD and occupational stress has received more attention because this disease remains a leading cause of premature deaths especially among people in active employment (Evans, 1991). Two sources of evidence have provided some insight on the relationship between job stress and coronary heart disease. One source of evidence is linked with the type or category of occupation that might be potentially stressful, for

example, holding managerial or blue-collar jobs (Haynes & Feinleib, 1980; Alfredsson, Spetz & Theorell, 1985; Eaker, Pinsky & Castell, 1992). The second source is based on the influence of job stressors such as work load, lack of support at work, or job control (Krantz, et.al, 1988). Evidence from these sources is not conclusive, but demonstrates at least two major empirical pathways in addressing the link between occupational stress and coronary heart disease (Cooper & Marshall, 1976; Byrne & Byrne, 1991).

2.8.3.1 Type of Occupation

Occupation *per se* can influence CHD outcomes. There is ample evidence to suggest that blue-collar workers are at an increased risk of developing CHD compared to white-collar workers (McMicheal & Hartshorne, 1982; Dobson, Gibberd, Leeder & O'Connell, 1985). For example, Bolm-Audorff and Siegrist (1983) examined the occupational characteristics of patients who had suffered their first episode of acute MI and found that patients in blue-collar jobs were significantly over represented in the incidence of MI relative to the total population. Data from one prospective study also showed that blue-collar workers were at higher risk of CHD compared to white-collar workers after statistically adjusting for other CHD risk factors (Siegrist, Peter, Junge, Cremer & Seidel, 1990)

Buring, Evans, Fiore, Rosner and Hennekens (1987) found that men who occupied blue-collar jobs were at a statistically significant risk of experiencing fatal MI compared to white-collar workers. Data from 568 men who have died from CHD was evaluated with an equal number of controls matching for age, gender and neighbourhood residence. The

workers occupations were dichotomised into blue and white-collar jobs. The results showed that workers in white-collar jobs had a 30 per cent decreased risk of fatal CHD compared with blue-collar workers. This result was maintained after statistically controlling for other known risk factors like medical history of CHD risk and life-style factors. The data indicated some support for white-collar jobs as having significantly decreased risk of death from CHD compared with blue-collar workers.

The relationship between grade of employment, coronary risk factors and CHD has been examined in prospective studies (Rose & Marmot, 1981). Marmot, Rose, Shipley and Hamilton (1978) found that workers in low employment status had 3 to 6 times risk of CHD mortality than those in senior management jobs. It was also evident from this study that mortality from CHD among men holding high job status is on the decline. Although these findings are partly explained by the observation that men in lower social class practised a high risk lifestyle, for example, they smoked more and exercised less, much of the difference, however remained unaccounted for. A caution is in order on the use of social class given the evidence, which strongly revealed marked differences in lifestyle habit practices by workers in professional and managerial jobs compared with unskilled blue-collar workers. Some high risk behaviours such as smoking, drinking and poor diet practices seemed to be more prevalent in the lower categories of the occupational strata (McMicheal & Hartshorne, 1980), therefore these high risk behaviours may confound the real influence of job stress *per se*.

2.8.3.2 Job Stressors

Single measures of job stress such as workload, role conflict and role ambiguity have been linked with the risk of coronary heart disease (Sales, 1970; Theorell & Floderus-Myrhed, 1977). Kittel, Kornitzer and Dramaix, (1980) investigated the incidence of MI in two cohorts of bank executives and clerks, aged 40 to 59 years in two Belgians' banking organisations for several years. One was a private banking organisation and the other a semi-public savings bank. In cohort I, which represented the private bank, 83 per cent of that sample was found to be free of CHD at entry in the study. In cohort II, which represented the public bank, 88 per cent reported no evidence of CHD at entry. The two banks had different work tempos. The private bank performed with a typically commercial function and had a history of hectic work pace, a competitive atmosphere and low employment security. The semi-public bank was less demanding, work was quite regular and monotonous and there was no atmosphere of competition for promotion among the staff (Kittel et al., 1980). The study revealed that workers in the private bank had an elevated incidence of MI compared to workers in the public bank regardless of the conventional risk factors. At 5 years' follow-up, the two groups differed significantly on the incidence rate of coronary heart disease. The incidence rate of CHD in workers in the private bank was significantly higher than that of workers in the public bank. A similar set of results was observed at 10 years' follow-up.

Theorell and Floderus-Myrhed (1977) assessed the concept of "workload" from a cluster of items created through factor analysis of 60 psychosocial variables assessing

social situations and work. The sample consisted of 5,187 building construction workers aged 41 to 61 years in Greater Stockholm. These workers have been in full-time employment without a long-lasting illness in the year preceding this study. This sample was followed for two years using three sets of registers, the nation-wide central death register, register of hospitalisations within the greater Stockholm area and register of sickness absence for those who live in the urban part of Stockholm. The "workload" index was demonstrated to be significantly associated with the subsequent risk of myocardial infarction (Theorell & Floderus-Myrhed, 1977).

Some studies have also failed to provide evidence supporting job stressors as predictors of coronary heart disease (Karasek, Baker, Marxer, Ahlbom & Theorell, 1981). Instead, more promising evidence has emerged from the interaction between job demands and low decision latitude (job control) and low social support (Karasek, 1979; Johnson & Hall, 1988; Karasek & Theorell, 1990; Kristensen, 1995). The proposition is that it is not job stress *per se* that leads to the risk of CHD, but the interactive effect of experiences of high job demands, low control (decision latitude) and lack of social support that exert a far greater risk of CHD than job stress alone. This hypothesis has received very strong empirical support. For example, men who described their jobs as hectic with little avenue for new learning have reported a high risk of CHD (Alfredsson, et al., 1985) and excessive work demands combined with boredom at work were reported to be a reliable predictor of the risk of coronary diseases (Theorell, Hamsten, de Faire, Orth-Gomer & Perski, 1987). Job control through intellectual discretion and work freedom has also been reported as a significant predictor of coronary heart disease

(Karasek, 1979; Karasek, Theorell, Schwartz, Schnall, et al., 1988; Theorell, 1989; Siegrist & Matschinger, 1989). Excess workload marked by active, repetitive jobs such as assembly labour and workload combined with conflicting demands have been linked to the risk of coronary heart disease (Jenkins, 1971; Jenkins, 1982; Jenkins, 1988). The combined effects of job demands and job control have also been positively linked with the incidence of CHD (Langosch, Brodner & Borcharding, 1983; Siegrist, 1984; Ganster & Fusilier, 1989) and remains a powerful predictor of the risk of coronary heart disease (Karasek & Theorell, 1990).

The influence of support at work has been considered as an important factor that may help explain the relationship between CHD and the pathogenic influence of psychosocial factors (Johnson & Hall, 1988; Kristensen, 1995). It is therefore useful to examine briefly some evidence on social support for the purpose of highlighting what influence social support may have on the risk of CHD, either independently, or through interaction with the Type A behaviour pattern.

2.9 SOCIAL SUPPORT AND CORONARY HEART DISEASE

The interaction between social support and the risk of CHD has received increasing research attention in the 1980s (Cohen & Wills, 1985; Buunk, Doosje, Jans & Hopstaken, 1993; Buunk & Peeters, 1994). Evidence generally showed that workers receiving support from their superiors and co-workers were at a far lower risk of suffering health related problems than those with no support at work (Terry, Nielsen & Perchard, 1993). Prospective studies have also revealed an increased risk of CVD among

people with few social support networks (Cohen, et al., 1987; Orth-Gomer, Rosengren & Wilhelmsen, 1993; Kulik & Mahler, 1993). Despite these data, relatively little is still known about the influence of social support on the risk of cardiovascular diseases (Seeman & Syme, 1987; Blumenthal, Burg, Barefoot, Williams, Haney & Zimet, 1987).

Seeman & Syme (1987) compared the relative importance of two aspects of social network ties that is, emotional support and size and type of social ties to determine their influence on the risk of CHD in a sample of 119 men and 40 women undergoing coronary angiography. They found that instrumental support and feelings of being loved that is the function or content of the social ties emerged as reliable predictors of coronary atherosclerosis than the network size or mere presence of social ties. This result was independent of the other biochemical and behavioural risk factors also measured in this study. Blumenthal et al., (1987) examined the interaction between the TABP and social support in relation to the severity of CHD in 113 patients undergoing diagnostic coronary angiography. The Type A behaviour was assessed using the Structured Interview. This study revealed that CHD was inversely related to the level of social support for the Type As but not the Type Bs. The Type A patients experiencing low levels of social support reported severe CHD compared with the Type As reporting high levels of social support. This relationship was not present in the Type B patients.

A number of other studies have also linked social support and the TABP to the risk of coronary heart disease. For example, a prospective study on a sample of 6000 men and

women in Alameda county, California, found that mortality rates from CHD were twice as high among participants with fewer social ties after controlling for other factors like socioeconomic status, alcohol, obesity, race and health status (Berkman & Syme, 1984). Other studies have revealed consistent results linking lack of support with an increased risk of coronary heart disease. One such example is the Framingham study (Haynes & Feinleib, 1980).

Social support has been included in recent investigations of the effects of psychosocial factors on the risk of coronary heart disease. Available empirical evidence has provided some data on the influence of lack of social support in the development of CHD and social support acting in concert with the TABP seemed to also exert a far greater influence on the risk of CHD than TABP acting independently as a CHD risk factor. Though not crucial to this review, the influence of social support does add further credence to the multidimensional approach of addressing the pathogenic risk of the Type A behaviour on the manifestations of various coronary problems.

2.9.1 Summary

Two major pathways were used to examine the relationship between the CHD and aspects of the occupational environment. One source of evidence is linked to the type of job and the other is job stressors. The first view asserts that workers in lower occupational strata like clerical workers are at an increased risk of CHD relative to those in higher job status such as managers. The second view proposed that the experiences of job stress acts as a precursor of the risk associated with CHD and here, the interactive

effect between job stress and ones control over the work environment emerge as a more reliable predictor of the risk of coronary heart disease. This position seems far more complete with the inclusion of additional psychosocial factors like support at work. There is evidence to suggest that inadequate support or lack of it can be a source of stress and this factor acting in concert with the TABP may also exert a greater influence on the risk of CHD, just like the interaction effect between job stress and the Type A behaviour. These empirical pathways remain tenuous at best because there is still a wealth of conflicting data produced on these empirical pathways. Some of these conflicting evidence is described next.

2.10 CONFLICTING EVIDENCE ON OCCUPATIONAL STRESS AS A RISK MARKER

Some studies have also failed to provide supporting evidence on job status and job stress as potential CHD risk markers (Magnus, Matroos & Strackel, 1983). Others have reported conflicting data, for example, Haynes and colleagues (Haynes, et al., 1978b; Haynes et al, 1980) reported workload as a predictor of CHD only in older men but not younger men. In addition, male clerical and sales workers reported the lowest incidence of CHD, professional workers and managers reported the highest CHD incidence, and blue-collar workers reported a moderate CHD incidence compared with the two groups. This finding is quite a contrast from the expectation that blue-collar workers are general at a greater risk of developing CHD compared with professional and managerial workers (Marmot et al., 1978; Rose & Marmot, 1981).

2.10.1 Summary

The conflicting data has led some (Byrne & Byrne, 1991) to propose that jobs, or activities from the occupational environment *per se* may not be the strongest predictors of coronary heart disease. Instead, the interaction between the occupational environment and characteristics of the individual appear as a more promising prospect of assessing the effects of psychosocial factors on coronary heart disease (Byrne & Byrne, 1991, p. 239). This proposition is supported by empirical evidence which shows positive correlations between the TABP, job stress and other aspects of working life. For example, Keenan, and McBain (1979) investigating the effects of job stress and strain on the manifestation of the TABP in managers and found a positive correlation between role ambiguity, role conflict, work overload, job tension at work and job dissatisfaction with expression of the Type A behaviour pattern. Orpen (1982), assessed the relationship between the Type A behaviour and job stress as measured by role ambiguity, role conflict and role overload, and reported that role conflict and psychological and physical strain was significantly higher among managers who identified themselves as Type A than managers who reported Type B behaviour pattern. Jamal (1990) examined the association between role ambiguity, work overload, role conflict and resources inadequacy among full - time nurses and found that nurses who identified themselves as Type A on the Bortner Rating Scale reported high job stress experiences and serious psychosomatic problems compared with the Type B nurses.

2.11 OCCUPATIONAL STRESS AND THE TYPE A BEHAVIOUR

Howard, Cunningham and Rechnitzer (1977) examined the relationships between the TABP and certain work patterns and job characteristics in 236 managers. The Type A behaviour was measured by the Structured Interview. Sixty-one per cent of managers were classified as Type A and 39 per cent were classified as Type B. Using the refined categories of the SI, 27 per cent of managers were classified as extreme Type A (A1), 34 % were classified as A2, 27 % as B1 and 12% as extreme Type B. The influence of age and education on the TABP were assessed and the results showed that lower levels of education were associated with the prevalence of the Type A behaviour pattern. The Type A behaviour also declined with age and a high percentage of the TABP (68 %) was reported by participants in the 36 to 45 year's age bracket. According to the researchers, job issues take on a sense of emergency around this age range, therefore, it is expected that participants in this age group are more likely than those younger or approaching retirement to express higher TABP tendencies. The Type A behaviour was also associated with company growth. In addition, the results showed that the Type A individuals tended to work more hours per week, travelled more days per year and were less satisfied with their jobs. The findings in this study are consistent with the expected trend of a relationship between the TABP and challenges of the occupational environment (Rosenman, 1993; Friedman & Rosenman, 1974), as well as other aspects associated with the occupational environment such as occupational strata and educational qualifications (Chesney & Rosenman, 1980; Byrne & Reinhart, 1995).

Sorensen, Jacobs, Pirie, Folsom, Luepker and Gillum (1987) examined the relationship between the TABP measured by the JAS and working hours, occupational mobility and job related interaction. A total of 2,512 men and women took part in this study. The TABP was statistically related to long working hours, high occupational mobility and lack of support from co-workers in both male and female workers. The TABP was highest among workers working 40 hours or more per week and was positively linked with job mobility and poor co-workers relationship at work. The results also revealed that older men and women reported the lowest Type A scores and the TABP peaked for men in the age group of 35 to 44 years, whereas for women, the highest Type A scores were reported by the youngest age group of 25 to 34 years. Education was also related to the expression of the TABP with high TABP scores reported by both males and females with high levels of education.

The relationship between the TABP, career aspirations, and role conflict was investigated using a sample of 80 full-time faculty members in a university (Greenglass, 1991). The study sample consisted of females. Most participants held doctoral degrees, were employed at associate professorial level, and were married with children. The TABP was measured by the Jenkins Activity Survey. These participants scored above the standard mean of zero on the Global, S and J scales, however they reported low scores on the H scale. Scores on the Global and S scales correlated significantly and positively with the reported evidence of role conflict as reflected by the participant's role as a professional, spouse, and a parent. The TABP was also statistically associated with the number of hours spent at work, the number of hours spent on child care, home

maintenance activities and professional work. The number of hours spent working at home and professionally accounted for a significant proportion (43 %) of the variance in the Type A scores.

Boyd (1984) explored the relationship between the TABP and corporate performance using a sample of 368 chief executive officers in the New England area in the United States. This study tested three hypotheses associated with the TABP and aspects of work life. Firstly, these business executives will report a high prevalence of the Type A behaviour. Secondly, increased TABP tendency will correlate with increase return on the firm's investment. Finally, increased TABP tendency will correlate with increase sales revenue. The TABP was assessed by the Jenkins Activity Survey. Annual returns on investment were used as a measure of profit and organisational growth was measured by average annual change in sales revenue over a five year period (Boyd, 1984). The results revealed that most of these executives (82 %) reported the TABP by scoring above the arbitrary mean of zero on the Global scale. Corporate performances plotted against the Type A scores revealed that, firms operated by executives who scored above the mean of zero on the J scale also reported a higher return on investments and greater five-year growth in sales revenue compared with firms managed by executives who scored below the arbitrary mean of zero on the J scale. No statistically significant differences were observed between the Type A and Type B executives on the other JAS scales.

2.11.1 Summary

It is obvious from the data produced on the association between occupational stress and the TABP that the two psychosocial variables are correlated. Evidence reviewed points in the direction of a positive correlation between the TABP markers of job stress like role ambiguity, role load and role conflict. Evidence also suggests that the TABP is linked with long working hours, occupational mobility and lack of support at work. In addition, the evidence also seemed to suggest strongly that the TABP is linked with high occupational strata and educational qualifications, and the data here does not appear to discriminate between male and female workers. Furthermore, the data also seemed to suggest that the expression of the TABP seemed to decline with increasing age. Generally, the evidence here adds further support to the original conceptualisation of the TABP as a pattern of behaviour that is stimulated and reinforced by the challenges of the external environment (Friedman & Rosenman, 1974; Rosenman, 1993).

2.12 CONCLUSION

The TABP was coined as an explanatory epidemiological construct in CHD, and it has been demonstrated in some prospective and cross-sectional studies that individuals with the TABP reported an elevated risk of CHD compared with those expressing the Type B behaviour pattern. The risk imposed by the TABP was independent of and in the same order of magnitude as other traditional risk markers of coronary heart disease. The positive evidence produced on the pathogenic nature of the TABP led a group of eminent behavioural and medical scientists to formally accept the TABP as a CHD risk

factor. However, despite this formal endorsement of the TABP as a CHD risk marker a shadow of doubt continues to prevail over its pathogenic nature. This is attributed largely to some equally good methodologically designed studies, which failed to replicate the positive evidence endorsing the TABP as a CHD risk factor. This data has led to serious questions being raised on the pathogenic nature of the Type A behaviour pattern. Alternatively, this controversy has also offered an opportunity to address new empirical questions that might explain the nature of the link between the TABP and coronary heart disease. The latter issue has resulted in the development of theories which approached the question of the risk associated with the TABP within a complex multidimensional pathway rather than the traditional epidemiological models. Central to this effort is the question of the mechanisms through which the TABP contributes to the development of coronary heart disease. The inclusion of the characteristic aspects of the occupation, such as job challenges, is one example of the inclusion of mediating variables in this interactionist approach in assessing the pathogenic nature of the TABP, as well as its origins. Other examples included the interaction effect of social support, emotional affectivity, and physiological reactions as mediating factors between the TABP and the risk of coronary heart disease.

The inclusion of occupational challenges as one option in assessing the pathogenic nature of the TABP offers some hope of ascertaining the predictive value of the Type A behaviour pattern. This option is empirically logical given that both the TABP and job stress acting independently have produced less clear-cut and consistent data as risk factors. An interaction effect between the TABP and job stress seemed to suggest a better

prospect of accounting for the pathogenic influence of the TABP and other related psychosocial factors on coronary heart disease. Furthermore, in view of the conflicting evidence on job stress and TABP as CHD risk markers, this theory stands as the most probable pathway in addressing the influence of psychosocial factors on various manifestations of coronary heart disease. Some evidence on the relationship between the TABP and aspects of work life is described next.

It is still not entirely clear what the nature of the relationship is between the TABP and aspects of the occupation. One view proposes that the TABP is elicited by the challenges of the environment. Here characteristic features of the occupation and in particular, stress at work are implicated as antecedents of the Type A behaviour pattern. The other view is that Type A individuals, by the very nature of their behavioural tendencies seek out and re-create the occupational environment to be challenging. It is not well established as to which of the two views offer the most sound explanation of the link between the TABP and occupation. Nevertheless, both conceptual models provide the empirical opportunity, upon which studies have been conducted on the construct of the Type A behaviour pattern. The role of the occupational environment has also offered the opportunity to question the cultural context in which the TABP can be explained. In this regard, the role of occupational challenges in western societies have been instrumental as an environmental antecedent of the Type A behaviour. This offers an empirical opportunity to address cross-culturally whether the TABP is a unique behavioural expression link with challenges of the western work demands, or can it be generalised as a universal human construct that is applicable to all humans who confront similar challenges from the

external environment such as the work setting, regardless of socio-cultural differences that may exist between peoples of the world. The findings on the expression of the TABP in Non-Western work settings will have greater implications on the universality of the pathogenic nature the Type A behaviour pattern.

The next chapter describes some cross-cultural evidence of the TABP and its generalisability as a CHD risk factor within a cross-cultural framework. It addresses the same issues described in this chapter such as the evidence of the TABP as a risk factor, the influence of job stress on the expression of the Type A behaviour and the mechanisms through which the expression of the TABP can be assessed in Non-Western societies. A review of relevant literature on the cross-cultural correlates of the TABP is important especially in this thesis to put in some perspective the empirical importance on efforts to learn more about this human behaviour globally.

Chapter Three

Cross-cultural Consideration of the Type A Behaviour

3.1

INTRODUCTION

This world has undergone important changes, for example, in technology at least in the last 20 to 30 years, and these changes have been no more profound than those witnessed in developing countries. One of the striking features of this transition is industrial growth coupled with increased urbanisation and modernisation of the peoples lifestyle. For third world countries, this transition has largely been from subsistence-oriented economies to (semi) urban-industrialised economies. Socio-economic and cultural adjustments have not only exposed the positive benefits of modernisation such as formal education, increased material wealth, convenient technologies and better health services, but this process has also influenced the attitudes, behavioural patterns, disease patterns and the overall lifestyle of people affected by these changes. One example of health consequences associated with this transition is the decline in cardiovascular health of people in developing countries (Fletcher, et al., 1990; Wielgosz, 1993). For example, as previously described, cases of CHD among urban - educated population in developing countries are reported to be on the rise compared with most developed countries. Evidence of the link between industrialisation and the risk of CHD combined with data linking the TABP with industrialisation (Rosenman, 1993) offers interesting theoretical and empirical prospects for investigating the TABP in developing countries. This is

because many of these countries are undergoing rapid societal transformations, which have the hallmarks of the process of industrialisation.

This chapter describes some evidence on the prevalence of the TABP and its association with CHD and job stress in societies other than the United States. This chapter begins by discussing acculturation and its association with the risk of CHD to provide a context in which a cross-cultural consideration of the TABP can be addressed. The view that Western work environment prompts the TABP serves as the basis upon which an attempt is made at addressing the cross-cultural correlates of the Type A behaviour pattern. It is also in this context that an empirical case is proposed for investigating the link between the TABP and job stress in Non-Western societies.

3.2 ACCULTURATION AND CORONARY HEART DISEASE

The association between acculturation and disease patterns in countries undergoing socio-cultural, economic and technological transformations is well recognised (Berry & Annis, 1974). Acculturation means change in culture and it is widely referred to the contact between two diverse cultures. Other changes in either, or both cultures taking place as a result of this contact identifies with this process. Acculturation entails adaptation of cultural beliefs, customs, behaviours, values and attitudes, identity of the alternate culture - usually that of the host society, changes in social net work and potential changes in socio-economic status (Williams & Berry, 1991; Rogler, 1994). Adjustments associated with acculturation can either be beneficial or stressful. Negative stress associated with acculturation can manifest in stressful forms of behaviours such as hostility, identity

confusion and feelings of being marginalised, or alienated. The stressful experiences associated with acculturation can potentially manifest itself into psychosomatic and physical problems (Dyal & Dyal, 1981; Williams & Berry, 1991; Gil, Vega & Dimas, 1994).

Theories have been formulated to explain the link between acculturation and health (see for example, Szapocnik & Kurtines, 1993), however the underlying theme of many acculturation theories is that, an individual or groups of people undergoing lifestyle changes within and between cultural settings will experience a certain degree of psychological and physical discomforts (Berry & Annis, 1974), and these discomforts can trigger a host of psychological and physical problems (Berry & Annis, 1974; Berry, Kim, Minde & Mok, 1987; Gil, et al., 1994).

Coronary heart disease is one health problem that has been investigated within the process of acculturation (Marmot, 1983; Syme, 1987). Cases of CHD among individuals who have moved from one social setting to another and among individuals who dwell within a social setting while the setting itself undergoes changes is well established empirically (Syme, Borhant & Buechley, 1966). A good example of the potential negative consequences of the interaction between CHD and acculturation is demonstrated in a series of studies among Japanese-Americans and Japanese in Japan (Marmot & Syme, 1976; Marmot, 1983). The rate of CHD was lowest in Japan, intermediate in Hawaii and highest in California (Kagan, Harris, Winkelstein, Johnson, Kato, et al., 1974; Nichaman, Hamilton, Kagan, Grier, Sacks & Syme, 1975; Marmot & Syme,

1976). This result was not fully accounted for by the differences in the established risk factors such as smoking and cholesterol level, suggesting the potential influence of socio-cultural and psychosocial factors in the development of coronary heart disease (Marmot & Syme, 1976; Marmot, 1983).

Social and cultural variation as indicators of the risk of CHD were pursued in one of these studies among Japanese-Americans living in California (Marmot & Syme, 1976). Three acculturation markers were used as measurement indicators of acculturation. They include: (a) culture of upbringing, (b) cultural assimilation and (c) social assimilation. These indicators measured the degree to which Japanese-Americans retained Japanese way of life in California. The results showed that the Japanese-Americans who were most acculturated reported three-to-five fold excess of CHD prevalence and those who retained Japanese traditions reported rates similar to that observed among Japanese men in Japan. The difference in reported rates between the least and most acculturated Japanese-Americans could not be explained by the classical risk factors, implicating acculturation as a useful indicator for measuring diseases in people undergoing changes in their lifestyle (Marmot & Syme, 1976).

It is empirically documented that acculturation and CHD are interrelated, and since the TABP is linked with CHD and stress from the external environment, it is also useful to examine the potential influence acculturation may have on the Type A behaviour. In this regard, very little is known about the association between acculturation and the Type A behaviour, yet this pathway offers one of the most logical empirical option in assessing

the expression of the TABP in different societies, and especially in countries or people undergoing socio-cultural and economic transformations. The influence of acculturation on the expression of the Type A behaviour is discussed in the next section to put in some perspective the loosely defined and somewhat confusing pathway in discussing the TABP within a cross-cultural framework.

3.3 ACCULTURATION AND TYPE A BEHAVIOUR

As previously described, the acculturation process can be stressful because it involves re-locating between different societies (Kagan, et al., 1974; Nichaman et al., 1975; Marmot & Syme, 1976; Marmot, 1983). The process of acculturation also offers an opportunity to question if the TABP can be examined within the context of acculturation. This is because re-location into a Western society would inevitably expose those involved to the characteristic features of Western environments such as individualistic tendencies, competitive attitude, or a fast-paced life style, therefore, it is possible that the TABP may become evident as a pattern of behaviour in reaction to the potential stress and challenges associated with acculturation. As with many other facets of the TABP, there is very limited data on the association between the TABP and acculturation.

Few studies that have addressed the relationship between acculturation and the Type A behaviour have produced encouraging results on the potential mediating influence of acculturation on the expression of the Type A behaviour. One such study is the American - Hellenic Heart Study (Gerace, Smith, Kafatos, Trakas & Osterweiss-Stangos, 1990). This study addressed the link between acculturation, expression of the TABP and the risk

of coronary heart disease. The sample used in this study are USA-born Greek-American males, Greece-born Americans in schools in the US and Greek students in public schools in mainland Greece. Students in Greece consisted of those from Athens, rural Etoloakarnia and the island of Crete, which included Iraklion. In total, 710 males age 7 to 18 years were recruited for this study. The hypotheses tested in this study were: (1) the prevalence of the TABP in young males would be greatest in the USA, a country of high CHD incidence, and the least in the rural areas of Greece where the incidence of CHD is reported to be very low; (2) migration would reveal an increasing prevalence of the Type A from mainland Greeks to Greece-born Americans to USA-born Greek-Americans, and (3) urban sites in mainland Greece and Crete would have a higher prevalence of the Type A behaviour than the rural areas on mainland Greece and Crete respectively. This is based on the view that the TABP is more likely to be elicited by competitive, fast-paced urban environment (Rosenman, 1978b). Participants completed the Miami Structured Interview (MSI). The MSI is similar in format, content and administration to the SI of the Type A behaviour for adults. The results revealed that contrary to the first hypothesis, age-adjusted prevalence of the TABP in USA (Greek-Americans) was lower than that reported for the mainland Greece, however, the prevalence of the TABP for the Greek-Americans was similar to the Cretes. Results on the migration hypothesis revealed that Greece-born Americans were more similar to mainland Greeks than to the USA-born Greek-Americans. It is reported that these data suggested cultural assimilation in the USA may affect the development of the Type A behaviour pattern. The hypothesis testing the urban vs rural difference on the TABP in

Greece was confirmed. Prevalence of the TABP in Athens was significantly greater than in rural mainland Greece of Etoloakarnania, whereas the results of the urban Crete (Iraklion) and rural Crete (villages of Iraklion) revealed that participants in these areas had similar prevalence of the Type A behaviour pattern (Gerace, et al., 1990).

The evidence described on acculturation and the TABP provides a tentative pathway in addressing the construct of the TABP across different societies. As yet, not much in terms of empirical data is available on the interaction between the TABP and acculturation. However, evidence linking CHD with acculturation provides an avenue where the TABP could be examined. Many empirical evidence on the TABP emphasised the influence of Western environment in the conceptual paradigm used in the explaining the Type A behaviour. It is through this model that the TABP is largely viewed as a constellation of behaviours that is stimulated and reinforced in Western work settings.

3.4 TYPE A BEHAVIOUR AS A WESTERN CULTURE CONSTRUCT

The concept of the TABP and its association with CHD emerged from white middle-aged working class men in the USA in the 1950s (Rosenman et al., 1964; Friedman & Rosenman, 1974; Cohen, et al., 1987) and many more studies have confined their investigations of the TABP and its pathogenic nature in other western societies (Haynes et al., 1980b; Sykes, Haertel, Gostautas & Evans, 1992). This lead partly to the view that the Type A behaviour is a behavioural expression unique only to Western societies and is strongly mediated by the ambient situation in which the person dwells in (Rosenman, 1993). One line of argument linked to this view is the encouragement by Western

societies of the ideals of “rugged individualism” which is a fiercely autonomous, self-indulgent and sometimes narcissistic perspective guided by economic, political and social self-interest to be competitive to succeed. This approach to life may elicit and reinforce the expression of Type A behaviour (Thoresen & Powell, 1992). This view asserts that stress of living in a competitive society like most Western industrialised societies promotes the ideals of individualism, competition, materialism, prestige and the overall desire to be in control of the environment (Helman, 1987; Thoresen & Powell, 1992). The desire to compete and achieve recognition often provides ambiguous experiences about what exactly is required to be successful. The uncertainty that prevails over one's ability to succeed in situations judged as important and yet often confusing, uncontrollable and frustrating has the potential of stimulating the Type A behaviour. The TABP therefore is a behavioural mechanism that allows the individual to exert greater efforts to discover what is needed to succeed. (Strube, Boland, Manfredo & Al-Falaj, 1987).

A theory that perhaps sheds some light on this rather confusing but interesting conceptual view on why the TABP is viewed as a western construct and why the environment is so crucial in stimulating the TABP is based on the cognitive model of the TABP by Virginia Price (Price, 1982, 1982). Price's theory asserts that cognition and in particular, personal beliefs foster a variety of fears (or anxieties) and together these beliefs and fears promote and sustain the expression of the Type A behaviour pattern (Price, 1982). This belief system emerged against a backdrop of an achievement-oriented,

materialistic society synonymous with most Western cultures and this belief system extols the merits of individual effort and competitive spirit (Price, 1982).

There are three components to this belief system and each of these beliefs has an accompanied fear. The first belief rests on the view that an open economy such as those characteristic of many Western economies permits an upward social and economic mobility. In an open economy, in theory, there are limitless opportunities, therefore success depended very much on individual efforts. If a person is competitive, ambitious and aggressive in pursuit of desired goals, material improvements and socially envied accomplishments like occupational and social prestige will flow with these efforts. The associated fear is the perception of being judged unsuccessful and unworthy. The second belief rests on the view that there is no universal moral laws to ensure fairness, justice and goodness, therefore human effort must prevail to succeed in life. The fear is one of absence of good human values. The final belief relates to the availability of resources. Resources needed to be successful are scarce so competition must prevail if one wishes to achieve desired goals. The fear is that, it may just be possible that life's necessities may not be in abundance for everyone (Price, 1982; Thoresen & Powell, 1992). These beliefs are offered as explanations on why the TABP is viewed as a behavioural expression common only in Western societies and argued by some (Helman, 1987) to be deeply rooted in the social fabrics and human values of Western societies.

These cognitive determinants of the TABP identify the work environment as an important and relevant environmental setting in which the Type A individuals attempt to

prove themselves by their tangible accomplishment (Price, 1982). In Price's words: "Boys in our society typically learn that their success as men will be chiefly a function of succeeding in their work." (Price, 1982, p.123). Margolis et al., (1983) described at least four aspects of work in Western societies that is suspected of eliciting the Type A behaviour. The four features are:

- (1) reward systems that foster aggressive competition and achievement striving;
- (2) limited controllability and/or predictability of success or failure, accompanied by little tolerance for error;
- (3) numerous role demands, resulting in both time and opportunity conflicts;
- (4) time demands that encourage time-urgent and/or aggressive behaviour (pp. 251-252).

These features of the work environment are perceived to encourage and maintain the TABP in the Western work environment. The influence of the work environment is consistent with the emphasis placed on the role of the environment in eliciting the Type A behaviour pattern (Friedman & Rosenmen, 1974). More importantly aspects of work such as job stressors, education and type of jobs have been strongly implicated in the development of Type A behaviour as described in the previous chapter.

As previously described, work environment is one of the most influential and significant institutions in Western societies linked to the Type A behaviour pattern. Evidence of the expression of the TABP among employed individuals attests to the influence of the work environment on the Type A behaviour (Howard, Cunningham & Rechnitzer, 1977; Sorensen et al., 1987). The question then is, if this social structure in Western countries is responsible for stimulating the TABP, can work environments in developing countries also exert similar influences on the Type A behaviour pattern. Some evidence on the prevalence of the TABP and its association with aspects of work life such

as job stress in some societies other than the US are described next to illustrate the interaction between the TABP and aspects of work life.

3.5 CROSS-CULTURAL EVIDENCE ON TYPE A BEHAVIOUR

There are only a small number of cross-cultural studies on the TABP outside US and many of these studies were conducted in societies that vary in degree but not necessarily in social structures from US, for example, European countries (Kornitzer, et al., 1981; Keltikangas-Jarvinen and Raikkonen; 1989) and Australia (Byrne & Reinhart, 1989; Atchison & Condon, 1994; Byrne & Reinhart, 1995). The lack of data on the TABP in many Non-Western societies demonstrates a need to ascertain whether this pattern of behaviour also exists in these societies and whether, the pathogenic nature of the TABP can be generalised to all humans regardless of their race, culture, or socio-economic background.

3.5.1 Other Western Countries

The Belgian Heart Study (Kornitzer, et al., 1981) is a classic example of studies, which positively identified the expression of the TABP in European countries. The TABP assessed through the SI and JAS was reported in this study and the TABP predicted major coronary events independent of the risk imposed by the traditional CHD risk factors.

The first evidence of a link between the TABP as measured by the JAS and CHD outside the US was in Europe in a study of patients from the Centre of Cardiological

Rehabilitation at Inowroclaw in Poland. In this case control study (Zyzanski, et al., 1979), 149 MI patients were compared with 80 medical patients diagnosed with non-cardiovascular disorders and 88 healthy controls on selected behavioural and CHD risk factors. The TABP was assessed by the Jenkins Activity Survey. Coronary patients scored significantly positively higher mean scores on the Global and H scales compared with participants free from coronary heart disease. The researchers reported the results in this study as strikingly similar to the findings of studies using the same study design in United States (Zyzanski et al., 1979).

In a health intervention program in Netherlands (Appels, et al., 1982), the JAS was administered to 2, 712 males. Participants who reported one or more cardiovascular risk factors and those who suffered from angina pectoris had higher JAS mean scores than those without concurrent cardiovascular complaints. The psychometric property of the JAS scales when translated and used outside US were also assessed in this study. The Dutch version of the JAS classified correctly 73 per cent of participants as Type As. This study demonstrated that when properly translated and scored, the JAS shows strong correspondence with the SI confirming the robustness of this instrument to maintain its properties of oral translations. An important conclusion that has cross-cultural implications on the assessment of the TABP was that, this behavioural disposition existed in Holland and it can be meaningfully assessed using instruments developed in the United States (Appels et al., 1982).

However, not all studies conducted in Europe provided support for the predictive value of the Type A behaviour pattern. One prospective study in Holland (Appels, Mulder, Van's Hof, Jenkins, van Houtem & Tan, 1986) addressed the question of whether the TABP predisposed high risk individuals to coronary heart disease. This study screened 3,365 males for both physiological and psychosocial risk factors linked with coronary heart disease. The TABP was assessed by the SI and a Dutch version of the JAS (Form B). This study was described as a feasibility study so no regular follow-ups were done until after a period of 9.5 years, when an extensive follow-up of these 3,365 men were carried out. Participants who were still alive at follow-up were mailed a questionnaire to complete whilst the death certificates of those in the sample who have died were used to ascertain their cause of death. The results revealed that the TABP measured by the SI was not predictive of the risk of a major coronary event. In addition, none of the JAS scales were found to be associated with the incidence of coronary heart disease. These results were attributed to possible measurement error and the small sample size of participants reporting the TABP at follow-up.

Reunanen, Hanses, Maatela, Impivaara and Aromaa (1987) assessed the prevalence of the TABP in an actively employed sample of 1,958 men and 2,224 women aged 30-64 years in Finland. The Type A behaviour was assessed by the JAS and scores on the JAS scales showed that Finns were substantially more Type B than white middle-aged Americans. The age-adjusted Global Type A score for men and women were lower than the norm (Jenkins et al., 1979). The results also revealed that males were not statistically different from females on the Global scale. Male and female participants also described

themselves as Type Bs on the sub-components of the JAS scales. The results also revealed that level of education was significantly associated with the JAS scores. The Global, J and S scales were statistically significantly higher in workers with higher level of education, whereas the H scale was lower in those who reported higher educational qualifications. Statistically significant results were reported for occupational groupings with highest JAS scores on the Global Type A, S and the J scales being evident in workers in administrative occupations. However, these results were reversed in industry type jobs, with workers holding administrative jobs reporting the lowest scores on H scale.

Hartel and Chambless (1989) examined the relationships between employment status and the TABP in 5,312 men and women aged between 25 and 64 years were assessed in this study. The TABP was assessed by the FTAB measure. Evidence of the TABP was examined as a function of various occupational positions, for example, blue vs white collar workers and public vs self-employed workers, controlling for factors like age and level of education. The results revealed that being self-employed was the best predictor of the expression of the Type A behaviour. Similar results were also observed for females using the same data analysis procedure. The findings overall demonstrated a strong relationship between work situation and the Type A behaviour, and this result was more evident for self-employed men.

Evidence of the TABP has also been reported in Australia (Byrne, et al., 1985; Byrne & Reinhart, 1989). A sample of 432 men and women employed in managerial and

professional roles in a federal government department were assessed on the link between occupational characteristics, occupational achievement and the Type A behaviour. The TABP was measured by the Jenkins Activity Survey (Byrne & Reinhart, 1989). Fifty-six per cent of these employed individuals reported the Global Type A behaviour, 53 per cent reported positive evidence of the Speed and Impatience behaviour, 74 per cent reported high TABP scores on the J scale and 21 per cent reported high TABP scores on the H scale. High Type A scores meant these participants scored above the arbitrary mean of zero. The overall findings of this study also provided some support for the view that the TABP does correlate positively with various characteristics of employment such as occupational levels of workers and time spend on work situation. In a different study, Byrne & Reinhart (1990) assessed the relationship between distress, job satisfaction and the TABP in 341 workers representing administrators, mental health personnel and nurses employed in a regional health service. The Type A behaviour was assessed by the JAS, and the results in this study was similar those of a previous study (Byrne & Reinhart, 1989). Fifty-one per cent of the employees reported Global Type A behaviour, 49.9 per cent reported Speed and Impatience, 44.9 per cent reported Job Involvement, and 28 per cent reported Hard - driving and competitive behaviour.

After a decade or so of assessing the TABP using the JAS in Australia, Byrne and Reinhart (1995) suggested that the Australians are marginally more Type B than male samples in North American. However, methodological issues such as measurement of the construct and assessment techniques of the TABP limited the authors from stating

conclusively if Australians are unhurried, uncommitted, or leisure seeking compared with North Americans (Byrne & Reinhart, 1995).

3.5.2 Non-Western Countries

Researchers are now beginning to assess the construct of the TABP in Asia, the Middle East and the continent of Africa given its implication on disease pathology (Emara, El-Islam, Abu Dagga & Moussa, 1986), and its influence on job stress, performance, and productivity level of workers in the formal work sectors (Schaubroeck & Williams, 1993). It is obvious that there is a paucity of data on the TABP in Non-Western countries as reflected by the few studies conducted on the TABP in Non-Western countries since its inception as an explanatory construct of CHD by Friedman and Rosenman in the 1950s.

Bo-yuan (1988) examined the relationship between the TABP and CHD in 714 CHD patients and 424 controls in 18 provinces and municipalities in the Peoples Republic of China. The TABP was measured by a 60 item questionnaire designed by the researcher to mimic the components of the TABP, namely, time urgency, impatience, rapid work, competitiveness, hostility and irritability. Patients scored significantly higher on these components of the TABP compared to the control group. Patients with white-collar also scored higher on the Type A behaviour scale.

A total of 2,437 Japanese-American men living in Hawaii was assessed for the expression of the TABP using the Jenkins Activity Survey (Cohen, Syme, Jenkins, Kagan & Zyzanski, 1979). Eighteen per cent of these men scored as Type As. This percentage was reported to be much lower than that observed in white American men.

The results also revealed that Japanese men who reported the TABP also reported a higher prevalence rate of CHD than their Type B counterparts. In addition, the prevalence of CHD among the Type A Japanese Americans was marginally higher than their Type B counterparts. Factor analysis of the JAS scale scores revealed three new factors, namely hard-driving and impatience, ability to function successfully in a job setting and hard-working patterns of behaviour as underlying expressions of the TABP among Japanese. Cohen and Reed (1985) in examining the association between the TABP measured by the JAS and the prevalence and incidence rates of CHD in 2,187 Japanese men in the Honolulu Heart Study found that the prevalence rate of CHD was significantly associated with the Type A behaviour pattern. This relationship was independent of the influence of other risk factors. However, the data associated with the clinical manifestation of CHD did not correlate with the Type A behaviour.

A study of CHD and the TABP compared 40 male heart patients with 80 controls in rural communities in Israel (Stockwell, et al., 1985). Patients with coronary heart problems were drawn from a sample of patients in rural villages attending a clinic. Controls were selected randomly from that clinic. Participants were assessed for evidence of the TABP using the Jenkins Activity Survey. Men diagnosed with coronary heart condition scored higher means on the components of the JAS scales than those men free of the disease.

A study of stress and the TABP in 290 Chinese, Malays, and Indian students in Singapore (Chew & Chee-Leong, 1991) revealed that 69 per cent of participants reported

the Type A behaviour pattern. The TABP was measured by an instrument containing 14 items assessing such components of the TABP as time urgency and hostility (Everly & Girdano, 1980). In addition, the measure also assessed what the authors labelled as polyphasic trait and lack of planning. The study was conducted partly to ascertain the antecedents of personality differences on stress and managerial effectiveness within an organisational context. Chinese students reported higher scores on the Type A scale than Malay and Indian students. Consideration on the components of the Type A behaviour showed that Indian students scored more highly on the hostility scale than the other two groups. Chinese students were more polyphasic than the Malays' and they were more likely to execute a job without proper planning compared to Indian students. This study also provided some cross-cultural data showing that those reporting the Type A behaviour also reported higher levels of job stress experiences (Chew & Chee-Leong, 1991) suggesting that stress at work is associated with the expression of the TABP as previously observed (Friedman & Rosenman, 1974; Rosenman, 1993).

There is hardly any empirical data on the TABP in peoples of the South Pacific. Reference here is made specifically to Melanesians, Polynesians, and Micronesians. There is however some data on the general pace of lifestyle of these people, their notion of time and some of their behavioural tendencies. For example, (Graves, 1978) investigated the stereotypic perceptions of Polynesians and European immigrants, particularly English, Australians, North Americans and New Zealanders and found that the Europeans and Americans were self-reliant, arrogant, ambitious, serious, loud and brash, adventurous and adaptable relative to the Polynesians. Polynesians on the other

hand were light hearted, easygoing, unambitious, gregarious and generous. They also exhibited a distinct lack of time urgency compared to European immigrants.

A related study (Graves & Graves, 1985) also tested the assumption that Polynesians would differ from people with a European cultural background on the Type A behaviour attributes. It was hypothesised that Polynesians would exhibit far fewer attributes of this pattern of behaviour compared with the Europeans. Two hundred and twenty-eight Samoans, 212 Cook Islanders and 224 native-born New Zealanders of a European background were assessed in this study. Participants were randomly selected from the same working-class neighbourhoods in Auckland. Overall, the results confirmed the study hypothesis. Polynesians reported themselves as Type Bs compared with the Europeans, and the Type A scale scores between Polynesians and Europeans were statistical significantly different with the Polynesians reporting themselves as more relaxed and easy going despite the situational stress of living in an urban setting compared with their European counterparts.

It is clear from the data presented that the expression of the TABP varies across different population groups and whilst there is some evidence of a link between the TABP and CHD in these societies, the magnitude of the problem is not in the same order as those observed in North America. In some countries, the notion of the TABP is currently being investigated with no conclusive evidence on its expression and distribution across demographic markers. In addition, not much is known about the physiological, psychological, and environmental factors that may stimulate the expression this pattern of

behaviour in non-Western societies. These problems are further compounded by an obvious lack of data on the pathogenic nature of the TABP in many of these countries, and especially the Non-Western countries.

3.6 TYPE A BEHAVIOUR AND OCCUPATIONAL STRESS ACROSS CULTURES

The reported evidence of job stress in different countries is well established and so is the issue of the association between stress and psychological and physical well-being of workers experiencing job stress (Rahman, 1989; Shankar & Famuyiwa, 1991). There is enough evidence establishing job stress as a common problem in non-Western societies, however what is scarce is the data on the link between aspects of work life such as job demands and the expression of the Type A behaviour pattern (Swan, Renault De Moraes & Cooper, 1993).

Waluyo, Ekberg and Eklund (1996) assessed the work conditions, health status, and job satisfaction among 326 Swedish and 136 Indonesian assembly workers. The prevalence of musculoskeletal symptoms was high in both groups. The Swedish groups rated their work conditions as worse in most respects and reported higher stress and psychosomatic symptoms than the Indonesians. Indonesian workers found their work tasks to be physically heavier, but less monotonous and with lower demands on productivity than the Swedish workers. Indonesian workers were also more satisfied with their jobs than their Swedish counterparts. Rahman (1989) found statistically significant relationships between job stress, job dissatisfaction and mental health in a sample of factory workers in Bangladesh. Workers reporting high stress were more

dissatisfied with their jobs and reported poor mental health than workers reporting low stress. It was concluded that stress at work does exert a significant influence on working lives of workers in developing countries. Shankar and Famuyiwa (1991) assessed job stress and distress in a sample of 400 factory workers in Nigeria. Examples of job stress indicators measured in this study were overtime, job security, interpersonal rewards and opportunity for self development. This study found job pressure in the form of subjective feelings of insecurity and interpersonal rewards as the best predictors of job distress.

The brief evidence reviewed demonstrated that job stress is a real problem in the work environments in developing countries, however what is not entirely clear is whether the TABP is also evident in work settings in these countries. Data on the association between the TABP and aspects of the occupation is scarce as is reflected by the the following brief discussion on the association between these psychsocial constructs.

There is very limited cross-cultural evidence on the TABP among people who are employed (Reunanen et al., 1987; Hartel & Chambless, 1989), however where evidence of the TABP is reported, the data seem to suggest that the TABP is also associated with aspects of work life such as job stress, performance and productivity levels of workers (Chew & Chee-Leong, 1991; Schaubroeck & Williams, 1993;), level of education (Reunanen et al., 1987), and job status such as blue vs white collar employees (Hartel & Chambless, 1989). For example, a study of occupational stress among white collar workers in Brazil (Renault De Moraes et al., 1993) found that workers who experienced

job stress also expressed the Type A behaviour, and the Type A behaviour predicted some of the outcome variance of job stress.

3.7 SUMMARY AND CONCLUSION

The expression and distribution of the TABP has largely been the focus of studies in western societies, and most studies on the TABP have been limited to population groups in the US, Europe and Australia. Studies in Australia reported that Australians were marginally more Type B compared with males in North America (Byrne & Reinhart, 1995) and similar results were also reported for some parts of Europe (Reunanen et al., 1987). The question of the pathogenic nature of the TABP is also less clearly understood and explained as is shown by some studies confirming the pathogenic nature of the TABP while others are less supportive as described.

The question of the interaction effects between the TABP and other psychosocial variables have been at the heart of debate on alternative pathways that might offer some explanations on the pathogenic nature of the Type A behaviour. Evidence across countries appears encouraging with some studies establishing empirically associations between the TABP and the influence of work settings like education levels, type of job and job stress. However, most of these studies have their focus in other western societies and not in developing countries. The Type A behaviour as a psychological construct is limited in its applicability across societies because of a paucity of data on its expression, the factors that elicit and reinforced this pattern of behaviour, and its pathogenic nature. It is therefore worth addressing some of these issues, and especially the question of whether

people in Western and non-Western societies expressed the TABP in a similar manner, and can aspects of the external environment such as work settings in non-Western societies elicits and reinforce the TABP as is observed in similar work environments in Western societies.

Chapter Four

Pilot Study in Papua New Guinea

4.1 INTRODUCTION

4.1.1 Aims of the Study

This study had two main objectives. The first was to assess the potential problems with the study design, and the questionnaires intended for use in this study on the TABP and job stress. The second objective was to collect some preliminary data on the expression of the Type A behaviour and experiences of job stress to generate questions and hypotheses, which can be addressed in a second study in Papua New Guinea. There is hardly any recorded data on some of these variables in PNG and this is particularly true of the construct of the Type A behaviour pattern. The pilot study was a crucial component of the research design given the vacuum of the data on these variables. This study also provided an opportunity to assess the initial reaction of educated employed Papua New Guineans to such a study.

4.1.2 Research Setting

The study was conducted in an educational institution in Port Moresby, the capital district of Papua New Guinea. This organisation was chosen because of a cross-section of occupations representing managerial, administrative, and technical jobs in this institution. It was the aim of this study to access these cross-section of occupations to assess the viability of such a research as, well as the usefulness of the instruments in a wide range of jobs in Papua New Guinea. A second consideration related to accessibility of

participants. Workers in that organisation could be conveniently accessed in the time frame of four weeks set for the pilot study.

4.2 METHOD

4.2.1 Participants

The sample consisted of 40 females and 50 males. These participants were selected through non-probability sampling of convenience (Henry, 1990) from the internal telephone directory of the organisation. Participants selected were distributed across the cross-sections of the jobs described in this institution except for unskilled labourers. Unskilled workers were not listed in the telephone directory and even if they were, they would have been deleted from selection because participants targeted were those educated at the 10th grade or above. It was very unlikely that unskilled workers will have reached this level of education. Of the initial 90 participants selected through this sampling procedure, 87 consented to undertake the study. Eighty-seven questionnaires were distributed and 69 were returned. Sixty-three of the completed questionnaires were used in the data analysis because they were either fully completed or contained substantially less missing data.

The 63 participants consisted of 42 males and 21 females. The males' age ranged from 20 to 53 years (mean age = 35.8 years, S.D = 7.52) and the female participants' age ranged from 20 to 41 years (mean age = 31.0 years, S.D = 6.17). Males were older than females and this difference in age was statistically significant ($F_{1, 62} = 6.11, p < 0.01$). Over 85 per cent ($n = 54$) of the participants were married and the rest (14.3 %, $n = 9$)

were distributed in the never married, single parent, widowed, divorced and separated categories. The participants reported a minimum of 10 years educational training using English as their medium of communication. Level of education reached by participants ranged from grade ten to university training. Forty participants (63.5%) held college certificates, four (6.3%) held college diplomas and nineteen (30.2 %) held degrees. The job profile of participants were as follow: 46.03 per cent (n = 29) occupied managerial jobs, 30.16 per cent (n = 19) were in administrative jobs, and 23.81 per cent (n = 15) described their jobs as technical in nature. Participants income ranged from under K5,000.00 to K25,000.00 per annum.

4.2.2 Measures

Several questionnaires were used in this study. The Jenkins Activity Survey (JAS) (Jenkins, et al., 1979) measured the Type A behaviour pattern. The Facet-Specific Job Satisfaction Questionnaire (Quinn & Staines, 1979), the Role Conflict and Role Ambiguity scales (Rizzo, House & Lirtzman, 1970) and the Role Overload scale (Beehr, Walsh & Taber, 1976) assessed job stress. Two Social Support questionnaires, one extracted from "Occupational Stress, Job Satisfaction and Health Measure" (Byrne, 1986) and the other the "Interview Schedule for Social Interaction" (ISSI) (Henderson & Byrne, 1982) were used to assess social support. A job satisfaction scale was also extracted from the Occupational Stress, Job Satisfaction and Health Measure to assess the experiences of job satisfaction. Cardiovascular health status of participants was assessed by the "Rose Chest Pain Questionnaire" (Rose, McCartney & Reid, 1977). This is a self-report

measure of cardiovascular symptoms. Psychological distress in the form of anxiety was assessed by the “Spielberger State-Trait Anxiety Scale” (STAI) (Spielberger, Gorsuch & Lushene, 1970). These variables were assessed for some initial data to map out an empirical pathway in addressing the link between the TABP and occupational stress in PNG.

4.2.2.1 Jenkins Activity Survey

The TABP was measured by the Jenkins Activity Survey. The JAS contains 52 multiple choice items and is a self-administered questionnaire. The 52 items measured four components of the TABP namely, Global Type A (thereof as Global scale), Speed and Impatience (thereof as S scale), Job Involvement (thereof as J scale), and Hard-Driving behaviours and Competitiveness (thereof as H scale). The JAS was designed specifically to mimic the Structured Interview (SI) (Suls, 1990). The JAS has been used in different groups of people (Byrne & Reinhart, 1989, 1990, 1994) and has been reported to be linked with the prevalence and incidence of coronary heart disease (Matthews, 1982). This instrument has well established psychometric properties (Byrne et al., 1985; Edwards, 1991).

4.2.2.2 Work Activities Questionnaire

Job stress was assessed by a number of indicators: (1) job comfort; (2) job challenge; (3) financial reward; (4) co-workers relationship; (5) resources adequacy; (6) promotion; (7) role overload; (8) role ambiguity and (9) role conflict. These scales were taken from three

different instruments namely, the Facet-Specific Job Satisfaction questionnaire (Quinn & Staines, 1979), the Role Ambiguity, Role Overload and Non-participation questionnaire (Beehr, et al., 1976), and the Role Ambiguity and Role Conflict measure (Rizzo, et al., 1970).

The Facet-Specific Job Satisfaction questionnaire contains 33 items designed to evaluate six features of a job namely, job comfort, job challenge, financial reward, resources adequacy, network of relationship at work and promotion prospect. Some examples of items in this measure are: "The job security is good" "My fringe benefits are good" and "Promotions are handled fairly". All items are worded positively. The responses on each items are made on a 4-point response option scale from 4 to 1 with 4 meaning the item is *very true* of the issue assessed and 1 meaning *not at all true*. The option "very true" means the indicator of experience of job stress is not perceived as stressful and the option "not at all true" denotes evidence of job stress. A mean score is calculated from the 4 - point response options for each scale so that an average score of 4 and 3 denotes an absence of the reported experience of stress, and an average score of 1 and 2 confirms reported evidence of job stress as measured by these scales. There are two abbreviated versions of this measure, one has 18 items and the other contains 7 items. Items in the shorter versions capture all the 6 scales reported in the 33 items measure and both versions correlate with the full scale instrument at 0.97 and 0.91 respectively. This test was initially developed in a large sample of male and female workers representing industries and different occupations, and has been used in a wide range of studies assessing job stress (Cook, Hepworth, Wall & Warr, 1981). The 18 items instrument

was screened because of consideration given on the number of variables, and the size and number of questionnaires used in this research. The same consideration was given on other instruments where abbreviated versions existed.

The role overload scale (work overload) was extracted from the Beehr et al., (1976) measure of Role Ambiguity, Role Overload and Non-Participation questionnaire. Role overload is described as having too much work to do in the time allocated for the task. There are three items in this scale. Each item is assessed on a six-point response option scale. An average score between 1 and 3 indicates a lack of reported experience of role overload, and average score between 4 and 7 reflected experiences of work overload. The psychometric properties of this measure such as its internal reliability coefficient (0.56) is reported to be acceptable (Cook et al., 1981). For this study, four response scales similar to the Facet Job Satisfaction questionnaire were used and the results were interpreted in much the same way as the original 7-point responses option.

The role ambiguity and role conflict scales were taken from Rizzo's et al., (1970) 14 measure of Role ambiguity and Role conflict. This measure has been tested in a wide cross-section of occupational groups (Szilagyi, Sims & Keller, 1976), and the psychometric properties of the two scales have been well researched and confirmed as acceptable (Cook, et al., 1981). The short version of the test contains 14 items, 6 measuring role ambiguity and 8 assessing role conflict. Responses are scored on a 7-point response dimension scale, and a mean (between 1 and 7) is calculated such that a high mean score indicates reported evidences of role ambiguity and role conflict. A score

of 4 is often used to represent moderate levels of role ambiguity and role conflict. Items on the role conflict scale are reversed scored, however the mean score is interpreted in a similar manner as the role ambiguity scale.

4.2.2.3 Social Support Scales

Two instruments measuring social support were used in this study. The first measure was taken from Byrne's (1986) collection of scales on Occupational Stress, Job Satisfaction, and Health. This scale assessed issues indicative of support at work. The first item asked participants to rate the frequency in which different people like supervisors, co-workers and family members helped to make their work easier. The second item requested participants to rate the frequency in which the same group of people were relied on when things got tough at work. The final item measured the frequency in which workers confide with others at work and out of work. The response scale used in all items were 1 to 5 with 1 meaning *don't have such a person*, and 5 meaning *always*.

The second social support instrument screened was the questionnaire version of the Interview Schedule for Social Interaction (ISSI) (Henderson, Byrne & Duncan-Jones 1982). The ISSI is a comprehensive instrument designed to assess both structural and functional aspects of social support (Orth-Gomer, 1979; Unden & Orth-Gomer, 1989). The ISSI is constructed from the idea of "psychological needs" based on the work of Robert Weiss (Unden & Orth-Gomer, 1989). According to Unden & Orth Gomer (1989):

These needs can broadly be divided into 'attachment', the need of deep emotional relations and 'social integration', a more complex concept. This concept is based on: (1) relations, in which interests are shared, (2) relations which give reassurance of personal worth and (3) alliances which give a possibility for both instrumental and other types of support in difficult situations (p.1387).

This instrument was constructed from a population study and was reported to have good psychometric properties as well as predictive capacity of cardiovascular risk outcomes (Unden & Orth-Gomer, 1989). The ISSI contains four scales: (1) Availability of social integration - AVSI, (2) Adequacy of social integration - ADSI, (3) Availability of attachment - AVAT, and (4) Adequacy of attachment - ADAT. These sub-scales are maintained in the questionnaire version of the Interview Schedule for Social Interaction used in this study (Orth-Gomer, et al., 1993).

4.2.2.4 Job Satisfaction Scale

Job satisfaction, an outcome variable was assessed using four questions extracted from Byrne's Occupational Stress, Job Satisfaction and Health Measure (1986). The questions ranged from whether workers would take the same job again if they had a choice to a direct question measuring their overall experience of satisfaction about their current job. The responses are measured on a multiple choice response format. An example of an item measuring job satisfaction is: "All in all, how satisfied would you say you are with your job"?, and the responses are: *very satisfied (1), fairly satisfied (2), not too satisfied (3), and not at all satisfied (4)*. The means reflected the ratings given to each response options on the job satisfaction items.

4.2.2.5 Health Questionnaires

Two health questionnaires were screened in the pilot study. One is a self-report measure of three cardiovascular symptoms, namely angina pectoris (chest pain), possible infarction, and intermittent claudication (Rose et al., 1977). This measure provides a convenient way of identifying individuals with a potential risk for developing coronary heart disease. The other questionnaire is the "Spielberger State Trait Anxiety scale (STAI)". The STAI measures two aspects of anxiety, one is labelled State Anxiety (A-State), which indicates transitory feelings of fear or worries that most people experience on occasion. The other scale measures Trait anxiety (A-Trait), which is a relatively stable tendency to respond anxiously to a stressful predicament. The two forms of anxiety are interrelated with Trait anxiety reflecting proneness to display State anxiety (Gregory, 1992). This instrument has been used in different population groups such as college students (Gomez-Fernandez & Spielberger, 1990), adults (Byrne & Reinhart, 1989, 1990), and across cultural settings (Biaggio, 1990). The psychometric properties of this test are judged as acceptable (Gregory, 1992).

4.2.3 Procedure

All the employees were informed about the study by the Human Resource Division of the organisation about two weeks before the study commenced, and the selected participants were then contacted by the researcher either in person or over the telephone for a formal meeting. In these contacts, 87 participants consented to undertake the study. Questionnaires were distributed in these meetings, and these contacts were used to

describe the research and the questionnaires. Participants were asked to provide written comments on items that they felt needed clarification, or would pose difficulties in the PNG work environment. Some examples offered as illustrations were less commonly used words, or phrases that participants have not heard of, or were not used frequently by Papua New Guineans. Participants were also asked to comment on the contents and structure of the questionnaires, and items they felt would pose difficulties for other Papua New Guineans holding similar jobs, or trained to a similar level of education even if they themselves did not find the questionnaires difficult to interpret. Comments were also sought on the variables assessed in this study and the study design.

Participants were asked not to identify themselves by their names, or through other means like employee number, or location of employment in the organisation. They were asked to return their completed questionnaires in sealed envelopes through the internal mail service addressed to the researcher. Sixty six questionnaires were returned. However, only 63 were sufficiently completed for data meaningful analyses, and these 63 cases formed the report presented as chapter 4.

4.3

RESULTS

The results contained descriptive statistics on each variable assessed in this study, and participants' evaluation of the questionnaires and the study design. The results in this chapter, and subsequent chapters were rounded to 2 decimal points and the alpha level was set at .05 for data that required statistical analyses.

Table 4.1 shows the distribution of mean scores on the JAS scales. Table 4.2 contains the percentage of participants who scored above or below the arbitrary mean of zero on the four JAS scales. Participants scored below the arbitrary mean of zero on the Global, S and J scales, but scored above the arbitrary mean of zero on the H scale. When comparing the distribution of mean scores in Table 4.1 with the norms (Jenkins et al., 1979), the mean score on the Global scale fell at the 35th percentile, the S and J scales at the 30th percentile, and the H scale at the 65th percentile (Jenkins et al, 1979). Overall, participants described themselves as Type Bs compared to Type As when comparing their mean scores with the JAS norms. The distribution of mean scores on the JAS scales also revealed that participants self-reported as Type Bs compared to other similar data produced on the JAS scales in other Western employed groups (Byrne & Reinhart, 1989, 1995).

Correlations between the JAS scales are also shown in Table 4.1. The Global scale correlated significantly and positively with the 3 sub-components of the JAS scales. This result was expected given that the Global Type A scale consisted of item recoded from these three sub-scales. This result was consistent with previous findings, though the strength of the correlation coefficients between the JAS scales varied across studies (Byrne & Reinhart, 1989). The correlations between the three sub-scales, however varied across different studies, for example, Byrne and Reinhart (1989) reported a statistically significant positive correlation between the S and H scales. The results in this study showed that the two scales were unrelated. The S scale correlated positively with the J scale, however this result did not reach statistical significance at the alpha level of .05.

Similar results have been reported elsewhere between the S and J scales (Byrne & Reinhart, 1989). The H scale was significantly positively correlated with the J scale in this study and this result is consistent with results from other studies (Byrne & Reinhart, 1989).

Table 4.1

Mean, standard deviation (S.D) and correlation between the JAS scales

JAS Scale	JAS Standardised Scores (<i>N</i> = 61) 2 missing cases				
	Mean	S.D	2	3	4
1. Global Type A	-4.48	7.68	.56**	.34**	.30*
2. Speed & Impatience	-5.84	6.72	-	.13	.00
3. Job Involvement	-5.27	7.98		-	.15*
4. Hard-Driving	2.62	8.49			-

* $p < 0.05$; ** $p < 0.01$

Table 4.2

Percentages of JAS scale scores split at arbitrary mean of zero

JAS scale	JAS standard scores (percentage < 0 or > 0)			
	% above 0	n	% below 0	n
Global Type A	33.33	21	66.67	42
Speed & Impatience	16.87	10	84.13	53
Job Involvement	28.57	18	71.43	45
Hard Driving	61.90	39	38.10	24

Participants did not report any major concern with the Jenkins Activity Survey. The only concern raised was on the phrase “Hard-driving” in items 16, 17 and 18 of this instrument. Some participants did not know what this phrase meant, however absence of missing data on these questions suggested that this problem was not serious for most participants.

Table 4.3 shows the distribution of scores on the Facet-Specific Job Satisfaction questionnaire and the Role Overload scale. The mean scores on finance, co-workers relationship, and resources at work ranged between 1 and 2. These low mean scores on these scales suggested that participants found these aspects of their jobs of some concern to them. Other job stressors measured by these scales did not represent any concern for participants. The full scale score of 2.51 suggested that the workers were content with the different aspects of their jobs as represented by the markers in Table 4.3

A scale on role overload was also screened in this study. As previously described, this scale used a 4 point response option similar to the other stressors reported in Table 4.3. A mean score of 1.93 (S.D = 3.45) was established in this scale. This mean of 1.93 suggested that participants did not find workload at work a problem for them.

The distribution of scores on all job stress indicators are marginally skewed, and the distribution of scores on availability of resources and role overload scales approached normal distribution. The means on these stress scales in the present study are within the acceptable range when compared with the norms from the “National Quality of Employment Survey” (Quinn & Staines, 1979), and the Role Overload scale (Beehr et

al., 1976) illustrated in parentheses. The scores on the scales assessing work resources and role overload approaching normal distribution.

Table 4.3

Distribution of scores on the job stressor scales

Job Stressors	Mean	S.D	Skewness
Job Comfort	2.74 (2.87)	0.68 (0.57)	-0.44
Job Challenge	2.65 (3.00)	0.72 (0.68)	-0.15
Finance	2.44 (2.89)	0.73(0.81)	0.16
Co-workers	2.10 (2.89)	0.70 (0.81)	0.34
Resources	2.25 (3.19)	0.72 (0.57)	-0.03
Promotion	2.87 (2.46)	1.00 (0.86)	-0.43
Full scale	2.51(2.96)	0.30 (0.52)	-0.19
Role overload **	1.93 (3.45)	0.58 (1.33)	0.06

note: The figures in parentheses are from the National Quality of Employment Survey (USA) by Quinn & Staines (1979);

** Scale taken from Beehr et al., (1976).

The percentage of participants describing aspects of their job as representing some concern for them or not are shown in Table 4.4. The scores on the response scale of 1 to 4 were split in halves with average scores of 1 and 2 reflecting evidence of job stress and average scores of 3 and 4 denoting absence of the reported experiences of job stress.

Table 4.5 contained the results on role ambiguity and role conflict. Participants reported lower mean scores on the two markers of job stress. The distribution of mean scores on the two scales were also reflected by a high percentage of participants reporting low role ambiguity and conflict at work as shown in Table 4.6. These results

suggested that participants generally understood the scope of their work roles. The correlation coefficient between the two scores in this sample was very low ($r= 0.019$ $p > 0.05$).

Table 4.4

Percentage of high or low scores on job stressors scales

Facet-Specific Job Scales	Percentage	
	Low Stress	High Stress
Job Comfort	66.67 (42)	33.33 (21)
Job Challenge	48.39 (30)	51.61 (32)*
Finance	36.07 (22)	63.93 (39)*
Co-workers relation	17.74 (11)	82.26 (51)*
Resource adequacy	34.92 (22)	65.08 (41)
Promotion	66.87 (42)	33.87 (21)
Role Overload Scale	31.15 (19)	68.85 (42)*

* missing cases (N≠ 63)

Table 4.5

Distribution of scores on role ambiguity and role conflict scales

Role Scales	Mean	S.D	Skewness
Role ambiguity	2.51	1.05	.33
Role conflict	3.87	1.22	-.21

Table 4.6

Percentage of high or low scores on role ambiguity
and role conflict scales

Role Scales	Percentage		
	High Stress	Moderate Stress	Low Stress
Role Ambiguity	28.57 (18)	17.46 (11)	53.97 (34)
Role Conflict	33.34 (21)	25.39 (16)	41.25 (26)

note: figures in parentheses = n

Intercorrelations between the job stressors are shown in Table 4.7. Significant negative correlation was reported between job comfort, financial concern and role conflict. Similar results were also observed between job challenge, co-workers relationship and promotion. A significant positive correlation was established between finance and promotion scales. Co-workers relationship was significantly positively correlated with resource at work. The resource scale correlated significantly and positively with promotion, role overload and role ambiguity scale. These correlations were low but they reached statistical significance. A number of scales also failed to correlate with each other as shown in Table 4.7

Participants raised two concerns on the questionnaires assessing job stress. Firstly, they did not understand why different questionnaires and different response options were used to assess job stress. The Facet-Specific measure and the Role overload scale had four options response scale, and the Role ambiguity and Role conflict contained a 7 point response dimension scale. Some participants argued that the use of different response

scales can be confusing, and recommended a consistent response option scale on all the questionnaires used in the present study.

Table 4.7

Correlation between job stressors scales

	2	3	4	5	6	7	8	9
1. Comfort	.10	-.44***	-.10	-.10	-.16	.03	-.14	-.37**
2. Challenge	-	-.12	-.25*	-.15	-.26*	-.21	-.10	.03
3. Finance		-	.10	.06	.27*	.06	-.13	.21
4. Co-workers			-	.39**	-.01	.12	.24	-.12
5. Resources				-	.28*	.28*	.25*	.14
6. Promotion					-	.13	.00	.18
7. Role Overload						-	.10	-.07
8. Role Ambiguity							-	-.04
9. Role Conflict								-

* P < 0.05; **P < 0.01; ***p < 0.001; 5 cases deleted with missing values

Two social support instruments were screened in the study. The first one was a composition of items assessing social support at work taken from Byrne's Occupational Stress, Job Satisfaction, and Health Measure (1986). The sources of support are listed in abbreviated sentences in Table 4.8. Participants reported moderate levels of support at work and from external sources like relatives or friends, however they did not find their supervisors of any help at all at work.

Table 4.8

Distribution of scores on social support items

Support Items	Mean	S.D	Skewness
1...Work Easier...			
Remote Supervisor	1.70	1.03	1.45
Immediate Supervisor	3.02	1.12	-0.11
Matched Workers	3.12	1.14	-0.06
Subordinates	3.29	1.27	-0.40
Family	3.68	1.25	0.21
Friends & Relatives	2.90	0.91	-0.70
2...Relied On...			
Immediate Supervisor	3.38	1.21	-0.30
Matched Workers	3.17	1.11	-0.48
Subordinates	3.11	1.23	-0.26
Family	3.59	1.32	-0.40
Friends & Relatives	2.88	1.07	0.25
3... Easy to Talk with...			
Immediate Supervisor	3.38	1.19	-0.34
Matched Workers	3.52	0.98	-0.50
Subordinates	3.41	1.26	-0.37
Friends & Relatives	3.05	1.23	0.19

The second instrument of social support is the questionnaire version of the Interview Schedule for Social Interaction (ISSI). Results in Table 4.9 presents the distribution of scores on the Orth-Gomer version of the this instrument (Orth-Gomer, 1979; Uden &

Orth-Gomer, 1989). The data from a Swedish sample are also shown in parentheses in Table 4.9 for illustrative purposes. It would seem that the distributions of scores in the Swedish sample are more skewed than the distribution of scores in PNG sample on all scales except "adequacy of social integration scale". The only response in the Swedish sample that approached normal distribution was the score on the AVSI scale. The maximum scores for each scale on the Orth-Gomer version of the ISSI instrument are shown in Table 4.9. The only significant correlation reported between the ISSI scales was between the ADAT and ADSI scales ($r = .34$, $p < 0.01$). The other scales were positively intercorrelated, however, these correlations failed to reach statistical significance at the alpha level of .05. By way of comparison, there were significant intercorrelations between all scales except the AVSI and ADSI scales in a Swedish sample (Unden & Orth-Gomer, 1989).

Table 4.9

Distribution of scores on the ISSI scales

ISSI scales	Maximum score	Mean	S.D	Skewness
AVAT	6	4.21 (5.10)	1.21 (1.40)	-.64 (-1.80)
ADAT	10	6.00 (7.60)	2.37 (2.60)	-.51 (-1.10)
AVSI	6	2.87 (3.00)	1.37 (1.70)	.55 (0.01)
ADSI	8	5.16 (6.50)	1.66 (1.80)	-.44 (-1.10)

note: The values in parentheses are comparable values from the abbreviated version of the ISSI on middle-aged Swedish men (Unden & Orth-Gomer, 1989).

Job (dis)satisfaction was assessed using the items taken from Byrne's measure described previously. Four items designed to measure levels of job (dis)satisfaction are

presented in abbreviated sentences in Table 4.10. The first item was skewed, and the overall results of job satisfaction suggested that participants were moderately satisfied with their current jobs. The first item measuring participant's decision on taking the same job correlated significantly with items on whether they would advice their friends to take the same job ($r = .27, p < 0.05$) and their overall satisfaction rating of their current jobs ($r = .26, p < 0.05$). The other items were positively correlated but the correlation coefficient failed to reach statistical significance at the alpha level of .05.

Table 4.10

Distribution of scores on job satisfaction items

Items on Satisfaction	Mean	S.D	Skewness
1. ...decide over to take the job or not...	1.78	.74	1.29
2. ...choice to get any type of job if free...	2.25	.78	- .26
3. ...friends interested in same type of job...	2.66	1.42	- .15
4. ...overall satisfaction...	2.11	.86	.39

note: items in abbreviated forms, see appendix D.

The Rose Chest Pain questionnaire contained a substantial amount of missing data because participant failed to comply strictly with the procedure required to accurately complete this questionnaire. For example, a major problem that emerged from this questionnaire was that participants failed to complete the follow-up questionnaires in each of this questionnaire after establishing positively the self-reported cardiovascular symptoms. This measure contained a large number of missing data and incorrect responses. The data presented in Table 4.11 may not be an accurate reflection of the real

extent of self-reported cardiovascular symptoms. However, based on the correctly completed questionnaires, the results revealed that a high percentage of participants did not experience the self-reported cardiovascular symptoms measured by this instrument.

Table 4.11

Distribution of scores on self-reported cardiovascular symptoms

Cardiovascular Symptoms	Possible (+) cases		Possible (-) cases	
	Percentage	n	Percentage	n
1. Chest Pain	12.70	8	87.30	55
2. Possible Infarct	15.87	10	84.13	53
3. Intermittent Claudication	1.59	1	98.41	62

Rose Chest Pain questionnaire was the only instrument that participants appeared to experience considerable difficulties with. Many participants failed to complete the three sections of this questionnaire as instructed. It was not exactly known what the problems were with this instrument, however comments provided by some participants point to the possibility of ambiguity with the self-explanatory instructions on how to complete the three sections of this questionnaire.

This test is divided into three sections: section A - Angina; section B - Possible Infarction; and section C- Intermittent Claudication. The confusion, it would appear rests on questions *a* and *c* in section A, and section C of this instrument. The first question in Section A reads:

(a). Have you ever had any pain or discomfort in your chest? 1. YES 2. No (Go to C).

Question *c* in Section A reads:

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

Some participants completed the first question and pointed out that if they responded with a "NO" in the first question, than it did not make any sense to complete the rest of section A including question *c*.. This is because participants read this question as addressing an aspect of pain or discomfort once a positive experience of chest pain was established in question *a* of Section A. It would appear that the response options in the first question was interpreted in two possible ways by participants. Firstly, the negative responses in question *a* also has "go to C" so some participants read this to mean section C on Intermittent Claudication ,which is what was intended from this instrument. Others read it to mean question C in section A, and so did not complete the other sections of this measure (see p 48, Rose et al., 1977). This confusion probably explained the failure by some participants to adhere strictly to instructions required in filling in the responses on this instrument. Many participants also chose to ignore the other two sections in this measure resulting in a large amount of missing data.

The results for the STAI inventory are not reported because two copies of the A-State anxiety scale was screened because of an oversight by the researcher. Participants did not report any problems with this scale of STAI, but found it odd to have identical copies of the A-State scaled screened.

Several general problems associated with the questionnaires were reported in this study. Firstly, as would be expected in a study using questionnaires, some participants

create their own categories of responses where they felt the options provided did not accurately reflect their perception of the variable under investigated. For example, responses like, “rarely”, “sometimes”, and “once in while” were used as substituted for the standard responses constructed in the questionnaires. This problem was distributed across the instruments and was not limited to one questionnaire. Some missing data were accounted for by the creation of these extra response options. Secondly, some participants pointed out that some items were duplicated in the various questionnaires. For example, items measuring role ambiguity in the participants views appeared twice, firstly in the Facet-Specific Job Satisfaction measure, and secondly in the Role Ambiguity and Role Conflict scales. Similar criticism was made on the variable of social support at work. For example, the items on Byrne's social support measure at work were perceived by some participants to assess the same factor of co-workers relationship in the Facet-Specific Job Satisfaction measure. Thirdly, participants commented on the use of different response options dimensions in the instruments. Some participants argued that the use of different response scaling formats and response options were confusing. They proposed a uniform response scaling system for all the questionnaires. Finally, participants were critical about the length of some questionnaires, and the number of variables assessed in this study. The questionnaire package piloted was 32 pages long with the first two pages detailing issues of consent, confidentiality, ethics, and a description of the study. Participants felt that there were too many questionnaires and cautioned that a poor response rate can be expected if participants were discouraged by

the length of the questionnaire package. These problems will be considered when modifying the questionnaires for the second study.

4.4 DISCUSSION

The results from the pilot study supported the viability of investigating the construct of the Type A behaviour and job stress in Papua New Guinea. The results did not suggest any major problems in assessing the construct of the TABP among educated employees within the work environment. This finding is applicable to both males and females employees. Descriptive data on almost all variables were not markedly skewed to suggest out of the normal range responses by participants on the different questionnaires. The distribution of the scores on each scale seemed to compare well with their respective norms as reported in the results section. The self-explanatory instructions on each questionnaire were comprehensible and easy to follow. The only exception was the instruction on the Rose Chest Pain Questionnaire. The study design also did not present any major difficulties for participants, nor did it raise concern over ethics regarding research on humans. Overall, this study did not present or project any serious problem in a PNG work environment, and among educated Papua New Guineans to cast doubt on the viability of such a research project.

There were only a few isolated problems with the questionnaires and it is important that they were described because of the changes that will have to be made on the questionnaire package to accommodate these problems. Firstly, some participants raised concerns about the size of the questionnaire package, and suggested that the number of

questionnaires should be reduced if the study was going to yield a good response rate. Secondly, some participants criticise the use of different response option scales. There were many different response scales and some participants found this to be distracting. Some participants suggested the use of consistent response grid for all questionnaires including the Jenkins Activity Survey. The third problem was linked to responses on the Rose Chest Pain Measure. It seemed that participants did not follow strictly the instructions required to complete the three sections of this instrument. This questionnaire alone contained a lot of missing data relative to other measures used in this study. It was difficult to meaningfully extract the data on this questionnaire to assess participants responses. Finally, only one scale of STAI was screened and participants did not report any major problems with this scale of the State-Trait Anxiety Inventory. Given the problems raised, a number of changes will be made to address these concerns in the main study, for example some variables not so central to the thesis such the variable of social support may not be investigated in the main study to reduce the length of the questionnaire package and a consistent response option grid may be used for the job stress questionnaire. In addition, the separate scales on job stress may be combined as one instrument assessing the variable of job stress.

The construct of the TABP has never been investigated in Papua New Guinea. This study is a pioneering effort to measure the TABP as it is scientifically defined in Papua New Guinea. In addition, this study also addressed systematically job stress and other aspects of the occupation such as job satisfaction implicated in the pathway between the TABP and the risk of coronary heart disease.

The initial results showed that participants reported Type B characteristic as opposed to the TABP as reflected by low mean scores which fell below the arbitrary mean of zero on the Global Type A scale and 2 of the 3 sub-components of the TABP measured by the Jenkins Activity Survey. Over 50 per cent of participants scored below the arbitrary mean of zero on the Global, S and J scales. The same participants also scored above the arbitrary mean of zero on the H scale. Participants also reported some evidence of job stress as measured by the job stressors. Given the results obtained in this study, some basic questions need to be raised. Firstly, where evidence of the TABP was reported as shown in Table 4.1 and Table 4.2, will these reported expressions of the TABP correlate with job stress as shown in Tables 4.3 and 4.5, and will job stress predict the expression of the Type A behaviour pattern? Secondly, will education and job status influence positively the expression of the TABP as was observed in Western societies? Thirdly, will evidence of the TABP correlate with, and predict the experiences of job distress and job satisfaction at work? These are some of the questions that need some answers to understand the expression of this pattern of behaviour across diverse cultures, and to learn more about its generalisability as a CHD risk factor in different cultures.

In light of the initial evidence on the expression of the Global Type A behaviour and its sub-component, several hypotheses were proposed and tested in the PNG study. These hypotheses have been described in chapter one. To reiterate: (1) the TABP will be linked positively with occupational stress, and job stress will predict the expression of the Type A behaviour; (2) gender, job status and level of education will influence positively the expression of the TABP in the following manner: (a) Male and female employees will express the TABP in a similar manner; (b) Employees with higher educational

qualifications and high job status will report the Type A behaviour relative to those with lower educational qualifications and employed in low status jobs, and (3) reported evidence of the TABP will correlate with, and predict job distress symptoms. These hypotheses are tested in the main study.

4.5 CONCLUSION

The instruments piloted for their usefulness in the PNG work environment did not present any major problems among educated Papua New Guineans. It appeared that participants understood the meanings of most of the test items in the different instruments as reflected by the few comments and criticisms raised, and by less missing data from this study. On the basis of the observations made in this study, a research project of this nature exploring the prevalence of the TABP and job stress, and the association between the two variables posed no obvious problems in a Papua New Guinea work environment. What is of specific empirical importance was the link between the TABP and job demands. Will job stress correlate with, and predict the expression of the TABP among educated employed Papua New Guineans? This question will now be further explored in two large public sector organisations in Papua New Guinea. The data collected in the second study will be compared with a matched sample of participants in Australia to examine the generalisability of the TABP as a human behavioural disposition in different societies. The evidence of the prevalence of the TABP between two contrasting societies will also provide further data on the antecedents of the TABP, and more importantly the universality of the construct of the TABP as a CHD risk marker.

Chapter Five

Main Study in Papua New Guinea

5.1 INTRODUCTION

5.1.1 Research Setting

This study was conducted in two public sector organisations in Port Moresby, the capital district of Papua New Guinea. These organisations were the Electricity Commission, and Post and Telecommunication Corporation. The Electricity Commission's (thereof as ELCOM) mission is to:

Provide the service of electricity power supply to the people of the country as a contribution to the social and economic development of the nation in accordance with the National Goals and Directive Principles underlying the Constitution and with the Goals and Principles of the Commission (Section 20 A (1), Electricity Commission Act, Chapter Number 78, Annual Report, 1993, p.1.).

The Post and Telecommunication Corporation's (thereof as PTC) mission is to:

Improve postal and telecommunication services and extend those services as rapidly and efficiently as is practical so that all people of Papua New Guinea have access to these services at an affordable cost (Annual Report, 1993, p.1.).

There are several administrative and technical departments in ELCOM and PTC, and both organisations co-ordinate the functions of their organisations in Port Moresby.

5.1.2 Background of Study Population

As at June 15th 1995, ELCOM employed a total of 1,993 workers in a cross-section of managerial, administrative, technical, and unskilled jobs (ELCOM Staff Registry, June 1995). One thousand nine hundred and twenty workers (96.34 %) were Papua New

Guineans, and 73 (3.66%) were foreign staff. In the same period, PTC employed a total of 2,639 workers in a cross-section of jobs similar to the Electricity Commission. Two thousand five hundred and seventy-one staff (97.42 %) were Papua New Guineans, and 68 (2.58 %) were foreign workers (PTC Staff Registry, June 1995).

The workers in both organisations were graded for seniority on a grading scale system. ELCOM has a scale of grades 1 to fifteen. ELCOM's managing director is on grade 1, and the semi and unskilled workers are classified in grades 14 and fifteen. The rest of the workers are classified between grades 2 and thirteen. Senior managers, and middle line managers are in grades 2 to five. PTC also has a similar job classification system, and its grades ranged from 1 to thirteen. PTC's managing director is on grade thirteen, and the divisional heads and middle-line managers are in grades 10 to twelve. The rest of the workers are classified in grades 1 to nine. PTC also has an additional classification of grade 50 for unskilled workers. These grading scales provided a reliable way of cross-checking the jobs targeted for this study. Participants were selected from managerial, administrative, and technical jobs in both organisations.

The workers' level of education was an important criterion set for the selection of participants. A decision was taken to exclude workers in grades 14 and 15 in ELCOM, and those in grades 1 and 50 in PTC because these grades were likely to contain some workers with less than grade 10 level of education. The criterion for inclusion of participants in this study was that, they must be able to read English at the 10th grade or

better. The reason for setting this educational requirement as a condition of entry to the study was to ensure that those selected commanded sufficient fluency in English to be able to read and understand the meaning of items in the questionnaires.

A sample of 1000 participants was selected from the remaining pool of workers in both organisations after deleting their foreign and unskilled workers. This sample consisted of participants who were educated at grade 10 level or above, and held managerial, administrative, and technical jobs.

5.2 METHOD

5.2.1 Participants

Participants in the two organisations were stratified by the job descriptions of managerial, administrative, and technical jobs to ensure that these job categories were proportionally represented in the study. A total of 1000 participant were selected through proportional stratified selection process from these job categories (Henry, 1990), and questionnaires were sent to these participants through their organisation's mail services.

Four hundred and thirty-eight participants representing 43.8 per cent of the 1000 participants in the original sample returned their questionnaires. From these, 356 of those sufficiently completed their questionnaires for a meaningful extraction of data for statistical analyses. This response rate is generally expected of the survey design used in this study (Berry & Houston, 1993).

The 356 participants consisted of 101 females and 255 males aged between 20 and 51 years (mean = 33.9 years, S.D = 6.84). Many participants were married (n = 293 = 82.30%). Two hundred participants (56.18%) held college certificates, 98 participants (27.53%) held college diploma and 58 participants (16.29%) held university degrees (mainly first degree). Three hundred and twenty-nine participants (92.42 %) were from the coastal regions and 27 (7.58 %) were highlanders. Fifty-nine of the 356 participants held managerial jobs, 78 performed supervisory duties in administrative and technical jobs, 93 were technical workers; and 102 held administrative jobs. Twenty-four participants did not report their jobs. There was obvious gender difference across these jobs. The descriptive results showed that 52 males and 7 females occupied managerial positions; 63 males and 15 females were supervisors; 79 males and 14 females held technical jobs, and 39 males and 63 females performed administrative jobs. Nineteen males and 5 females did not report their jobs. These participants were employed in their current jobs from 1 to 5 years (mean = 4.42, S.D = 1.58). However, many also reported holding more than one job in their occupational career (mean number of jobs = 3.20, S.D = 2.22). The salary range of participants who responded ranged from K9,000 to K26,000 (+) (PNG Kina) per annum¹.

¹ 1 PNG Kina is equal to approximately 1 Australian dollar.

5.2.2 Measures

The instruments used were the JAS, the Work Activity's questionnaire, a scale on job satisfaction, and three health questionnaires. The health questionnaires assessed job distress symptoms, anxiety and self-reported cardiovascular symptoms. Except for the job distress questionnaire, all other questionnaires were assessed in a previous study in Papua New Guinea. Information was also collected on socio-demographic variables like gender, age, region of origin, educational qualifications and the occupational profile of participants like type of job, number of jobs and income. The instruments used in PNG are presented as Appendix A. It is pointed out here that instruments presented in the appendix section excludes standardised measures such as the JAS and the State Trait Anxiety Scale.

5.2.2.1 Jenkins Activity Survey (Jenkins et al., 1979)

The TABP was assessed by Form C of the Jenkins Activity Survey (Jenkins et al., 1979). This instrument contains 52 multiple choice items measuring the Global Type A behaviour, and its components as previously described in chapters 2 and four. The features, and application of this instrument have also been described in detail in these chapters.

The choice of the JAS over other Type A measures was based on a range of important practical and theoretical considerations. These considerations were: (1) its psychometric

properties are well established, for example, the JAS is regarded as a reliable and valid self-report measure of the TABP (Byrne & Reinhart, 1989), and the TABP assessed by the JAS has successfully predicted CHD in initially healthy individuals (Jenkins et al., 1974); (2) the JAS is used more extensively than the other self-administered questionnaires combined, and what is more relevant especially in this study is that, this instrument unlike other self-administered TABP questionnaires and the SI has been used widely in a cross-section of the population (Jenkins et al, 1979; Boyd, 1984 Cohen & Reed, 1985; Greenglass, 1991); (3) practical considerations on cost, time, training and the size of the sample in this study made it almost impossible to use the SI, which was claimed as the preferred method of measuring the TABP (Powell, 1987; Rosenman, 1990), and (4) the S, J, and H scales addressed behavioural tendencies which are closely identified with the behavioural aspects of working life making the JAS a relevant Type A measure for this study (Chesney & Rosenman, 1980; Byrne & Reinhart, 1989).

One other important consideration on the use of the JAS in this study was based on its widely published data (compared with the other Type A measures) in different societies like Europe (Reunanen et al., 1987), Japan (Cohen et al., 1979), Africa (Wilson, et al 1989) and Australia (Byrne & Reinhart, 1990, 1989). The data generated in these studies have demonstrated the JAS as a useful way of assessing the Type A behaviour in different groups of people. For example, the TABP assessed through the JAS was positively correlated with reported evidence of CHD in societies outside of US (Zyzanski, et al.,

1979; Cohen & Reed, 1985), and the JAS was reported to classify correctly a high percentage of individuals as Type As (Appels, et al., 1982). In addition, this measure showed a strong correspondence with the Structured Interview (Appels, et al., 1982). Scores from the JAS have also been reported to correlate with some socio-demographic variables like high educational qualifications and job status (Reunanen et al., 1987; Byrne & Reinhart, 1995), and reported experiences of job stress (Sorensen, et al., 1987; Greenglass, 1991). These are findings which are consistent with the norms (Rosenman, 1993; Byrne & Reinhart, 1995). These wealth of cross-cultural data demonstrated the utility of this TABP instrument when used across diverse groups of people, compared to other methods of measuring the TABP such as the Bortner Rating Scale. These data and the survey design used in this study provided the basis upon which the JAS was chosen as the most suitable instrument from amongst other self-reported scales to measure the Type A behaviour in Papua New Guinea.

5.2.2.2 Work Activities Questionnaire

The Work Activity questionnaire contained 35 items assessing 9 subjective indicators of the of job stress. The items in this measure were extracted from three popular measures of job stress, namely, the Facet-Specific Job satisfaction questionnaire (Quinn & Staines, 1979), the Role ambiguity and Role conflict measure (Rizzo, et al., 1970), and the Role Overload scale (workload) (Beehr, et al., 1976). These scales were combined and presented as the “Work Activity Questionnaire”. A major consideration in combining the

items from the different questionnaires was based on the observation, that each of these questionnaires, individually, did not address all the stress indicators associated with occupational activities. For example, the Facet-Job Satisfaction Questionnaire did not adequately assess the issues of role ambiguity, role conflict and role overload, and visa versa, the work role scales did not address issues like promotion prospect, salary conditions and the resources required to perform a job task. These are crucial indicators of job stress and it was the intention of this study to make a comprehensive assessment of job stress indicators to establish empirically their influence on the expression of the TABP within the PNG work environment. An added consideration in collating these scales under one questionnaire relates to the criticisms and problems with the use of different measures in the pilot study described in chapter four. For example, concerns were raised on the size and number of questionnaires screened in the pilot study.

Generally, many items in the Work Activity Questionnaire are simple and easy to administer, and constructed to be applicable to different levels and types of jobs (Cook et al., 1981). In addition, many of these scales, and items have been adopted and modified in the design of instruments to assess job stress (Karasek, 1979). These changes allowed for a presentation of the 3 measures as the Work Activity questionnaire. The response scales adopted for the Work Activity Questionnaire were four point likert scales similar to the response scale of the Facet-Specific Questionnaire (see Appendix C).

5.2.2.2.1 Facet-Specific Job Satisfaction Questionnaire (Quinn & Staines, 1979)

This questionnaire contains 33 items designed to tap six features of the experience of job stress. The six factors were extracted through factor analysis, however the details have not been reported (Quinn & Staines, 1979). These job stress indicators are: (a) Job comfort (5 items); (b) Job challenge (3 items); (c) Financial rewards (2 items); (d) Relations with co-workers (2 items); (e) availability of resources (4 items), and (f) Promotion (2 items). Each scale is weighted with different number of items as highlighted and the items are worded positively. For example, "I have enough time to get the job done", "I am given a lot of chances to meet friends" and "The chances for promotion are good". The responses on each item are measured on a four point likert scale of *Very true* (4), *Somewhat true* (3), *A little true* (2) and *Not at all true* (1), and an average score is obtained for the scales. A mean score of 1 is indicative of the experience of job stress and an average score of 4 represents a relative absence of the experience of job stress. Two short measures are available as substitutes for the 33 item questionnaire. One contained 18 items and the other 7 items. The items in the two short forms were extracted from a full scale questionnaire because of their close association with the full scale. The two short questionnaires correlated strongly at $r = 0.97$ and $r = 0.91$ respectively with the 33-items questionnaire. The alpha coefficient (0.92) for the full scale measure suggests that the sub-scales are not entirely independent. The alpha coefficient of the sub-scales ranged from .88 to .61 (Quinn & Staines, 1979). The 18 items questionnaire was used in

this research for the purposes of keeping as short as possible the questionnaires. The alpha coefficient reported for this scale was .85 and the alpha coefficient for the subscales ranged from .48 to .71 (Quinn & Staines, 1979).

5.2.2.2.2 Role Overload Scale (Beehr, Walsh & Taber, 1976)

The items on the Role overload (Work overload) scale was extracted from the “Role Ambiguity, Role Overload and Non-participation Questionnaire” (Beehr et al., 1976). This instrument contains three items designed to assess a person's perception of Role overload. The items are: (1) “I am not given enough time to do what is expected of me on my job”, (2) “It often seems like I have too much work for one person to do”, and (3) “The performance standards expected of my job are too high”. In this study, the responses to these items were measured on a similar likert scale described for the Facet-Specific Job Satisfaction scale as opposed to its original response option scale of 1 to 7 described in section 4.2.2.2 in chapter 4. The psychometric assessment of this questionnaire has produced a mean of 3.45 (S.D = 1.33), and an internal reliability coefficient of 0.56 (Beehr et al., 1976).

5.2.2.2.3 Role Ambiguity and Role Conflict Scales (Rizzo, House & Lirtzman, 1970)

This instrument contains six items assessing role ambiguity and eight items assessing role conflict. The items in the two scales were extracted through factor and item analyses from

a 30 items questionnaire administered to managerial and technical workers (Rizzo et al., 1970). The items on the role ambiguity sub scale are worded positively, for example, "I feel certain about how much authority I have" or "I know what my responsibilities are". This is not the case with items on role conflict. For example, "I work with two or more groups who operate quite differently", or "I work on unnecessary things". The responses were measured in a similar response scale as the Facet - Job Satisfaction questionnaire and the Role overload scale as opposed to its original 7-point scale described in chapter four. The role ambiguity scale is scored from 4 to 1 respectively on the response options and the scoring on the role conflict scale is reversed from 1 to 4 respectively. A mean between 4 and 1 is calculated for the two scales such that a high score indicates high level of perceived role ambiguity and role conflict. This measure was chosen because (a) it has been used extensively on different types of jobs and (b) its psychometric properties are well established compared to other similar scales assessing role ambiguity and role conflict at work (Cook et al., 1981). For example, the alpha coefficients produced by one study based on six different samples produced scores ranging from 0.63 to 0.87 for the role ambiguity scale and scores ranging from 0.56 to 0.82 for the role conflict scale (Aldag & Brief, 1977). The intercorrelation between the two scales have also been reported in the same study to range from 0.18 to 0.50. Another example of the well researched and established psychometric properties of this instrument is its test-retest reliability. Data produced in one study of scientists and engineers over a period of 4

months produced a score of 0.65 for the role ambiguity scale and a score of .71 for the role conflict scale. In another study of health-care workers over six months, Szilagyi (1977) reported a test-retest reliability score of 0.66 for the role ambiguity scale and a score of 0.67 for the role conflict scale. In addition, one of the most important considerations for the use of these scales was based on observation that different forms of the two scales existed and researchers have deviated from the original scaling and scoring procedure (Schriesheim & Von Glinow, 1977). For example, Valenzi and Dessler (1978) used a five-point response option scale instead of the original 7-point response option scale and others have reversed the direction of scoring these scales (Schriesheim & Von Glinow, 1977). However, given these alterations to the use of these scales, it was cautioned that care must be taken when interpreting research data against the norms (Cook et al., 1981).

5.2.2.3 Job Satisfaction Scale (Byrne, 1986)

The experience of job satisfaction (dissatisfaction) was assessed by five items extracted from Byrne's (1986) Occupational Stress, Job Satisfaction and Health questionnaire. The items assessed a number of job satisfaction issues, for example, the person's choice to take the same job or a different job if the opportunity presents itself and a measure of the individual's overall job satisfaction rating. The responses on each item are measured using a 4 multiple choice response options. The items on job satisfaction were subjected to factor analysis and this statistical procedure produced four factors, the first linked to

“work interest”, the second “participation in work decisions”, the third “job satisfaction” and the final dimension was “satisfaction of work characteristics” (Byrne & Reinhart, 1990). The Cronbach alphas on each of these scales were generally high, the first dimension had an alpha of 0.83, the second 0.78, the third 0.76, and the fourth dimension 0.78 (Byrne & Reinhart, 1990) (see Appendix D).

5.2.2.4 Anxiety-Stress Questionnaire (House & Rizzo, 1972b)

This instrument assessed the subjective experience of job tension (see Appendix E). The measure contains 17 items forming three sub-scales, namely Job-Induced Tension (7 items), Somatic Tension (5 items), and General Fatigue and Uneasiness (5 items). The 17 items are based on an initial 26 item scale administered to managerial, professional, and technical workers in a single organisation. Factor and item analyses were used to reduce the number of items to 17. The responses are measured on a *True* or *False* scale for the experiences of the symptoms described. The scale scores are averaged so that a mean of 2 denotes self-reported experience of the job distress symptoms and a mean score of 1 reflected a relative absence of the measured symptoms. The use of a 13-item version of this measure with managers, scientists and engineers produced a Spearman-Brown internal reliability coefficient of 0.89 on this scale (Miles & Perreault, 1976). Based on a sub-sample of this study, Miles (1975) reported a test-retest reliability of 0.79. In addition, it is worth noting that some correlation data have been produced between this measure, and the role ambiguity and role conflict scale. For example, Rizzo, House and

Lirtzman (1970) reported a correlation of 0.22 and 0.31 between this scale and the two work role scales respectively. Brief and Aldag (1976) reported a correlation coefficient of 0.20 and 0.41 on the two role scales with this anxiety scale based on data collected from nursing aides and assistants. The alpha coefficient reported on this scale in that study was 0.70.

5.2.2.5 Depressed Mood at Work (Quinn & Shepard, 1974)

This questionnaire assesses self-reported experience of depressed mood at work (see Appendix F). The scale has 10 items and the responses on these items are scored on a 4 point scale ranging from *Often* (4) to *Never* (1). Four items on this questionnaire are reversed scored. An average score is calculated to establish the experience of depressed mood. A mean score of 1 indicates self-reported experience of depressed mood and a score of 4 represents absence of depressed mood. This instrument was used as part of a "National Quality of Employment Survey" conducted by the developers of this instrument (Quinn & Shepard, 1974). The average score calculated for this sample (N=1496) was 3.32 (S.D = 0.44). An alpha coefficient of 0.77 has been reported for the scale (Quinn & Shepard, 1974), and Beehr (1977) using this test on workers in 5 different organisations reported a Spearman-Brown internal reliability coefficient of 0.71. This measure have been used in conjunction with other instruments. For example, this measure produced a correlation coefficient of 0.49 when correlated with a Life Satisfaction scale, and score of 0.43 when correlated with a Job Satisfaction scale (Quinn & Shepard, 1974).

5.2.2.6 State-Trait Anxiety (Spielberger, Corsuch & Lushene, 1970)

The State-Trait Anxiety Inventory (STAI) consists of two scales measuring two distinct anxiety concepts, namely State anxiety (A-State) and Trait anxiety (A-Trait). The two scales contain 20 items each. The items in the A-State scale assessed how a person feels at a given moment in time, and the A-Trait scale assesses the individual's general feelings of anxiety.

This measure is presented in a likert-style format with 4 response categories on each of the items on the two scales. A score of 1 on the A-State scale denotes a *not at all* response and a score of 4 *very much so* response. On the A-Trait scale, 1 means *almost never* and 4 *almost always*. The responses on the items are summed with a highest total possible score of 80 and a lowest total possible score of 20. It is also important to emphasise that some of the items are worded such that a high response rating can mean either high level of anxiety or low level of anxiety. For example, "I am tense", or "I am relaxed". The items designed to assess low levels of anxiety are scored in a reverse direction. Half of the items on the A-State scale are reversed scored and the other half are positively scored. This is not the case with the A-Trait scale. Seven items on the A-Trait scale are reversed scored and 13 items are directly scored (Spielberger et al., 1970).

5.2.2.7 Rose Chest Pain Questionnaire (Rose, McCartney & Reid 1977)

The Rose Chest Pain questionnaire is a self-report measure of the cardiovascular symptoms of Angina pectoris (Chest pain), Infarction and Intermittent claudication. The original version of this instrument was described in section 4.2.2.5 of Chapter four. The Byrne's version (Byrne, 1986) was used in this study (see Appendix G). The use of this version of the Rose Chest Pain questionnaire was to correct a potential ambiguity on the self-explanatory instruction on how to score the responses (see chapter 4, pp.124-125). The use of the original test resulted in poor responses by participants in the study described in Chapter four, therefore a different version of this instrument was used in this study in an attempt to correct the problems described in chapter 4 and to improve on the poor response rate witnessed in the previous study.

5.2.3 Procedure

Questionnaires were distributed to participants through the internal mail services of the two organisations and each questionnaire was accompanied by a brief description of the objective of the study, endorsement letters from ELCOM and PTC, and a stamped self-addressed envelope. Participants were requested to return their completed questionnaires through their internal mail service using the self-addressed envelopes provided. A total of 7 weeks was set as the time frame for this study to allow enough time for participants in field operations in the provinces of PNG to take part in this study. Reminder letters were

sent to all participants 2 weeks before the completion of the study and a further letter was sent to thank those who returned their completed questionnaires.

All participants received identical questionnaires, and for the purposes of follow-up studies in the future they were requested to identify themselves by their work identification numbers. It was stressed that this was optional. Participants were provided with detailed information on the issues such as consent and confidentiality associated with this study through a standard "Consent Form" from the institution the researcher was attached to. All the questionnaires contained self-explanatory instructions for participants to follow when filling in the responses. Participants were informed that their involvement in this study was not compulsory, and individual responses would remain confidential and presented in a combined form when reporting the results.

5.3

RESULTS

The results are presented in two sections. The first contained a descriptive analysis of the variables and the second part sets out to address the two underlying questions which are the concerns of this study, namely (1) the expression of the TABP and (2) its association with job stress.

5.3.1 Descriptive Results

The descriptive statistics and correlations between the JAS scale scores are reported in Table 5.1. The JAS has an arbitrary mean of zero as its cut-off point to distinguish between Type A and Type B scores. Positive scores (scores above the mean of zero) represented a relative presence of the Type A behaviour and negative scores (scores below the mean of zero) reflected a relative presence of the Type B behaviour (absence of the TABP). The mean scores on the Global, S and J scales in Table 5.1 showed that participants expressed patterns of behaviour in the direction of the Type B behaviour as reflected by the negative mean scores falling below the arbitrary mean of zero on these scales. The scores on the H scale, however fell above this arbitrary mean of zero reflecting a tendency towards the Type A behaviour.

Assessing the distribution of the scores on JAS in this study against the norms (Jenkins et al., 1979), the mean score on the Global scale fell at 40th percentile, the mean score on the S scale fell at the 30th percentile, the mean score on the J scale fell at the 35th percentile, and the score on the H scale fell at the 65th percentile. The distribution of the scores suggested that this sample of participants self-reported as Type Bs compared to the norms on the JAS.

Modest but statistically significant correlations were established between the Global scale and the three sub-scales. The positive relationship between the Global scale and the

3 sub-scales was expected given that the Global scale is constructed from items extracted from the three sub-scales (Byrne & Reinhart, 1994). This result also suggested that the scales are not measuring entirely independent constructs (Byrne & Reinhart, 1989). In addition, significant but modest correlations were established between the three sub-scales. However, the J and H scales were unrelated, a result which has been reported in previous studies using the Jenkins Activity Survey (Byrne & Reinhart, 1995).

The percentages of participants who reported themselves as Type As or Type Bs on the JAS scales are reported in Table 5.2. The mean scores were split at the arbitrary mean of zero with positive scores (+) representing the TABP and negative scores (-) indicating the Type B behaviour pattern. Over 50 per cent of participants scored below the arbitrary mean of zero on the Global, S and J scales. Similarly, over 50 per cent of the same participants scored above the mean of zero on the H scale. The distribution of scores in this Table essentially reflected the means reported in Table 5.1.

Table 5.1

Mean, S.D and correlation between JAS scales

JAS Scales	JAS standardised scores (N = 356)				
	Mean	S.D	2	3	4
1. Global Type A	-3.41	7.84	.62***	.25***	.34***
2. Speed & Impatience	-6.37	7.84	-	.11**	.20***
3. Job Involvement	-5.68	8.77		-	.03
4. Hard-Driving	3.43	8.87			-

** p < 0.01; *** p < 0.001

Table 5.2

Percentage of JAS scale scores split at arbitrary mean of zero

JAS Scales	JAS standard scores (percentage < or > zero) (N = 356)			
	% above 0	n	% below 0	n
Global Type A	33.7	120	66.3	236
Speed & Impatience	19.7	70	80.3	286
Job Involvement	25.3	90	74.7	266
Hard-Driving	64.9	231	35.1	125

The means, S.D's and correlation coefficients between the job stressors are reported in

Table 5.3. The 6 scales of the Facet-Specific questionnaire correlated significantly but

modestly with each other and with the role ambiguity scale. This result was not replicated with the role overload and role conflict scales. The role overload scale correlated negatively with job comfort and promotion scales, and was essentially unrelated with the other scales. The role conflict scale correlated positively with the role ambiguity and job challenge scales, and negatively with the job comfort scale. All other scales were unrelated to the role conflict scale.

It is important to clarify the results on the role overload, role ambiguity and the role conflict scales. As previously described in section 5.2.2.2.3 of this chapter, two statements on the role overload scale are worded negatively and one positively therefore a low mean score denotes an absence of perceived role overload and a high mean score reflected evidence of workload. The mean score of 2.39 in Table 5.3 indicated an absence of perceived role overload by participants. The role ambiguity items are worded positively and the items on the role conflict scale are worded negatively. A high mean score on the role ambiguity scale reflects an absence of the experience of role ambiguity. On the other hand, a high mean score on the role conflict scale represents evidence of the experience of role conflict. In this study, the mean score of 3.13 was reported for role ambiguity indicating that participants were generally clear with the expectations and responsibilities associated with their jobs. A mean score of 2.15 was reported for the role conflict scale suggesting that participants also did not perceive any conflict regarding their roles at

work. Overall the issues to do with promotion and finance were the only issues representing important concern for participants.

The alpha coefficient reported for the Work Activities questionnaire in this study was .66 and the alpha coefficients for the sub-scales contained in this questionnaire ranged from .59 to .62 as reported in Table 5.3. The alpha coefficient on each of the job stress scales are reported in Table 5.3. The scores are all above .50 suggesting that each scale tapped the issues they were designed to address.

Table 5.4 contains the percentages of participants who reported experiences of job stress as measured by the items in the Work Activity Questionnaire. Six-eight per cent of participants reported promotion as a source of concern for them at work. The items on this scale assessed fairness of promotion and promotion prospects. Based on these items this result suggested that participants did feel that promotions were not handled fairly nor did they view their future promotion prospect as encouraging. Financial issues in the form of income and other occupational entitlements were also reported to be of concern for 50 per cent of participants. Other indicators of job stress did not represent any major concern for participants as shown by less than 50 per cent reporting these other areas of their work as sources of concern for them.

Table 5.3

Mean, SD and correlation between the job stressor scales

Job Stressors	Mean	SD	1	2	3	4	5	6	7	8	9
1. Job comfort	2.88	.69	(.62)	.22***	.31***	.23***	.30***	.33***	-.13*	.29***	-.11*
2. Job challenge	2.85	.72	(.59)	.28***	.30***	.30***	.35***	.34***	.04	.34***	.20***
3. Finance	2.76	.86	(.61)	.28***	.28***	.28***	.33***	.23***	-.06	.21***	.08
4. Relationship	2.94	.79	(.61)	.35***	.35***	.35***	.17**	.02	.02	.29***	.09
5. Resource	2.79	.73	(.60)	.39***	.39***	.39***	-.09	.37***	-.02	.37***	-.02
6. Promotion	2.30	.93	(.62)	.39***	.39***	.39***	-.13*	.23***	-.02	.23***	-.02
7. Role overload	2.39	.92	(.70)	.39***	.39***	.39***	.12*	.33***	.07	.33***	.07
8. Role ambiguity	3.13	.54	(.61)	.39***	.39***	.39***	.07	.33***	.07	.33***	.07
9. Role conflict	2.15	.63	(.58)	.39***	.39***	.39***	.07	.33***	.07	.33***	.07

N = 356 all variables; * p < 0.05; ** p < 0.01; *** p < 0.001; alpha coefficient of the scales in parentheses; reliability coefficients of scale = 0.66.

Table 5.4

Percentage of participants reporting job stress experience

Job Stressors	No Stress		Stress	
	Percentage	n	Percentage	n
Job comfort	53.6	166	46.6	190
Job challenge	52.8	188	47.2	168
Finance	49.4	180	50.6	176
Co-workers relation	60.7	216	39.3	140
Work resources	59.6	212	40.4	144
Promotion	32.0	114	68.0	242
Role overload	71.6	255	28.4	101
Role ambiguity	69.0	246	31.0	110
Role conflict	90.2	321	9.8	35

The experience of job satisfaction (dissatisfaction) was also assessed in this study. One hundred and eighty-seven participants (52.5%) would take the same job again without hesitation, 154 (43.3%) participants expressed having second thoughts on whether they should take the same job again or to move into a new and different job, and fifteen participants (4.2%) would not take the same job again. On the issue of choice in deciding on a job, 88 (24.7 %) participants would take the same job again, 112 (31.4%) would take a different job, 152 (42.7%) preferred to be re-classified at a different level of their current job and 4 (1.1%) preferred not to work at all. When asked if participants

would recommend their current job to a friend, 166 (46.6%) participants reported that they would strongly recommend their current job to a friend; 68 (19.1%) will have doubts recommending their jobs to a friend or advise against it; 122 participants (43.4 %) will give the facts and not evaluate their jobs to their friends. Assessing overall job satisfaction, 312 participants (87.6%) were satisfied with their jobs; whereas 44 participants (12.3 %) were not satisfied with their current jobs. A total of 318 participants (89.4 %) described their jobs as excellent or good, and 38 participants (10.6%) described their jobs as bad or terrible. It is fairly self-evident from these results that the participants were generally content with their current jobs.

A significant but modest positive correlation was established between most of the job satisfaction items, however the items relating to whether the individual would take the same job again if they had the choice, and the item on whether they would go into any type of job if they were free right now were essentially unrelated with the item assessing overall satisfaction of their current job.

Table 5.6

Mean, S.D and correlation between job distress and cardiovascular scales

Health Measures	Mean	S.D	1	2	3	4	5	6	7	8	9
A. Stress-Anxiety											
1. Job tension	1.19	.25	(.61)	.47***	.39***	-.28***	.40***	.33***	-.27***	-.15***	-.10***
2. Somatic complaints	1.36	.30		(.54)	.46***	-.34***	.38***	.40***	-.32***	-.20***	-.27***
3. Fatigue and uneasiness	1.34	.21			(.64)	-.22***	.29***	.28***	-.24***	-.14***	-.23***
B. Depressed Mood at Work											
4. Depressed mood	3.11	.42				(n/a)	-.44***	-.44***	.18***	.19***	.23***
C. State-Trait Anxiety											
5. State-Anxiety (A-State)	34.44	9.41					(n/a)	.70***	-.20***	-.20***	-.14***
6. Trait-Anxiety (A-Trait)	41.43	6.81						(n/a)	-.18***	-.20***	-.20***
D. Rose Chest Pain											
7. Angina pectoris									(.38)	.39***	.32***
8. Possible infarction										(.49)	.24***
9. Intermittent claudication											(.54)

N = 356 all cases; **p < 0.01; ***p < 0.001; alpha coefficient in parentheses; n/a = not available for scale.

resulting in a large number of incomplete sections or incorrect responses. The problems here were similar to those describe on this instrument in chapter four. Missing data was substituted by the average score of each respective questions. This short-fall may have prevented participants from making an accurate assessment of their experiences of these cardiovascular symptoms. Nevertheless, adhering to the scoring criteria, and assessing the responses provided in the first questions in the three sections of this measure, the descriptive results showed that a high number of participants did not experience the self-reported cardiovascular symptoms measured by the instruments. It is cautioned that this may not be a true reflection of the actual problems given the poor recorded responses on this instrument by participants.

Table 5.7

Self-reported cardiovascular symptoms by participants

Cardiovascular symptoms	Percentages	
	With Symptoms	Without Symptoms
Angina	40.4 (144)	59.6 (212)
Infarction	16.0 (57)	84.0 (299)
Claudication	41.3 (147)	58.7 (209)

note: figure in parentheses = n; missing data on each scales substituted by means.

The three sub-scales of the Stress-Anxiety measure, namely job tension, somatic symptoms, and fatigue and uneasiness correlated significantly but modestly with each

other. The A-State and A-Trait scales were highly inter-correlated, and the three self-reported scales of cardiovascular symptoms were statistically significantly and positively related with each other. The Depressed scale is a single construct scale. The scales of the Stress-Anxiety questionnaire correlated positively with the two State-Trait Anxiety Scales, but negatively with the Depressed scale and the three self-reported cardiovascular symptom scales. The Depressed Mood at work scale was positively linked with the three self-reported cardiovascular symptom scales but negatively with the A-State and A-trait scales.

5.3.2 Statistical Analyses to test Hypotheses

The expression of the TABP among educated employed Papua New Guineans and its relationship with job stress were the two main problems addressed in this study. The main hypothesis tested as described in chapter 1 and four was: the reported evidence of the TABP will correlated with job stress, and job stress will predict the expression of the Type A behaviour. Of secondary importance as well were the effects of demographic and employment variables on the expression of the Type A behaviour. Examples of demographic variables were gender, age and marital status (married vs single, divorced, widowed). Examples of occupational factors were job classifications (managerial, administrative, technical) and years spent on current job. The hypotheses tested in relation to the effects of these socio-demographic variables were described in chapter 1 and four.

Finally, the association between the TABP and reported experiences of job distress was also given some consideration here. As previously stated, it was hypothesised that the TABP will correlate with, and predict reported experiences of job distress.

The results in Table 5.8 contains the distribution of mean scores between participants who scored above or below the arbitrary mean score of zero on each of the JAS scales. Participants who scored above the mean score of zero differed significantly from those scoring below the cut-off mean score of zero on the JAS scales as shown in Table 5.8. Participants scored significantly lower mean scores (below the mean of zero) on the Global, S and J scales than those who scored high scores above the standard mean of zero on these scales, while a reverse pattern of results was observed on the H scale. On these scale, participants scored significantly above the arbitrary mean of zero.

Table 5.8

Distribution of scores on the JAS scales in the sample

JAS scales	Mean (above 0)	S.D	Mean (below 0)	S.D	<i>t</i>
Global	5.59	(4.37)	-7.86	(4.87)	25.11***
Speed	5.50	(5.02)	-9.32	(5.33)	20.73***
Job	6.01	(4.70)	-9.57	(5.94)	25.05***
Hard	8.70	(5.67)	-6.40	(4.09)	28.82***

*** $p < 0.001$

5.3.3 Distribution of the TABP scores on levels of Socio-demographic Variables

The influences of the demographic, educational, and occupational characteristic of the participants on the TABP formed part of the overall assessment of the TABP in this study. Analysis of variance test (ANOVA) was used to assess the main effect of these variables on the expression of the Type A behaviour. The distribution of the JAS scale scores on the demographic, and occupational characteristics are reported in Tables 5.9 and 5.10.

5.3.3.1 Gender Effect

Male and female participants differed significantly ($F_{1, 355} = 19.33, p < 0.0001$) on the J scale. Male participants reported significantly higher mean scores on the J scale than the females. No significant gender effects were established for the other JAS scales.

5.3.3.2 Age Effect

A significant age effect ($F_{2, 355} = 3.24, p < 0.05$) was established for the J scale. Participants in the age group 30-to-39 years were significantly more involved in their jobs than those aged 20-to-29 years old, and 40 years and older. Participants in this age group scored higher mean scores in the direction of the Type A behaviour on the J scale compared to those in the other age groups.

5.3.3.3 Marital Status Effect

The only significant effect for marital status was on the H scale. Participants in the "alone" category (which consisted of never married, single parents, separated, divorced, and widowed) expressed significantly greater mean scores on the H scale compared with married participants. The differences in mean scores between these marital status categories reached statistical significance ($F_{1,355} = 9.29, p < 0.01$). The "alone" category was created to accommodate the low number of participants in these individual categories.

5.3.3.4 Educational Effect

Participants with university degrees reported significantly higher mean scores on the Global scale ($F_{2, 355} = 3.36, p < 0.05$) than those holding certificates and diplomas. Participants with degrees and diplomas also scored significantly higher mean scores on the J scale compared to those with certificates ($F_{2, 355} = 44.45, p < 0.0001$), however participants holding certificates reported significantly higher mean scores on the H scale compared to participants with degrees and diplomas ($F_{2, 355} = 10.25, p < 0.05$). The effect of years in school showed that participants who spent between 11 and 15 years in school, and those who had been in school for over 16 years scored significantly higher mean scores on the J scale than participants who were in school for 10 years ($F_{2, 355} = 21.95, p < 0.0001$). Participants with 16 years or more in school scored above the arbitrary mean of zero on the J scale. The results on the H scale showed a complete

reverse to the findings on the J scale. Participants with 10 years or less educational training reported significantly higher means on this scale compared with those in school for more than 10 years ($F_{2, 355} = 5.23, p < 0.01$).

5.3.3.5 Occupational Characteristic Effect

A number of main effects on the TABP were also observed on the job characteristic of participants. Participants holding managerial jobs reported higher mean scores on the Global scale than participants in administrative and technical jobs, and this difference was statistically significant ($F_{2, 355} = 3.62, p < 0.05$). Managers and technicians were also more involved in their jobs than administrative participants ($F_{2, 355} = 28.06, p < 0.01$) because they scored higher mean scores on the J scale than participants in administrative jobs. The results also revealed that participants with less than one year-to-one year experience on their jobs reported greater mean scores on the S scale than those who have held their jobs for over a year or more ($F_{2, 355} = 4.77, p < 0.01$). Significant differences ($F_{2, 355} = 11.45, p < 0.0001$) were also observed on the J scale on the number of jobs occupied by participants. Participants holding 4 jobs, or 5 or more jobs in their career path scored mean scores in the direction of the TABP on the J scale compared to those with 3 or less jobs. With regard to income and its influence on the expression of the TABP, participants earning over K13,000.00 per annum scored higher Global Type A mean scores than those earning less than this amount of money in a year, and this results reached statistical significance ($F_{3, 355} = 4.59, p < 0.01$). Similar results of significantly

high mean scores on the J scale was observed among participants earning K9,000.00 - to - K 12,000.00, and K13, 000.00 or more ($F_{3, 355} = 24.52, p < 0.0001$). The differences in mean scores on these occupational variables on the H scale failed to reach statistical significance as shown in Table 5.10.

5.3.4 Occupational Stress and Type A behaviour

The association between the reported evidence of the TABP and job stress was of crucial importance in this study as is consistently discussed throughout this thesis. This section attempts to establish statistically if the TABP and job stress are correlated and whether the expression of the TABP depended on the reported experiences of job stress. Other secondary issues link with the TABP, such as the relationship between the TABP and socio-demographic factors and job distress symptoms are also considered.

Table 5.11 contains the correlation between the job stress indicators and the JAS scales. The H scale was consistently and significantly positively correlated with most of the job stressors compared to the other JAS scales. The other JAS scales appeared to be essentially unrelated to the job stressors, although it can be observed that, workrole scales were significantly and positively correlated with the Global and S scales, whereas the J scale seemed to be linked closely with issues to do with interpersonal relationships at work.

Table 5.9

Means of JAS scales on levels of demographic factors

Demographic Factors	JAS Scales				n
	Global	Speed	Job	Hard	
Gender					
Male	-3.15	-6.15	-4.40*	3.31	252
Female	-4.02	-6.90	-8.78	3.71	104
Age					
20-29 yrs	-3.47	-6.04	-7.32	3.41	92
30-39 yrs	-3.43	-6.31	-4.66*	3.17	198
40(+) yrs	-3.25	-7.02	-6.47	4.24	66
Marital status					
Married	-3.30	-5.60	-6.80	0.34	62
Alone	-3.42	-6.53	-5.45	4.08*	294
Education					
Certificate	-4.24	-6.87	-8.47	5.03*	200
Diploma	-2.91	-5.74	-4.82*	2.54	98
Degree	-1.36*	-5.73	-2.48**	-0.59	58
Years in school					
10 yrs	-3.99	-6.67	-8.24	5.00*	134
11-15 yrs	-3.71	-6.64	-5.84*	3.18	159
16 (+) yrs	-1.38	-5.06	0.14**	0.72	63

N = 356; *p < 0.05; **p < 0.01

Table 5.10

Means on JAS scales in levels of occupational variables

Occupational Factors	JAS scales				n
	Global	Speed	Job	Hard	
Type of job					
Managers	-2.00*	-6.21	-2.37*	3.62	137
Technical	-4.25	-6.51	-5.01**	2.35	96
Admin	-4.31	-6.44	-9.90	4.05	123
Years on the job					
less than 1 yr	-1.17	-3.12**	-3.02*	2.50	47
2-5yrs	-3.69	-6.78	-3.90*	2.48	143
6 (+) yrs	-3.79	-6.93	-7.98	4.51	166
Number of jobs					
1 job	-3.72	-7.68	-8.06	3.16	91
2 jobs	-5.37	-7.44	-7.93	3.50	71
3 jobs	-3.70	-5.76	-5.47	4.58	67
4 jobs	-1.93	-5.49	-3.66**	3.77	51
5 jobs (+)	-1.92	-4.93	-2.29**	2.43	76
Salary					
less than K5,000	-5.72	-5.64	-12.24	1.68	22
K5-8,000	-4.19	-6.21	-9.11	4.90	99
K9-12,000	-4.23	-7.03	-5.92**	2.77	133
K13,000 (+)	-1.08**	-5.83	-0.64***	3.24	102

N = 356; * p < 0.05; ** p < 0.01; ***p < 0.001

Table 5.11

Correlations between job Stressors and JAS scales

Job Stressors	Type A	Speed	Job	Hard
Job comfort	-.06	-.06	-.09	.08
Job challenge	.02	.05	.05	.20***
Finance	.05	.03	-.02	.16**
Co-workers relation	.06	.06	.16**	.13*
Resources	-.13*	-.06	-.11*	.13*
Promotion	-.07	-.06	.08	.02
Role overload	.14**	.15**	.09	.19***
Role ambiguity	.08	.04	.06	.31***
Role conflict	.23***	.22***	.12*	.16**

N = 356; * p < 0.05; **p < 0.01; ***p < 0.001

In view of the significant correlations reported between the JAS scales and some of the job stressors in Table 5.11, four Stepwise regression analysis were used to establish the best linear combination of these stressors (predictive value) on the Global scale, and its sub-components. Job stressors were entered (in blocks) as independent variables, and the JAS scales entered as dependent variables in the regression equation. The results of the regression are reported in Table 5.12.

Role conflict emerged as a significant predictor of the behaviours measured by the Global and S scales explaining variances of 2% and 1% respectively. Co-worker's relationship significantly predicted Job Involvement explaining 4 % of the variance. The

H scale was significantly predicted by job challenge, and role overload. Both job stressors combined explained 10 % of the variance with role overload explaining the bulk of the variance on the H scale. It seemed that, the reported stress associated with work roles, and challenges confronted by participants appeared to manifest in the expression of the Global Type A behaviour, and the behaviours measured by the S and H scales whereas Job Involvement depended on stress associated with interpersonal relationships at work.

Table 5.12

Stepwise regression of job stressors on JAS scales.

<i>Dependent Variables</i>	<i>Independent Variables</i>	<i>R</i>	<i>R²</i>	<i>Δ R²</i>	<i>F</i>
Type A	Role conflict	.14	.02	.02	6.62*
Speed	Role conflict	.13	.02	.01	5.92*
Job	Co-workers relation	.21	.05	.04	16.87***
Hard	Job challenge	.21	.04	.04	12.57***
	Role overload	.24	.06	.06	9.62***

** p < 0.01; ***p <0.001

The correlations between demographic, educational and work characteristics variables, and the JAS scales are reported in Table 5.13. The Global scale appeared to be consistently associated with occupational characteristics. The J scale was the only JAS

scale that was consistently significantly correlated with most of the variables as listed in Table 5.14. The region of origin of participants, the number of jobs they occupied in their career path, and their income level were significantly positively correlated with the J scale, whereas gender, the years spent in school, type of job occupied by participants and the length of service to participants current job were significantly negatively correlated with the J scale. The S and H scales were essentially unrelated with the demographic, educational and job characteristics of participants.

The Global and J scales were the only JAS scales that were significantly linked with the demographic, educational and occupational characteristics of participants. The results of the predictive pathways between these variables and the JAS scales are reported in Table 5.15. The income of participants was the only variable that significantly predicted the expression of Global Type A behaviour explaining 3 % of the variance on this scale. On the other hand, the expression of the J scale was significantly predicted by a host of variables. In particular, gender, participants' region of origin, years in school, type of job, years spent on the participants' current job, number of jobs occupied in their career life and their income all emerged as significant predictors of the Job Involvement. Salary accounted for 17 per cent of variance on this JAS scale, and job classification explained 33 per cent of the variance. The variance explained by the other variables fell between the variances of salary and job classification. It would appear that the job characteristics of

participants exerted greater influence on behaviours measured by the J scale compared for example with stress experienced at work, or demographic variables.

Table 5.13

Correlations between JAS scales and participants characteristics

Characteristics	Type A	Speed	Job	Hard
A. Demographics				
Age	-.00	-.06	-.06	.06
Gender	-.05	-.04	-.23**	.02
Marital status	.04	-.05	.02	-.01
Region of origin	.03	.05	.21**	.04
B. Education				
Level of education	-.03	.04	.03	.05
Years in school	.11**	.04	-.34***	.05
C. Job Characteristics				
Job description	-.16**	-.03	-.43***	.05
Years on current job	-.03	.01	-.14**	.11**
Number of jobs	.12**	.14***	.21***	-.01
Salary	.18***	.03	.44***	-.05

N = 356; ** p < 0.01; *** p < 0.001

Table 5.14

Stepwise regression of participants' characteristics on JAS scales

<i>Dependent Variables</i>	<i>Independent Variables</i>	<i>R</i>	<i>R²</i>	<i>ΔR²</i>	<i>F</i>
Type A	Salary	.17	.03	.03	10.21**
Job	Salary	.41	.17	.17	71.68***
	Number of jobs	.43	.19	.19	41.39***
	Region of origin	.49	.24	.23	36.38***
	Years on current job	.52	.27	.26	32.53***
	Gender	.54	.29	.28	28.58***
	Years in school	.57	.32	.31	27.71***
	Type of job	.58	.34	.33	25.58***

p < 0.01; *p < 0.001

The experience of job satisfaction (dissatisfaction) by participants was one of the outcome variables assessed in this study. The only result of significance was a modest negative correlation ($r = -.14$, $p < 0.01$) between the H scale and participants overall satisfaction of their current jobs. The other job satisfaction items were unrelated to the JAS scales. On the basis of these results, no further statistical analyses between job satisfaction and JAS scales were considered.

negatively correlated with the indicators of job stress as shown in Table 5.15. The other job satisfaction scales were unrelated to the indicators of job stress.

Table 5.15

Correlations between job stressors and satisfaction items

	Satis 1	Satis2	Satis3	Satis4	Satis5
Job comfort	-.04	-.07	.03	-.13**	-.14**
Job challenge	-.13**	-.09	-.07	-.35***	-.17**
Finance	-.06	-.15**	-.02	-.13**	-.14**
Co-workers	-.02	-.04	-.00	-.14**	-.04
Resources	-.07	-.12*	-.08	-.28***	-.19***
Promotion	-.09	-.08	-.11	-.27***	-.19***
Role overload	.03	.02	-.03	.02	.01
Role ambiguity	-.11	-.17**	-.04**	-.24***	-.09
Role conflict	-.04	.01	.01	-.05	.00

note: Satis = Satisfaction item; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

A secondary issue also considered was the association between the TABP and reported evidence of job distress. The results presented in Table 5.17 showed that the S scale was consistently statistically correlated with job distress, and self-reported cardiovascular symptoms. The Global scale appeared to correlate positively with symptoms measured by the Stress-Anxiety measure, and the J scale correlated positively with depressed mood at work, and negatively with scales from the State-Trait Anxiety measure. The H scale was

essentially unrelated with the scales measuring health-related symptoms presented in Table 5.16.

It was of some interest to assess the predictiveness of the TABP on the experience of job distress. The mediating effect of emotional problems on the pathogenic nature of the TABP has been considered as one potential pathway on which the risk imposed by the TABP can be explained (Byrne & Rosenman, 1986; Rosenman, 1993; Byrne, 1996). It was therefore useful to highlight what the association might be in this sample. The JAS scales were treated as independent variables for this data analysis while job distress symptoms were entered into the regression equation as dependent variables. The results of the multiple regression analysis in Tables 5.17 and 5.18 showed that the S scale emerged as a significant and consistent predictor of all the job distress symptoms. In addition, the J scale also significantly predicted the experience of depressed mood at work. With the State-Trait Anxiety scales, the S and J scales significantly predicted the A-State anxiety, whereas all the JAS scales except the H scale emerged as significant predictors of the A-Trait Anxiety. The Type A behaviour as measured by the JAS scales failed to significantly predict the experiences of self-reported cardiovascular symptoms as shown in Table 5.16. This result is as expected given that the JAS scales were essentially unrelated with the self-reported cardiovascular symptoms as shown in Table 5.16.

Table 5.16

Correlations between JAS scales, job distress and cardiovascular symptoms

Health Measures	Type A	Speed	Job	Hard
A. Stress-Anxiety				
Job tension	.26***	.28***	.10*	.13**
Somatic complaints	.18***	.36***	.02	.07
Fatigue & uneasiness	.07	.21***	.02	.05
B. Depressed Mood				
Depressed mood at work	.01	-.15**	.15**	.01
C. State-Trait Anxiety				
State-Anxiety (A-State)	.12**	.24***	-.11**	.05
Trait-Anxiety (A-Trait)	.05	.27***	-.13**	-.01
D. Rose Chest Pain				
Angina pectoris	-.10*	-.14**	-.04	-.10*
Possible infarction	-.07	-.06	.04	-.07
Intermittent claudication	-.06	-.12**	.05	-.01

note: missing values in some cases on self-reported cardiovascular symptoms substituted with average of respective scales; * p < 0.05; **p < 0.01; *** p < 0.001;

Table 5.17

Multiple regression equations: Significant main effects for JAS scales (entered in blocks) on job distress symptoms

<i>Independent Variables</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>F</i>
<i>Job Tension</i>							
	.32	.10	.09				9.46
Global					.10	1.48	
Speed					.20	3.14**	
Job					.05	1.04	
Hard					.06	1.10	
Constant				1.25			
<i>Somatic Symptoms</i>							
	.36	.13	.12				13.36
Global					-.09	-1.26	
Speed					.41	6.43***	
Job					-.00	-0.06	
Hard					.02	0.39	
Constant				1.44			
<i>Fatigue & Uneasiness</i>							
	.23	.05	.04				5.07
Global					-.13	-1.77	
Speed					.28	4.27***	
Job					.02	0.35	
Hard					.04	0.71	
Constant				1.37			
<i>Depressed Mood</i>							
	.24	.06	.05				5.51
Global					.12	1.75	
Speed					-.24	-3.68***	
Job					.14	2.68**	
Hard					.01	0.26	
Constant				3.09			

** p < 0.01; ***p < 0.001

Table 5.18

Multiple regression equations: Significant main effects for JAS scales (entered in blocks) on A-State and A-Trait symptoms.

<i>Independent Variables</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>F</i>
<i>A-State Anxiety</i>							
	.28	.08	.07				7.34
Global					-.01	-0.12	
Speed					.26	4.05***	
Job					-.13	-2.50**	
Hard					.00	0.03	
<i>Constant</i>				35.61			
<i>A-Trait Anxiety</i>							
	.33	.11	.10				10.90
Global					-.14	-2.07*	
Speed					.37	5.86***	
Job					-.13	-2.54**	
Hard					-.02	-0.52	
<i>Constant</i>				42.58			

* $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$

Consideration was given on the association between job stress and reported incidence of job distress symptoms. The relationship between job stress and job distress is well researched and documented, and there is a wealth of evidence showing a positive association between reported experience of job stress and experience of stress-induced illnesses (Cooper & Marshall, 1976; Cooper, 1983; Sutherland & Cooper, 1988; Rice,

1992; Carayon, 1993; Barling & Macintyre, 1993; Rosch, 1994). It was not the prime objective of this research to address this issue, however, some results are reported to highlight some data on the relationship between the experience of occupational stress and job distress in a PNG work environment. Most of the relationships reported between the job stress and health indicators were modest but statistically significant. These results lend some support to the well established view of a positive association between the experience of job stress and stress-induced illnesses.

Table 5.19

Correlation between job stressors and job distress scales

	Comf	Chall	Finan	Rel	Res	Prom	Load	Amb	Confl
Job Tension	-.03	-.03	.05	.03	-.11**	-.04	.25***	.03	.29***
Somatic	-.03	.05	.05	.04	-.05	-.16***	.18***	-.02	.18***
Fatigue	-.10	.08	.09	.16***	-.05	-.10	.19***	-.02	.14***
Depressed	.17***	.01	.11*	.15***	.11**	.17***	-.07	.16***	-.08
State Anxiety	-.17***	-.09	-.06	-.18***	-.15***	-.18***	.18***	-.19***	.22***
Trait Anxiety	-.13**	-.05	-.06	-.10	-.11**	-.23***	.16***	-.20***	.14***
Angina	.04	-.05	-.09	-.06	.00	.03	-.11	-.02	-.17***
Infarction	.05	-.05	-.09	-.05	-.03	.07	-.05	-.05	-.04
Claudication	.05	-.05	-.09	.02	-.05	-.01	-.08	-.03	-.08

note: Comf=Job Comfort; Chall=Job Challenge; Finan=Finance; Rel =Co-workers relationship; Prom=Promotion; Load=Role Overload; Amb=Role Ambiguity; Confl=Role Conflict; * p < 0.05; ** p <0.01; ***p < 0.001

5.4

DISCUSSION

This study showed that participants were characteristically more Type B than Type A in nature as measured by the Jenkins Activity Survey. They scored significantly below the arbitrary mean of zero set as the criterion to distinguish between negative and positive scores on the scales of the Jenkins Activity Survey. The low mean scores reported by participants on the JAS scales seemed to add further credence to one line of argument that, the TABP is largely a Western culture construct (Price, 1982; Van Egeren, 1991). However, the distribution of the scores on the different levels of the socio-demographic factors such as gender; education and occupation in the present study do not concur with this view of a cultural sanctioned behaviour pattern. Instead, the results were consistent with established norms in Western societies (Chesney & Rosenman, 1980; Rosenman, 1990, 1993; Byrne & Reinhart, 1995). The results also showed that, the reported expression of the TABP measured by the JAS scales correlated significantly with reported experiences of job stress, and stress at work evolved as significant predictor of the expression of the Type A behaviour pattern. The view that the TABP is a behavioural disposition that is associated with the demands and frustration evolving from the occupational environment (Chesney & Rosenman, 1980; Rosenman, 1993; Rosenman, 1990; Byrne, 1996) found some support in this study. These findings are discussed within the context of the conventional expectation of the expression of the TABP in Western societies.

5.4.1 Type A behaviour and Socio-demographic Factors

A significant number of participants scored below the arbitrary mean of zero on the Global scale as reflected by negative mean scores on this scale, and by 66 percent of participants classified as Type B on the Global scale as opposed to 33 per cent who were classified as Type A on this JAS scale. The results are consistent with some data produced outside of the US (Cohen, et al., 1979; Reunanen et al., 1987). However, compared with the Australian normative data, the mean score on the Global scale in this sample was marginally negative (Byrne & Reinhart, 1995), whereas the scores on this scale were well below the international norms (Jenkins et al., 1979) suggesting that, participants in this study were characteristically more Type B than their Western counterparts. Further statistical analyses of the distribution of the JAS scores on socio-demographic characteristics of participants revealed a different pattern of results, which conflicted with the conventional expectations of the distribution of the JAS mean scores on these variables. The present study showed that, participants in possession of a university degree scored significantly greater mean scores on the Global scale than participants holding diplomas and certificates. Similar results of significantly higher mean scores on this JAS scale were observed among participants in managerial jobs compared to participants employed in administrative, and technical capacities. Salary also exerted some influence on the Global Type A behaviour. Participants earning higher incomes reported higher mean scores on the Global scale than those earning lower wages. The

results suggested that the expression of the Global Type A behaviour in the PNG work environment increased among the highly trained participants holding senior occupational status, and earning high income, and this result seemed consistent with data from Western societies linking upper occupational strata, and higher educational qualifications with higher TABP scores (Rosenman, 1993; Byrne & Reinhart, 1995). This study provided further empirical support to the view that, the TABP is generally related to occupational prestige, education, and income (Chesney & Rosenman, 1980).

Twenty-five per cent of participants scored above the arbitrary mean of zero on the J scale compared to 74 per cent of participants who scored below the arbitrary mean of zero, and this difference was statistically significantly different. This result suggested that, participants overall were quite uncommitted to the ideals of personal effort, and occupational achievements because this scale assesses the degree of commitment and dedication to ones' occupational activity (Jenkins et al., 1979; Byrne, 1987; Byrne & Reinhart, 1989). However, further analyses of the distribution of scores on the J scale revealed that, male participants scored significantly higher mean scores than females suggesting that, males were generally more involved, and committed to their jobs than females. The gender differences on the J scale was not at odds with the widely held view of the TABP as being a male attribute (Friedman & Rosenman, 1974). This result may also reflect the view that, women were often socialised to express less overtly competitive and hostile behaviour than men (Thoresen & Graff Low, 1991). However, this

socialisation theory have been questioned by some evidence linking high TABP scores with women in full-time employment (Waldron, 1978), and at least one well controlled population based study reported no differences between men and women (Moss, et al., 1986). In view of this conflicting data on gender differences, and it is also a possibility that, low mean scores by female participants in the present study may have been influenced by the content of the JAS scale, which gives men more opportunity than women to affirm the TABP characteristics at work (Bedeian, Mossholder & Touliatos, 1990; Byrne & Reinhart, 1995). Alternatively, it is also more likely that, females were also over-represented in the lower occupational strata, and as previously described, if the TABP is strongly linked with higher occupational strata (Chesney & Rosenman, 1980; Byrne & Reinhart, 1995), then the high distribution of females in the lower job classification hierarchy may provide an explanation on the significantly lower mean scores reported by females. This is a more likely explanation because the results also showed that managers scored significantly higher mean scores on the J scale compared to participants in administrative jobs, and in the study sample; men dominated this job classification.

Participants aged 30 to 39 years old also scored statistically higher mean scores on the J scale than those in the age groups of 20 to 29 years, and 40(+) years. It has been suggested that, at this age group job issues take on a sense of importance and urgency (Howard et al., 1977), therefore, it is possible that, the high J score in this age group

could well have been influenced by this sense of urgency. The high J scores in the 30 to 39 years age bracket perhaps best describe participants who are in the prime of their career, and who would most likely demonstrate a degree of competition and sense of urgency in an effort to excel in their careers. The lower mean scores (below the arbitrary mean of zero) in the age group of 40 (+) years compared to the higher mean scores of participants in the age group of 39 to 40 years is consistent with the view that, the TABP takes on a less meaningful or important role as people grow older (Howard et al., 1977; Byrne & Reinhart, 1989).

Educational qualifications of the sample also had a significant effect on the expression of the Job Involvement. Participants holding diplomas and degrees were more involved in their jobs than those with certificates as their highest academic qualifications because they scored significantly higher mean scores on this JAS scale compared to those in the lower educational qualification bracket. In addition, participants in school for 11 to 15 years, and 16 (+) years scored significantly higher mean scores on the J scale than those in school for 10 years. This result is consistent with the findings described on educational qualifications, since years on school is highly correlated with educational qualifications. The prominence of achievement orientation and goal directed behaviours as attributes of the TABP is associated with higher educational qualifications, as well as, higher occupational status, therefore it likely that the results on educational experiences produced in this study may reflect the Type A individuals who were seeking out higher

levels of education in the belief this action will assist them to progress in their occupations. This is a view put forward by Byrne and Reinhart (1995) to explain the differences observed on the expression of the TABP between those who are highly educated and holding high status jobs compared to those in the lower job classification hierarchy, and who are also less well educated. The high J scores associated with high occupational strata, educational qualification and high income in this study is consistent with data produced in other studies (Boyd, 1984; Reunanen et al., 1987; Greenglass, 1991). This result on the J scale seemed to suggest that, participants in the present study were expressing evidence of the TABP measured by this JAS scale in similar manner as their Western counterparts in an attempt to advance in their occupational environment. This is because the findings paralleled what has already been established on the relationship between these variables and the distribution of scores on the Jenkins Activity Survey.

As previously reported in Table 5.2, over 60 per cent of participants reported mean scores that fell above the arbitrary mean of zero on the H scale. This finding is at odds with some studies (Byrne & Reinhart, 1989; Greenglass, 1991), but concur with some normative data produced on the TABP measured by the Jenkins Activity Survey (Byrne & Reinhart, 1995). According to Byrne (1987), this component of the TABP within a work context is characterised by a concern with task commitment, expenditure of effort, and perception of activities and interactions as challenges to be accepted and dominated. This

description offer a potential explanation as to why participants with certificates, and those spending 10 years or less in school scored significantly higher mean scores on this JAS scale compared with participants with higher educational qualifications. Low educational qualifications and experiences often exerted greater efforts among those with this background to express greater levels of hard-driven and competitive behaviours as a way to achieve their goals (Byrne & Reinhart, 1995), compared to those with higher educational qualifications. It is therefore most likely then that, the significant differences observed on this scale between those with lower educational qualifications, and those with high educational qualifications was influenced by educational experiences. The results also showed that non-married participants scored higher mean scores on the H scale compared to the married participants. It has been reported that non-married individuals express more TABP because their efforts are not divided by the activities of a marital partnership (Byrne & Reinhart, 1995). The results of this study could be attributed to the different emphasis placed between work and family activities by the married participants, and those who fall in the “alone” marital status category.

The lack of significant findings on the S scale is most interesting. This scale assessed behaviours such as self-imposed time pressure, intolerance of slowness in others and inordinate degree of irritability and distractibility (Byrne, 1987). The low mean score (mean below the arbitrary score of zero) on the S scale suggested that, participant in the present study were generally less committed to the notion of time, tolerated slowness in

others and were less frustrated and irritated. This result is interesting because very few studies on the TABP in people of the South Pacific (Graves & Graves, 1985) also reported that, these group of peoples were unambitious, displayed a relaxed and easy going attitude despite the situational stress of living in a Western urban environment and exhibited a distinct lack of time urgency compared to their European counterparts. The low mean score on this JAS scale, and the lack of significant results produced on this scale appeared to be consistent with these previous findings. It is not entirely clear what the explanation might be for this finding, however, one possibility is linked to the underlying cultural differences on the emphasis placed on the notion of "time" between Western and Non-Western societies (Helman, 1987). For example, according to Helman (1987), in modern Western culture, time is tangible, and is linked to socio-economic advancement of society, as well as, the person. This sense of a "time oriented society" promotes, and reinforce what is now know as TABP like chronic sense of impatience and time urgency, involvement in multiple tasks that has set deadlines or being excessively punctual and time oriented (Helman, 1987). This notion of a time-oriented lifestyle is less prevalent in the island countries of the South Pacific (Graves & Graves, 1985), and some Asian and South American countries (Levine & Bartlet, 1984). It is therefore likely that, the findings of a lack of significant results on the S scale in PNG may have reflected a common underlying cultural difference of "less time oriented societies" of some Non-Western developing countries as opposed to Western societies,

which are driven by industrialisation, and capitalism, where competition, ambition, materialism and the time-urgency of rush hours and deadlines are part of the daily life (Helman, 1994).

5.4.2 Occupational Stress and Type A behaviour

The association between the TABP and job stress emerged from the theoretical underpinning of the origins of the TABP as a behavioural disposition elicited and reinforced by the challenges imposed by the external environment (Friedman & Rosenman, 1974; Rosenman, 1993). Stress at work environment have featured prominently as a precursor of the TABP (Chesney & Rosenman, 1980; Ganster, 1986; Kirmeyer, 1988; Rosenman, 1993), and the findings in this study added further support to this expected relationship between the TABP and job stress observed in Western societies as highlighted, as well as, in Non-Western societies (Evans et al., 1987; Schaubroeck & Williams, 1993; Renault De Moraes et al., 1993). The demands associated with the work roles of participants in the present study was consistently significantly positively correlated with JAS scales. It is now consistently shown in many studies that, work roles in the form of role conflict, role ambiguity and workload are associated with reported evidence of the Type A behaviour (Keenan & McBain, 1979; Orpen, 1982; Ganster et al, 1989; Bedeian, et al., 1990; Jamal, 1990; Spector & O'Connell, 1994), and the present findings on the association between work roles and reported evidence of the Type A behaviour added further evidence to these previous

results. The results also showed that some non-work role scales, namely job challenge, finance, co-worker's relationship and work resources also correlated significantly and positively with the H scale. Further statistical analyses addressing the predictive values of these stressors on the TABP confirmed the work roles scales, namely role conflict and role overload as significant predictors of the expression of the TABP adding further empirical support for an association between the TABP and job stress. The expression of job involvement at work was significantly linked with interpersonal issues in the form of relationships with co-workers at work. It is not clear why such a finding has emerged from the data collected in this sample, however, it is possible that, this JAS scale was measuring the competitiveness aspects in interpersonal relationships more than co-operation and support between co-workers in this study. Overall, the work roles as a significant predictor of the expression of the TABP may be linked to the need for the Type A individual to exert greater controls over his or her work environment (Orpen, 1982; Ganster, et al., 1989; Jamal, 1990), or it may simply be reflective of excessive stress associated with being Type A (Ivancevich & Matteson, 1984). These likely explanations are well worth addressing among employed individuals in PNG.

A secondary issue addressed here was the reported link between the TABP, and experience of job distress symptoms, and job satisfaction at work. The job satisfaction scales were essentially unrelated to the JAS scales. The results on job satisfaction in this study are consistent with other findings that the TABP was not associated with job

satisfaction (Burke, 1988; Spector & O'Connell, 1994). This result may suggest that the experience of job satisfaction was buffered by the high achievement orientation, and goal driven behaviours associated with the Type A behaviour pattern.

Correlations between the JAS scales and the health symptoms revealed that the S scale was consistently significantly related to the job distress scales. This scale was positively correlated with job tension, somatic symptoms, and fatigue and uneasiness, and was negatively correlated with experience of depressed mood at work. The S scale was also significantly positively correlated with the A-State scale, and A-Trait scale. The results on these scales are consistent with previous findings (Keenan & McBain, 1979; Orpen, 1982; Jamal, 1990; Byrne & Reinhart, 1990). Byrne and Reinhart (1990) in a study of employed individuals in a regional health service found that the Global and S scales correlated significantly positively with job distress scales such as State anxiety, Trait anxiety and fatigue. The results in the present study paralleled these previous findings especially on the S scale, and to some extent the Global scale (see Table 5.17). This finding seem to suggest that, the behavioural rather than attitudinal components of the TABP was strongly linked to the experiences of job distress. This finding is not unexpected from what has already been known about the association between the behavioural rather than the attitudinal aspects of the JAS with emotional distress (Byrne & Rosenman, 1986). The self-reported cardiovascular symptoms were generally unrelated to the JAS scales. No further statistical analysis addressing the predictive value of the

JAS scales on self-reported cardiovascular symptoms were considered, whereas statistical examination of associations between the S scale and the job distress confirmed the S scale as a significant predictor of these job distress symptoms. Although, not central to this thesis, the positive evidence between the TABP in this study, and the reported experiences of job distress symptoms confirmed previous findings of a relationship between emotional problems at work, and the expression of the TABP as described. What is also of added significance, as a related issue is that, the evidence generated between the TABP and psychological distress in this study adds to what is potentially, a pathway in addressing the mediating effect of emotional affectivity on the TABP, and the risk of coronary heart disease (Byrne & Rosenman, 1986; Byrne & Reinhart, 1994; Byrne, 1996).

As with any study, certain caution need to be mention to place the findings of this study in some context. Participants described themselves as Type B as opposed to Type A on the JAS scale, and as with self-reported measures, the JAS is susceptible to the biases of self-report and self-appraisal. Further assessment of the TABP, perhaps through other methods of assessing this construct such as the SI will need to be done to insure that this finding on the status of the TABP measured by the JAS are substantive, and not limited by the biases of self-reports of the construct of the Type A behaviour. This will offer an opportunity to make some definitive statements about the prevalence of the TABP in PNG, and about the role of job stress, and other antecedents of the Type A behaviour. A

second problem associated with this study was that, it was limited to certain occupational groups and educational criterion, therefore it is difficult to generalised the findings, especially on the prevalence of the TABP measured by the JAS scale to other occupational groups such as the self-employed, nurses, those in the military and those who are less well educated but employed. This is because work experiences in different context might have different expectations and demands on the individual, for example, there is evidence which suggests that self-employed individuals are more likely that employed individuals to express the Type A behaviour (Hartel & Chambless, 1989). It will be an interesting issue to ascertain further what the prevalence of the TABP will be in very contrasting work environments in Papua New Guinea.

5.5

CONCLUSION

Participants reported lower mean scores below the arbitrary mean of zero on the JAS scales, and the difference between higher and lower mean scores distinguished by the cut-off mean of zero was statistically significant. In comparison with Western norms, participants in this study exhibited more Type B than Type A behaviours. However, given that this is the first attempt at assessing the construct of the TABP in PNG, it will be naive to conclude that the TABP is not a common behavioural expression in the PNG work environment. This is partly due to the finding that, where the TABP was reported by participant in this study, the expression of the TABP interacting with other measured variables generally conformed to that known about the TABP in Western societies. For

example, the view that a high TABP score is linked to high occupational strata, educational prestige and high income received unequivocal endorsement from the data collected among the PNG participants. The highly educated, high occupational status and high income earners in this sample scored higher mean scores on the JAS as opposed to the less educated participants holding low job status, and earning low wages. In addition, the data also provided some support of an association between the expression of the TABP, and job stress demonstrating the theoretical relevance of the occupational environment as a factor in examining and explaining the potential antecedents of the Type A behaviour. The results bearing on the demographic, and occupational characteristics of the participants, and the influence of stress on the TABP suggests the possibility that the TABP is not a culturally specific behavioural pattern, but is a pattern of behaviour uniquely expressed as a function of the external environment as originally conceptualised (Friedman & Rosenman, 1974). The results from this study appear to suggest this possibility. Further studies looking at other population groups such as students, the self-employed or a further cross-sections of jobs such as those in the health profession and the military are need to learn more about the status of the TABP, and its antecedents in Papua New Guinea. Alternatively, a unique opportunity especially in PNG context is to further assess the prevalence, and antecedents of the TABP by comparing rural vs the urban population groups to explore further the view that, the TABP is elicited and reinforced by the challenges of the work environment. If the TABP is inextricably associated with the

demands and constraints of living a modern Western lifestyle society, than the rural population in PNG are less likely to experience these stress of a modern society and will report relative absence of the TABP compared to their affluent urban population groups. If however, the influence of the challenges of living in a modern Western environment is not a strong predictor of the TABP, than the TABP will continue to remain a less common form of behavioural expression in PNG.

Chapter Six

The Australian Study

6.1 INTRODUCTION

6.1.1 Research Setting

This study was carried out in the Commonwealth Public Service (CPS) in Australia in the months of June to August of 1996. The CPS is one of the largest public sector organisations in Australia. The others are the State, Territory and the Local governments. A total of 137, 150 permanent and temporary staff were employed in the CPS as at June 30th 1995. This figure represented approximately 8.7 per cent of the total workforce in the public sector organisations combined and 2.3 per cent of the labour force in Australia (APS Statistical Bulletin, 1995).

This study was designed to compare the prevalence of the TABP between a Western country, and a developing country in this case, Papua New Guinea. The basis of this cross-cultural comparison rests on the theoretical assumption of the construct of the TABP as a Western cultured construct (Chesney & Rosenman, 1980; Price, 1982, 1982; Rosenman, 1993). This view discussed in various sections of this thesis, and especially in chapters 1 and 3 described the TABP as a behavioural disposition common to Western societies; the general lifestyle characterised by competitive, fast-pace and time-orientation synonymous to Western societies are perceived as factors that contribute to the expression of this pattern of behaviour (Price, 1982; 1982; Rosenman, 1993). At the core of this conceptual view is the influence of the occupational environment as a

catalyst of the Type A behaviour pattern. Many characteristic features of the TABP conform with the challenges imposed by the work environment, therefore some have come to view the occupational environment in Western societies as one of the major underlying antecedents of this human behaviour.

This theoretical position was questioned in the present cross-cultural study with the assumption that regardless of the underlying cross-cultural differences that may exist between Western and Non-Western societies, if the TABP is elicited by the stress of the occupational environment, then it is reasonable to also assume that those who come in contact with the demands and constraints of a Non-Western work environment will also report some evidence of the Type A behaviour. In order to address this question, it was empirically logical that a Western country should serve as a control for a comparative assessment of the status of the TABP in a developing country's work environment. The Australian study fulfilled this empirical purpose.

6.1.2 Background of the Study Population

A representative sample of the Commonwealth public servants (CPS) of the Australian Federal Government in the Australian Capital Territory (ACT) undertook this study. At the time when this study was conducted, the CPS in the ACT employed a total of 41,371 civil servants. Twenty-three thousand, three hundred and eighty of these civil servants were males and 17,991 were females (APS Staff Analysis Section, 1996). The ACT public servants made up approximately 30 per cent of the Australian Federal government work force (APS Statistical Bulletin, 1995).

Reasons relating to the privacy of workers restricted the involvement of the researcher to providing details on the sample required for this study. The parameters set were that participants should be between the ages of 20 and 50 years, and must hold full-time employment with the Commonwealth Public Service. Participants must also be drawn from managerial, administrative and technical jobs. These markers were set to match participants in the study described in Chapter Five.

6.2

METHOD

6.2.1 Participants

A representative probability sample of 1000 participants representing managerial, administrative and technical jobs was drawn from public servants in the CPS in the Australian Capital Territory. This sample size represented approximately 2.42 per cent of civil servants in the ACT and approximately 0.07 per cent of all public servants employed by the Federal Government of Australia (APS Statistical Bulletin, 1995). A total of 488 males and 512 females were selected through this sampling process. Four hundred and sixty-three participants (46.3 %) responded by completing in full their questionnaires. This response rate is as expected for the design used in collecting the data in this study (Berry & Houston, 1993). Two hundred and twenty-eight participants (49.2 %) who responded were males and 235 (50.8 %) were females. The age range of these participants was between 19 and 45 years (mean age = 37.3 years, S.D = 9.51 years). Many participants fell into the “alone” category of marital status, which consisted of never married, single parent, divorced, separated and widowed (n = 248,

53.56 %). Most participants were educated to first degree (n = 135, 29.2 %) or college certificate (n = 112, 24.2 %) level. A total of 77 participants (16.6%) did not report their educational qualifications; 61 participants (13.2%) obtained higher degrees; 44 held college or university diplomas (9.5%) and 34 (9.3%) were in possession of a trade certificate. Many of these participants have been in school for 13 years or more (mean = 13.03 years; S.D = 3.73 years). Seventy-five participants (16.2 %) described their jobs as managerial in nature; sixty-seven (14.5 %) as supervisory in either a technical or non-technical area; 53 participants (11.4 %) were technical officers and 268 (57.9 %) performed administrative jobs. Considering the distribution of male and female participants in these cross-sections of jobs, the result revealed that 57 males (12.3%), and 18 females (3.9%) described their jobs as managerial in nature; 37 males (7.9%), and 30 females (6.5%) were supervisors in non-technical and technical areas, and 33 males (7.1%) and 20 females (4.3%) were technical officers. A high percentage of male and female participants classified themselves in administrative jobs, with male participants making up 21.8 per cent (n = 101) and females representing 36.1 per cent (n = 167). Many participants (66.67 %) were in their current jobs for more than a year (mean = 3.71 years; S.D = 1.22) and many also reported holding more than one job (mean = 6.71; S.D = 5.95). The salary range of those who responded was between \$36,000.00 and \$56,000.00 (+) Australian dollars per annum.

6.2.2 Measures

The instruments used were the JAS, the Work activities questionnaire, the Job satisfaction scale, the Stress-Anxiety questionnaire and the Depressed mood at work questionnaire. These measures have been described in detail in the Methods section in Chapter five. The instruments were used without modification (from the previous study described in chapter 5) in this study. The choice of using these questionnaires instead of the entire measures used in the PNG study was based on the central issues addressed in this thesis. These were the expression of the TABP, and its link with job stress. The other questionnaires were not used in this study because they were of low salience for a comparative cross-cultural assessment of the TABP between public sector workers in PNG and Australia.

6.2.3 Procedure

The CPS Staffing Analysis Section located in the Finance Department was responsible for drawing the sample and mailing of the questionnaires to participants. Questionnaires were accompanied by a letter inviting participants to take part in the study and a reply-paid envelope for participants to return their completed questionnaires through the postal service to the researcher. Detailed information alerting participants to the issues of consent and confidentiality were also provided as part of the questionnaire package. Each questionnaire contained concise self-explanatory instructions to follow when filling in the responses. Participants were informed that their involvement in this study was voluntary and their responses would remain confidential with the results reported in

a combined form concealing individual responses. A total of six weeks was used to collect the data. Participants were sent reminder letters 2 weeks before the conclusion of the study, requesting them to take part.

6.3 RESULTS

6.3.1 Descriptive Results

Descriptive statistics and the inter-correlations between the JAS scales are reported in Table 6.1. The mean scores on the Global, J and H scale fell below the arbitrary mean of zero, whereas the mean score on the S scale fell above the cut-off mean score of zero. It is also worth noting that, the mean scores on the S and J scales clustered around the mean of zero compared to the mean scores on the Global and H scales. The distribution of scores in Table 6.2 showed that, over 50 per cent of participants scored below the arbitrary mean of zero on 3 of the JAS scales. The distribution of the scores on the JAS scales in this sample was consistent with the Australian norms based on the Jenkins Activity Survey (Byrne & Reinhart, 1995).

The correlation coefficients between the JAS scales reported in Table 6.1 revealed that the three JAS sub-scales were significantly positively correlated with the Global scale. As previously described in Chapter 5, this result was expected given that the Global scale consisted of items from these JAS sub-scales. The correlation coefficient between the Global and S scales was high. A similar high inter-correlation between the Global and S scales was observed in the pilot study ($r = .56$), and the main study ($r = .62$) in Papua New Guinea. The S scale was also statistically positively correlated with

the J and H scales, however, the H and J scales were unrelated, a finding consistent with previous results (Byrne & Reinhart, 1995; see also Chapter five).

Table 6.1

Mean, S.D and correlations between JAS scales

JAS scales	JAS standardised scores (N = 463)				
	Mean	S.D	2	3	4
1. Global Type A	-1.06	9.00	.61***	.30***	.47***
2. Speed & Impatience	0.15	9.61	-	.17***	.12**
3. Job Involvement	-0.74	8.43		-	.04
4. Hard-Driving	-3.41	9.62			-

** p < 0.01; ***p < 0.001

Table 6.2

Percentage of JAS scale scores split at the arbitrary mean of zero

JAS scales	JAS standard scores (percentage < or > zero) (N = 463)			
	% above 0	n	% below 0	n
Global Type A	41.3	191	58.7	272
Speed & Impatience	46.9	217	53.1	246
Job Involvement	49.2	228	50.8	235
Hard-Driving	35.4	164	64.6	299

Descriptive statistics and inter-correlations for job stress indicators are reported in

Table 6.3. A modest but positive correlation was established between the scales

extracted from the Facet-Specific Job Satisfaction questionnaire, although, financial and co-worker's relationship scales were unrelated. The role overload scale correlated negatively with the scales on the Facet-Specific questionnaire. The role ambiguity scale was significantly positively correlated with role overload scale, and the scales on the Facet-Specific questionnaire, whereas role conflict scale was significantly negatively correlated with the scales on the Facet-Specific questionnaire and role ambiguity scale. The alpha coefficients for these scales as reported in Table 6.3 ranged from .50 (on the co-workers relationship scale) to .69 (on the role conflict scale). The overall results observed for these scales in this sample were consistent with those observed for the PNG sample described in Chapter 5.

Table 6.4 shows as percentages the distribution of scores on the different job stressors. The binary categories were created by splitting the mean ratings on the job stressor scales (see Table 6.3) in half with the average mean scores of 3 and 4 reflecting low job stress, and the average mean scores of 1 and 2 reflecting evidence of high job stress experience. Over 70 per cent of participants reported promotion as an issue of concern for them at work. Similarly, over 85 per cent of these participants reported role conflict as a source of stress for them at work. Other potential sources of job stress as measured by the job stress indicators listed in Table 6.1 and 6.2 were generally of less concern for participants as reflected by less than 50 per cent of participants who reported these issues as of some concern to them.

Table 6.3

Mean, S.D and correlation between job stressor scales

Job Stressors	Mean	S.D	1	2	3	4	5	6	7	8	9
1. Comfort	2.93	.58	(.59)	.17***	.32***	.12**	.43***	.28***	-.46***	.34***	-.42***
2. Challenge	2.66	.66	(.51)	.28***	.28***	.15**	.42***	.40***	.08	.37***	-.06
3. Finance	2.86	.75	(.55)	.09	(.55)	.09	.28***	.36***	-.11**	.22***	-.13**
4. Relationship	2.78	.75	(.50)	.29***	.12**	-.06	.21***	.21***	-.10*	.57***	-.38***
5. Resource	2.98	.65	(.51)	.46***	-.25***	-.38***	.28***	-.23***	.11**	.43***	
6. Promotion	2.24	.77	(.52)	-.15**	.28***	-.23***	.28***	-.23***	.11**	.43***	
7. Role Overload	2.14	.78	(.69)	.11**	.43***		.11**	.43***			
8. Role Ambiguity	2.89	.62	(.54)	-.25***							
9. Role Conflict	2.15	.61	(.69)								

N = 463; * p < 0.05; ** p < 0.01; *** p < 0.001; Coefficient alphas of the scales in parentheses; reliability coefficient of the scale = .60.

Table 6.4

Percentage of participants reporting job stress experience

Job Stressors	No Stress		Stress	
	Percentage	n	Percentage	n
Job comfort	56.8	249	46.2	214
Job challenge	56.6	262	43.4	201
Finance	59.8	277	40.2	186
Co-workers relation	54.6	253	45.4	210
Resources	59.0	273	41.0	190
Promotion	28.1	130	71.9	333
Role overload	78.6	364	21.4	99
Role ambiguity	53.1	246	46.9	217
Role conflict	12.3	57	87.7	406

Job satisfaction was also an issue addressed in this study. The results reported on each of the job satisfaction items are reported in Table 6.5. The responses on the satisfaction items were measured on a 4 point multiple choice response option scale, except item number 1, which had 3 multiple choice response options. A score of 1 for each of the scales generally identified with job satisfaction and a score of 4 generally denotes job dissatisfaction. The distribution of the mean score suggested that participants were generally satisfied with their jobs. The job satisfaction items were significantly positively correlated with each other as shown in Table 6.5.

Table 6.5

Mean, S.D and correlation between the job satisfaction items

Satisfaction Items	Mean	S.D	2	3	4	5
1. Decide over...	1.64	0.65	.27***	.39***	.54***	.38***
2. Job choice...	1.97	0.77	-	.13**	.27***	.16**
3. Friends...	2.23	1.33		-	.37***	.24***
4. Satisfaction...	2.11	0.80			-	.57***
5. Describe job...	2.02	0.63				-

note: N= 463, items with missing data was substituted with their average scores; Items also in abbreviation; ** p<0.01; *** p< 0.001.

Forty-six per cent of participants (n = 213) would not hesitate to take the same type of job if they had to decide over again; 44.5 per cent (n = 206) would have second thoughts and 9.5 per cent (n = 44) would definitely not take the same job if they had to decide over again. On the question of freedom to go into any type of job if the participants had the choice; 25.9 per cent (n =120) would take the same type of job as they now hold; 56.4 per cent (n = 261) would take a different job; 12.5 per cent (n = 58) preferred to move to a different level or classification of their current job and 5.2 per cent (n = 24) would not work at all. Forty-six per cent of participants would recommend their jobs to a friend if that person was interested in the participant's current job, 17.7 per cent (n = 82) would have doubts recommending their job to a friend; 3.5 per cent (n = 16) would advise their friend to not consider their job and 32.8 per cent (n = 152) will provide the facts and not evaluate their job. Over 20 per cent of participants (n =96) were very satisfied with their job; 53.6 per cent (n = 248) were fairly satisfied; 19.7 per

cent ($n = 91$) were not too satisfied and 6 per cent ($n = 28$) were not at all satisfied. Just over 16 per cent of participants ($n = 75$) described their job as “excellent”; 68.3 per cent ($n = 316$) described their job as “good”; 12.7 per cent ($n = 59$) described their job as “bad” and 2.8 per cent ($n = 13$) reported their job as “terrible”. Overall, these data suggested that, these participants were satisfied with their current job.

The descriptive statistics on the job distress symptom scales reported in Table 6.6 suggested that participants were generally content with their general health at work. These results also reached statistical significance with a significant number of participants ($p < 0.05$) reporting no evidence of job tension, fatigue or depressed mood at work. The job tension, somatic and fatigue scales were significantly positively inter-correlated ($r = p < 0.05$), while the Depressed mood at work scale was significantly negatively correlated with these scales. The correlation coefficients reported between these scales were modest, and the alpha coefficient for the Stress-Anxiety scales in this sample ranged between .47 and .64 as shown in Table 6.6.

Table 6.6

Mean, S.D and correlation between job distress symptom scales

Health Measures	Mean	S.D	1	2	3	4
A. Stress-Anxiety						
1. Job Tension	1.50	.30	(.64)	.48***	.35***	-.41***
2. Somatic	1.32	.26		(.51)	.48***	-.56***
3. Fatigue	1.32	.26			(.47)	-.51***
B. Depressed Mood at Work						
4. Depressed Mood	2.98	.49				(n/a)

N = 463; ***p < 0.001; coefficient alpha of the Stress-Anxiety scales are in parentheses; alpha coefficient for full scale = .70; n/a alpha not available

6.3.2 Statistical Analyses to test the Hypotheses

The status of the TABP among employed individuals in Australia has been well researched (Byrne & Reinhart, 1995), and so is the link between the TABP and aspects of the work environment (Byrne & Reinhart, 1989). A re-visit of the expression of the TABP in this study showed that participants scored below the arbitrary mean of zero on the Global and H scales, while their mean scores on S and J clustered around the arbitrary mean of zero (see Table 6.1). A further statistical examination of these results as shown in Table 6.7 showed that, the mean scores of participants who scored below the arbitrary mean of zero differed significantly from those who scored above the cut-off mean of zero. This result was expected, given that over 50 per cent of participants were classified in the Type B category on the JAS scales because they scored below the arbitrary mean of zero as reported in Table 6.2.

Table 6.7

Distribution of scores on the JAS scales in the sample

JAS scales	Mean (above 0)	S.D	Mean (below 0)	S.D	<i>t</i>
Global	8.15	4.97	-7.43	4.62	34.49***
Speed	8.59	6.52	-7.23	4.45	29.97***
Job	6.31	4.48	-7.50	5.22	30.49***
Hard	7.06	6.03	-9.21	5.41	29.74***

*** $p < 0.0001$ **6.3.3 Distribution of the TABP scores on levels of Socio-demographic Variables.**

One way analysis of variance (ANOVA) was used to assess the differences in mean scores on the JAS scale on the different levels of the demographic, educational, and occupational characteristics of participants. The distributions of TABP mean scores on the various levels of the socio-demographic characteristic of the sample are reported in Tables 6.8 and 6.9.

6.3.3.1 Gender Effect

Assessing the gender effect on the JAS scales, the results of statistical significance emerged on the J and H scales. Females scored significantly lower mean scores on the J scale than male participants ($F_{1,461} = 11.62, p < 0.001$). On the other hand, male participants scored significantly lower mean scores on the H scale ($F_{1,461} = 7.34, p <$

0.01) than female participants. No significant sex differences were observed for the other two JAS scales.

6.3.3.2 Age Effect

The age effect was assessed by creating three age categories. The first category was ages 20 to 29 years; the second was 30 to 39 years, and the last category consisted of participants aged 40 (+) years. These age categories were created to be consistent with the categories used in the PNG study. The results revealed that age did not exert any statistically significant effect on the expression of the TABP in this sample of participants.

6.3.3.3 Marital Status Effect

Marital status of participants were grouped into two categories married workers, and a second category labelled "alone". This category consisted of never married, single, divorced, widowed and separated to distinguish these marital status categories from the married category. The binary category for marital status was created because of the low distribution of cases in some of these marital status groups. For example, only 8 participants described themselves as single parents, whereas 26 participants were in the divorced category. The two groups were also created to maintain consistency with a similar classification used in the PNG study. The results showed married participants scoring significantly lower scores on the Global scale compared to participants in the alone category ($F_{1,462} = 6.60, p < 0.01$). No marital status effect was observed for the other JAS scales.

6.3.3.4 Educational Effect

Educational qualifications of participants were grouped according to college and university diplomas (first degree, higher postgraduate degree), trade certificate, and college certificate. A category was created to include educational qualifications that may not be covered in the categories highlighted. This category might include participants with higher school certificates such as grades 10 to 12 who gained on the job training in their respective jobs. Participants with undergraduate degrees, and postgraduate degrees scored above the arbitrary mean of zero on the Global, S and J scales of JAS, and their mean score differed significantly from those participants with lower educational qualifications ($F_{5,457} = 19.94, p < 0.001$). No significant educational qualification effects were recorded for the other JAS scales. In terms of the effect of years in school, participants who were in school for over 16 years reported significantly higher mean scores (above the arbitrary mean of zero) on the J scale compared to participants who were in school for up to 15 years ($F_{2,460} = 13.58, p < 0.001$). A reversed pattern of results was observed for the H scale. Participants who have had no more than 10 years educational training reported significantly higher mean scores on the H scale compared with those in school for over 10 years ($F_{2,460} = 3.80, p < 0.05$).

6.3.3.5 Occupational Characteristics Effect

Participants performing managerial jobs differed significantly in their expression of the Global Type A behaviour from participants in other jobs. Managers scored significantly

higher mean scores on the Global scale compared to participants in the other job categories. ($F_{5,457} = 5.77, p < 0.001$). In addition, managers and supervisors in technical jobs also scored significantly higher mean scores on the J scale than participants in other jobs listed in Table 6.9 ($F_{5,457} = 11.33, p < 0.001$). The results on the number of years participants were on their current job revealed that, those who were in their jobs from between 7 months to 10 years scored significantly higher mean scores on the J scale than those who have held their jobs for less than 7 months, or more than 10 years ($F_{5,457} = 4.81, p < 0.001$). The number of jobs occupied by participants did not have a significant effect on the expression of the Type A behaviour pattern. Participants who earned over \$46,000.00 (+) also scored significantly higher mean scores on the J scale compared to those below this income level ($F_{5,457} = 12.92, p < 0.0001$).

6.3.4 Occupational Stress and Type A behaviour

Simple correlations between the JAS scales, and the job stressors are reported in Table 6.10. The results show that, work scales were the only job stressors that were consistently significantly correlated with the JAS scales, though the role ambiguity scale was unrelated to the Global and J scales, and was significantly negatively correlated with the S scale. The only other notable pattern of results in this Table is an obvious significant negative correlation between the job comfort scale, and the JAS scales. Most of the other job stressors were essentially unrelated with the JAS scales.

Table 6.8

Means on JAS scales in levels of demographic factors

Demographic Factors	JAS scales				
	Global	Speed	Job	Hard	n
Gender					
Male	-1.56	0.68	0.60	-4.64*	228
Female	-0.57	0.22	-2.04**	-2.23	235
Age					
20-to-29yrs	-1.19	0.72	-0.85	-4.87	120
30-to-39yrs	-1.16	0.39	-0.73	-3.27	158
40(+) yrs	-0.44	-0.43	-0.68	-2.59	185
Marital Status					
Married	-2.20*	-0.48	-1.47	-3.96	215
Others	-0.06	0.69	-0.11	-2.94	248
Educational Qualification					
Diploma	-1.27	-0.51	-0.89	-4.19	44
First degree	-0.31	1.25	2.58**	-5.50	135
Higher Degree	1.06	0.23	4.57**	-3.72	61
Trade Cert	0.10	1.63	-5.19	-0.87	34
College Cert	-1.92	-0.91	-3.79	-2.32	112
Others	-3.19	-0.59	-4.28	-1.77	77
Years in school					
10 yrs	-2.07	-0.59	-2.35	-0.52*	88
11-to-15yrs	-1.26	0.24	-1.82	-4.04	251
16(+) yrs	0.07	0.48	2.59**	-4.19	124

* p < 0.01; ** p < 0.001

Table 6.9

Means on JAS scales in levels of occupational factors

Occupational factors	JAS Scales				
	Global	Speed	Job	Hard	n
Job Classification					
Manager	3.10**	2.89	4.76**	-4.11	75
Sup(Tech)	1.96	3.99	-0.24**	-3.79	32
Sup(Non)	-0.33	1.15	1.47	-1.37	35
Technical	-2.50	-1.46	-1.32	-5.50	53
Admin	-2.28	-0.92	-2.09	-3.35	233
Clerical	-3.12	-0.73	-5.30	-0.90	35
Years on the job					
less 1 mth	-2.63	0.53	-3.65	-0.02	12
1-6mth	-1.20	1.72	0.06	-5.89	87
7mth-1yr	0.29	-0.29	-0.06**	-2.43	54
1-5yrs	-0.87	0.45	0.19**	-3.28	217
5-10yrs	-0.53	-1.56	-1.25**	-1.75	61
10yrs (+)	-4.65	-2.14	-6.99**	-3.78	32
Number of jobs					
1-5 jobs	-1.27	-0.59	-1.61	-2.54	238
6-9 jobs	-3.00	-1.13	-0.43	-4.91	132
10 jobs (+)	2.26	3.84	1.04	-3.53	93
Salary					
Less \$25	-3.11	-0.60	-3.65	-2.65	16
\$25-\$35	-1.73	-0.73	-4.67	-1.51	139
\$36-\$45	-1.92	-0.55	-0.46	-3.98	183
\$46-\$55	-0.58	1.32	1.80**	-4.96	62
\$56(+)	3.30	3.38	5.78**	-4.52	63

**p < 0.001

Table 6.10

Correlation between job stressors and JAS scales

Job Stressors	Type A	Speed	Job	Hard
Job comfort	-.21***	-.27***	-.19***	-.13***
Job challenge	.04	-.05	.17***	.06
Finance	.02	-.07	-.01	-.02
Relationship	-.02	-.13**	.14***	-.04
Resource	-.03	-.13**	.04	-.05
Promotion	-.05	-.07	.16**	-.09*
Role overload	.20***	.15***	.16**	.23***
Role ambiguity	.08	-.14**	.00	.19***
Role conflict	.20***	.23***	.18***	.16**

N = 463; *p < 0.05; **p < 0.01; *** p < 0.001

In view of the statistically significant correlations reported between some of the job stressors and the JAS scales, four separate Stepwise regression analyses were used to assess the “best” linear combination of the markers assessing stress experienced at work as predictors of the Type A behaviour. The regression model was examined by entering job stressors as predictors, and the JAS scales as dependent variables. A number of observation can be made from the regression analyses results reported in Table 6.10. Firstly, the job stressors assessing issues linked with work roles and comfort at work significantly predicted the expression of the Global Type A. The role ambiguity and role conflict explained 16 % of the variance, and job comfort explained 4 % of the variability in the Global scale. Secondly, the role conflict, and job comfort

scales emerged as significant predictors of the S scale. Job comfort scale explained 7 % of the variance, and role conflict explained 9 % of the variability on the S scale. Thirdly, the J scale was significantly predicted by job stress experiences arising from issues relating to personal and interpersonal concerns at work like promotion, co-worker's relationship, job comfort and job challenge. These variables combined explained 36 % of the variance on this JAS scale with bulk of the variance explained by co-worker's relationship and job comfort. The only work role scale that significantly predicted Job Involvement was role conflict and it explained 12 % of the variance. Finally, the work-role stress markers dominated as predictors of the expression of behaviour measured by the H scale. The work role scales combined explained 25 % of the variance on the H scale. Availability of resource at work was the only non-work role scale that significantly predicted scores on the H scale. This scale explained 12 % of the variance. Overall it would appear that, the job stress experience associated with participants work-roles emerged as significant predictors of the TABP in this sample. In addition, the results on the J scale revealed demands of more personal, and interpersonal nature at work were strongly linked with the expression of Job Involvement and these stressors emerged as significant predictors of scores on the J scale.

Table 6.11

Stepwise regression of job stressors on JAS scales

<i>Dependent Variables</i>	<i>Independent Variables</i>	<i>R</i>	<i>R²</i>	<i>ΔR²</i>	<i>F</i>
Type A	Job comfort	.20	.04	.04	19.80***
	Role ambiguity	.26	.07	.06	16.14***
	Role conflict	.29	.09	.09	14.52***
Speed	Job comfort	.27	.07	.07	35.73***
	Role conflict	.29	.09	.08	22.30***
Job	Job comfort	.19	.04	.03	16.91***
	Promotion	.29	.08	.08	21.24***
	Co-workers relation	.32	.11	.10	17.99***
	Role conflict	.35	.12	.12	15.93***
	Job challenge	.36	.13	.12	13.86***
Hard	Role overload	.23	.05	.05	25.26***
	Role ambiguity	.31	.09	.09	24.14***
	Resources	.34	.11	.10	19.59***
	Role conflict	.35	.12	.12	16.02***

*** p < 0.0001

In Table 6.12, the results showed that the Global scale was significantly correlated with educational and job characteristics of participants. The S scale correlated significantly with the job characteristics of participants. The J scale was significantly correlated with the educational and job characteristics of participants, whereas the H scale was unrelated to demographic, educational and job characteristics of participants.

It is also worth noting that the Global, S and J scales were unrelated to the socio-demographic characteristics of participants.

Table 6.12

Correlations between JAS scales and participants characteristics

	Type A	Speed	Job	Hard
A. Demographics				
Age	.04	-.05	-.02	.10*
Marital status	.02	-.03	.05	.04
B. Education				
Education	-.10*	-.06	-.32***	.14**
Years in school	.10*	.07	.19***	-.08
C. Job Characteristics				
Job Classification	-.24***	-.17***	-.31***	.04
People supervised	.18***	.13**	.18***	.06
Being supervised	.01	-.00	-.08	-.05
Years on current job	-.04	-.10*	-.12**	.07
Number of jobs	.15***	.21***	.12**	-.04
Salary	.16***	.12**	.38**	-.12**

N = 463; * p < 0.05; **p < 0.01; ***p < 0.001

The predictive values of the demographic, educational, and occupational characteristics of participants on the TABP are reported in Table 6.13. Occupational characteristics, and years in school emerged as significant predictors of the Global Type A behaviour pattern. The job characteristics of participants combined explained 13% of

the variance and years spent in school accounted for 8 % of the variance. The number of jobs held by participants and job classification were the only significant predictors of the scores on the S scale. These occupational markers combined explained 10 % of the variability in the S scale. Occupational, and educational characteristics of participants emerged as significant predictors of the J scale. Occupational characteristics in the form of participants income, job classification; and the length of service to their current job accounted for a total of 58 % of the variance in this JAS scale. The variance was almost equally shared between the service on current job and job classification, whereas income accounted for 14 % of the variance. Educational qualifications of participants, and the years they have been in school explained 41 % of the variance on this scale. The variance was almost equally shared between the two markers of educational experiences. Finally, the demographic markers of gender and age emerged as significant predictors of the H scale. The two markers together explained 7 % of the variance. In addition, educational qualifications of participants, and their income also significantly predicted the H scale explaining 2 %, and 5 % of the variance on this scale respectively. Overall, it would seem that the occupational characteristics of participants emerged as a consistent predictor of the TABP as assessed by the Global, S and J scales. However, the occupational characteristics of participants were not strong predictors of the behavioural dispositions assessed by the H scale. To a lesser degree, the educational experiences of participants also emerged as a predictor of the expression of the TABP, and the results of this variable was more evident on the J scale. This

observation was qualified by the finding that, overall the J scale was the only JAS scale that was statistically dependent on the educational experiences of the participants.

Table 6.13

Stepwise regression of participants characteristics on JAS scales

<i>Dependent Variables</i>	<i>Independent Variables</i>	<i>R</i>	<i>R²</i>	<i>ΔR²</i>	<i>F</i>
Type A	Type of job	.24	.06	.06	27.00***
	Number of jobs	.26	.07	.06	16.87***
	Years in school	.28	.08	.07	13.04***
Speed	Number of jobs	.20	.04	.04	20.49***
	Type of job	.24	.06	.06	14.45***
Job	Salary	.38	.14	.14	76.08***
	Level of education	.44	.19	.19	54.48***
	Years on current job	.46	.21	.21	40.71***
	Years in school	.47	.22	.21	32.23***
	Type of job	.48	.23	.22	27.14***
Hard	Level of Education	.14	.02	.02	9.29**
	Gender	.17	.03	.03	7.26***
	Age	.21	.04	.04	6.83***
	Salary	.23	.05	.04	6.43***

** p < 0.01; *** p < 0.001

The correlations between the expression of the TABP and job distress symptoms are reported in Table 6.14. The Global scale was significantly positively correlated with job tension and somatic symptoms, and was essentially unrelated to fatigue and

depressed mood scales. The S scale correlated positively with job tension, somatic complaints and the fatigue and uneasiness scales, and significantly negatively with the depressed mood at work scale. The J scale was positively correlated with job tension, and depressed mood at work scales, but was essentially unrelated to the somatic and fatigue scales. The H scale was essentially unrelated to the job distress scales.

Table 6.14

Correlations between JAS scales and job distress symptoms

Job distress symptoms	Type A	Speed	Job	Hard
Job Tension	.18***	.23***	.18***	.04
Somatic	.11**	.26***	-.07	.08
Fatigue	.05	.19***	-.06	.06
Depressed Mood	.01	-.24***	.14**	.08

N = 463; ** p < 0.01; ***p < 0.001

It was also of some interest to assess the predictive value of the JAS scales scores on job distress experience. The result of Multiple regression analyses with the JAS scales entered (in blocks) as independent variables, and job distress scales entered as dependent variables in the regression equation are reported in Table 6.15. The results showed that the JAS combined explained 7 % of the variance on the job tension scale, 9 % of variance on the somatic scale, 5% of variance on the fatigue and uneasiness scale

Table 6.15

Multiple regression equation: Significant main effects for the JAS scales (entered in blocks) on job distress symptoms.

<i>Independent Variables</i>	<i>R</i>	<i>R</i> ²	ΔR^2	<i>B</i>	<i>Beta</i>	<i>t</i>	<i>F</i>
<i>Job Tension</i>							
	.27	.07	.07				9.14
Type A					.01	1.09	
Speed					.20	3.35***	
Job					.14	3.00**	
Hard					-.00	-.02	
Constant				1.50			
<i>Somatic Symptoms</i>							
	.30	.09	.08				11.37
Type A					-.12	-1.76	
Speed					.34	5.85***	
Job					-.09	-1.90	
Hard					.10	1.93	
Constant				1.33			
<i>Fatigue & Uneasiness</i>							
	.23	.05	.05				6.45
Type A					-.13	-1.89	
Speed					.27	4.59***	
Job					-.07	-1.41	
Hard					.09	1.64	
Constant				1.32			
<i>Depressed Mood</i>							
	.35	.12	.11				15.53
Type A					.17	2.59**	
Speed					-.38	-6.67***	
Job					.15	3.33***	
Hard					.04	0.73	
Constant				3.00			

** $p < 0.01$; *** $p < 0.0001$

and 12 % of variance on the depressed mood at work scale. Overall, the results suggested that the JAS scales combined emerged as a significant predictor of the

experience of depressed mood at work, whereas the other job stress symptoms depended on the S scale.

The results of the association between experience of job satisfaction, and job stress (dissatisfaction) are reported in Table 6.16. The results summarised in this Table showed that, the items assessing participants overall satisfaction of their jobs and their description of their work place were consistently significantly and negatively correlated with the job stressors. In addition, where statistical significant correlations were reported for the other job satisfaction items with the job stress, the correlations were in the negative direction as opposed to positive correlations.

Table 6.16

Correlation between job stressor scales and job satisfaction items

Job Stressors	Satis 1	Satis 2	Satis 3	Satis 4	Satis 5
Comfort	-.04	-.05	-.00	-.11*	.31***
Challenge	-.33***	-.23***	-.23***	-.49***	-.34***
Finance	-.00	-.09	-.07	-.17***	-.26***
Relationship	-.06	-.08	-.03	-.16**	-.14**
Resource	-.23***	-.19***	-.13**	-.36***	-.43***
Promotion	-.25***	-.17***	-.19***	-.38***	-.40***
Role Overload	-.09	-.06	-.05	.02	.07
Role Ambiguity	-.28***	-.17***	-.17***	-.36***	-.36***
Role Conflict	.09	.06	-.01	.09	.26***

N = 463; * p < 0.05; **p < 0.01; ***p < 0.001

The job tension scale was significantly positively correlated with the role overload and role conflict scales, and significantly negatively correlated with the job comfort, financial, availability of resources at work, promotion prospects and the role ambiguity scales. The experience of somatic symptoms at work was significantly positively correlated with the experiences of role overload and role conflict at work, and was significantly negatively correlated with the other scales except concerns linked with finance at work. The experience of fatigue and uneasiness at work was significantly positively correlated with role overload and role conflict scales, and significantly negatively correlated with all the other job stress markers. The experience of depressed mood at work was significantly positively correlated with all the job stressors except for significantly negative correlations with the role overload, and role conflict scales.

Table 6.17

Correlation between job Stressors and job distress scales

	Tension	Somatic	Fatigue	Depressed
Comfort	-.38**	-.19*	-.12*	.20**
Challenge	-.04	-.17*	-.13*	.32**
Finance	-.11*	-.09	-.12*	.20**
Relationship	-.04	-.12*	-.15*	.20**
Resource	-.29**	-.28**	-.21**	.34**
Promotion	-.19*	-.20**	-.22**	.32**
Role Overload	.35**	.17*	.16*	-.15*
Role Ambiguity	-.30**	-.26**	-.13*	.41**
Role Conflict	.35**	.26**	.14*	-.21**

N = 463; * p < 0.05; ** p < 0.01

This sample of Australian public service workers seemed, overall, to be more Type B than Type A in characteristics, at least as reflected in the JAS scale scores. Participants scored below the arbitrary mean score of zero on the Global, and H scale, while their mean score on the S and J scale clustered around the arbitrary mean of zero. The difference between positive, and negative mean scores on the JAS scale also reached statistical significance reflecting this sample as characteristically more Type B than Type A in nature. This findings is somewhat consistent with the normative data based on the JAS in Australia (Byrne & Reinhart, 1995).

The results also provided some support for an association between job stress and the expression of the Type A behaviour pattern. The role overload, and role conflict scales were significantly positively and consistently correlated with the JAS scales, whereas the job comfort scale was significantly negatively correlated with all the JAS scales, and further statistical examinations confirmed these markers as significant predictors of the Type A behaviour pattern. Both occupational, and educational characteristics of participants were associated at least with the Global and J scales, whereas demographic characteristics were essentially unrelated to the expression of the Type A behaviour pattern. Statistical analyses revealed overall that the demographic markers of the participants emerged as a poor predictor of the TABP in this sample. On the other hand, the educational, and job characteristics of the sample significantly predicted the expression of the TABP as measured by the scales on the Jenkins Activity Survey.

These results have been discussed in detail within the context of the expectations of the expression of the TABP within the work setting in Western societies, and particularly the Australian work environment (Byrne & Reinhart, 1995).

The pattern of JAS scores in this study is consistent with what is generally accepted as norms for Australian workers (Byrne & Reinhart, 1995). Participants in this sample described themselves as Type Bs on all the JAS scale except the S scale. The result reported on the S scale in this study is above the norms for the JAS in the Australian population, however because the distribution of scores on the S scale is only marginally above the arbitrary mean score of zero, and that the results on the S scale failed to reach statistical significance, not much weight should be placed on what this result may mean. Overall therefore, it could be argued that the distribution of the JAS scores in this sample of the Australian public servants is not at odds with similar samples from which Australian norms have been established (Byrne & Reinhart, 1995). Byrne and Reinhart (1995) also reported the Australians as marginally more Type Bs than the US sample (Jenkins et al., 1979), and the findings in this study added further support to this observation with the distributions of the JAS scores being marginally negative compared with the US data on the Jenkins Activity Survey (Jenkins et al, 1979).

Female participants differed significantly from male participants on the J scale by being less involved in their jobs than their male counterparts. The distribution of mean scores for females also clustered close (by about 1 standard score below) to that of the females in the Australia normative samples (Byrne & Reinhart, 1995). The distribution

of JAS scores by gender on the other scales in this sample did not differ markedly from that reported for the Australians norms. The results on the J scale perhaps reflected the over-representation of the number of female workers sampled in this study, and especially the high percentage of female workers in the administrative jobs. Alternatively, these results could reflect the content of the items on the JAS scale which allow males more than females to express the Type A behaviour pattern (Byrne & Reinhart, 1995). An added explanation could be linked with the socialisation process as previously discussed in Chapter 5 on observed sex differences (Thoresen & Graff Low, 1991). In other words, the females are brought up to generally display less overtly competitive, and hostile behaviour than men, providing one possible explanation as to why men generally reported higher scores on the JAS scales.

Educational experiences also exerted a significant effect on the expression of the J scale. The participants holding postgraduate qualifications, and first degrees scored significantly higher mean scores on the J scale than participants with lower educational qualifications. The results revealing high TABP scores among highly educated participants in this study, and the PNG study strengthened the conceptual view that, the TABP is strongly correlated with high educational qualifications, and occupational status (Chesney & Rosenman, 1980; Byrne & Reinhart, 1995).

The effects of occupational characteristics of participants on the expression of the TABP revealed that, managers scored significantly higher mean scores on the Global scale than those in the other job categories. In addition, together with supervisors in

technical jobs, managers also scored significantly higher mean scores on the J scale compared with participants in the other jobs. The results also suggested, that longer service in a job tended to be linked to higher mean scores on the J scale compared to shorter period on a job. Income also exerted an influence on the J scale, with higher income linked with statistically higher mean scores on the J scale than lower income. Income is correlated with education, and job, and since higher TABP scores were reported to link with higher educational qualification and jobs status; the result on income was also consistent. Participants holding more than 10 jobs over their careers were also significantly more Type A than those holding 1 to 9 jobs, and this group of participants also exhibited significantly higher Speed and Impatience behavioural tendencies, and Job Involvement than workers in other occupational categories. No further significant occupational characteristic effects were established for the other JAS scales.

The element of challenge posed by the work environment is central to the concept of the TABP, and research on the TABP strongly indicates the occupational environment as a catalyst for the Type A behaviour pattern (Friedman & Rosenman, 1974). In view of this theoretical conception of the TABP, the association between the job stress and the expression of the TABP was addressed in this study. Although a number of significantly positive correlations were reported between the experience of job stress, and the expression of the TABP, the results were consistent for the experience of role overload, and the role conflict at work with the JAS scales. Both markers of job stress correlated significantly and positively with the Global scale ($r = .20, p < 0.001$), the J

scale ($r = .15, p < 0.001$), the S scale ($r = .16, p < 0.001$), and the H scale ($r = .23, p < 0.001$). Similar sets of results were established between the experience of role conflict, and Global scale ($r = .20, p < 0.001$), S scale ($r = .23, p < 0.001$), the J scale ($r = .18, p < 0.001$) and the H scale ($r = .16, p < 0.001$). Further statistical analyses of these results assessing the predictive value of these job stressors on the expression of the TABP, confirmed stress associated with the work roles of the participants, as a significant predictor of the TABP as measured by the Jenkins Activity Survey. The interpersonal relationships at work also emerged as significant predictor of the expression of the Job involvement behavioural pattern at work. The results on the positive relationship between the expression of the TABP, and experiences of job stress in this study is not at odds with previous data (Orpen, 1982; Ganster, et al., 1989; Jamal, 1990; Bedeian, et al., 1990) suggesting that the two psychosocial variables are interrelated. This adds further empirical evidences in support of the role of the occupational environment as an important catalyst for the Type A behaviour pattern (Friedman & Rosenman, 1974; Rosenman, 1993).

The results reaffirmed that the expression of the TABP is linked with aspects of work life. This study revealed that the job characteristics like number of jobs occupied by the participants, income, job type, and educational experiences were significantly correlated with the TABP, and especially the Global, S, and the J scales of the Jenkins Activity Survey. These markers also emerged as significant predictors of the expression of the Type A behaviour adding further evidence on their influence on the expression of the Type A behaviour pattern.

6.5

CONCLUSION

The results generated in this Australian study are consistent with what has been previously observed on the TABP, especially in Australia (Byrne & Reinhart, 1989, 1990, 1995). The results are fairly consistent with the Australian norms (Byrne & Reinhart, 1995), and the expression of the TABP does correlate with high educational qualification, and high occupation. In addition, some findings in this study also support the position of an association between the expression of the TABP, and experience of stress at work (Chesney & Rosenman, 1980; Jamal, 1990; Ganster et al., 1989). What is of interest is whether these aspects of work life will have similar influence on the expression of the TABP between the PNG and the Australian workers. This question is addressed in chapter seven.

Chapter Seven

Comparison of PNG and Australian Public Sector Workers

7.1 INTRODUCTION

This chapter presents some cross-cultural comparative data on the expression of the TABP between PNG and Australian public sector workers. The underlying questions addressed in this chapter were: (1) will participants in PNG and Australia express the TABP in a similar manner? and (2) will job stress exert a similar positive influence on Type A behaviour among participants in PNG and Australia? The studies conducted in PNG and Australia were discussed separately in chapters 4, 5 and 6, therefore this chapter presents a comparative analysis of the data on the expression of the Type A behaviour between PNG and Australian public sector workers.

The construct of the TABP is largely viewed and accepted as a CHD risk factor (NHLBI, 1981), yet controversies prevail over its role as a predictor of coronary heart disease (Shekelle et al., 1985; Case et al., 1985). This has created a need to explore the potential mediating influence of physiological, psychosocial, and environmental factors on the Type A behaviour and its potential as a CHD risk factor (Byrne & Reinhart, 1995; Byrne, 1996). The influence of psychosocial stress at work is one factor that has been considered in this interactionist model as previously described in chapters 1 and 2 (Byrne & Reinhart, 1989, 1990).

Stress at work has been reported to stimulate and reinforce the TABP (Friedman & Rosenman, 1974; Rosenman, 1993), and it has also been suggested that the TABP is a behavioural expression common to Western societies with job stress serving as one of its major precursors (Price, 1982, 1982; Rosenman, 1993). This observation offers an opportunity to question empirically whether occupational stress will impose a similar positive effect on the expression of the TABP among those employed in paid jobs in non-Western countries. The data on the TABP in non-Western work settings is scarce, and little is known about the influence of occupational stress on the TABP in non-Western work settings. This chapter addresses these issues by comparing the reported expression of the TABP between PNG and Australian public sector workers and the influence of occupational stress on the TABP among these participants.

The need for a cross-cultural study on the TABP is important for a number reasons. Firstly, the importance of collecting empirical data on the TABP across cultures cannot be understated. Cross-cultural data on the TABP will contribute to an in-depth understanding of a range of issues related to the TABP, such as the factors that elicit the Type A behaviour pattern. The demands from the occupational environment in Western societies have been linked to the expression of the Type A behaviour pattern (Price, 1982; Jamal, 1990; Greenglass, 1991; Rosenman, 1993). Given this scenario, it becomes important to address this question cross-culturally to ascertain whether factors such as job stress can be accepted as a universal precursor of the Type A behaviour pattern. Secondly, the TABP has been confirmed as a major CHD risk factor (NHLBI, 1981), and this acceptance of TABP as a disease risk factor alone draws out the importance of assessing

the TABP across societies, and especially in less developed societies. A universal understanding of the pathogenic nature of the TABP will assist in a wide range of societal issues such as the influence of good health policies on lifestyle diseases such as CHD and cancer, development of awareness programs on lifestyle diseases and their associated risk factors, and development and implementation of preventive health programs. Given these considerations, it is indeed a worthy exercise to investigate the various facets of this behavioural construct in diverse societies such as the two countries used in the present study, namely PNG and Australia.

Other equally important considerations that support the need to assess this construct cross-culturally relate to questions arising from measures designed to assess this pattern of behaviour (Powell, 1987; Edwards, 1991). For example, are current established measures of the TABP useful in assessing the TABP across cultures, and do they measure the same underlying construct of the TABP or do these instruments generate different sets of constructs that mimic the Type A behaviour pattern (Graves, 1978; Boyuan, 1988; Chew & Chee-Leong, 1991). The use of the JAS scale among Japanese-Americans revealed three factors, namely hard-driving and impatience, ability to function successfully in a job setting, and hard-working patterns of behaviour (Cohen et al., 1979). Are these constellations of the TABP the same as was originally conceptualised (Friedman & Rosenman, 1959), or do they simply mimic the Type A behaviour? Furthermore, if similar sets of behaviour are identified across societies, do these behaviours exert the same risk on CHD as is observed in Western societies? These are the sorts of issues that demand answers and they point to the importance of assessing this

construct in a wide cross-section of population groups, as well as different environmental settings. This cross-cultural comparative study attempted to pursue one of these issues, namely the role of occupational demands as a potential universal precursor of the Type A behaviour pattern. The comparative cross-cultural data presented in this chapter addressed this question, as well as the important question of the overall rate and the nature of the expression of the TABP especially in PNG.

7.2

METHOD

7.2.1 Participants

Participants were selected from two public sector organisations in PNG and a similar public sector organisation in Australia. Participants in both countries were matched on age, level of education, and the jobs they performed. Educational qualifications of participants were based on universal educational qualifications of college certificate, diploma and degree, and jobs were classified in three broad categories of managerial, administrative and technical occupations.

Two thousand participants were selected for this cross-cultural study. One thousand were Papua New Guineans and 1000 were Australians. Eight hundred and nineteen participants representing 40.95 per cent of the total sample of 2000 participants responded by completing and returning their questionnaires. The mean age of the total sample combined was 35.8 years (S.D = 8.49; range = 19 to 45 years). The salaries of participants in PNG and Australia were not comparable. This was despite matching participants on the jobs they performed. Participants in PNG educated at similar levels as

Australian participants and matched on jobs earned up to 2 to 4 times less in income per annum compared with Australians. This variable was not considered in the data analyses because of the differences in wages within the job classifications used in this study. The rest of the socio-demographic variables used in the data analyses are reported in Table 7.1

Table 7.1

Distribution of scores on the levels of socio-demographic variables for total sample.

Socio-demographic factors	Totals	Percentage
A. GENDER		
Males	480	58.6
Females	339	41.4
B. MARITAL STATUS		
Married	542	66.2
Alone	277	33.8
C. EDUCATIONAL QUALIFICATIONS		
Certificate	417	50.9
Diplomas	147	17.9
Degrees	255	31.2
D. YEARS IN SCHOOL		
less than 10	222	27.1
11 to 15	369	45.1
16 (+)	228	27.8
E OCCUPATION		
Technicians	149	18.2
Clerical/Administration	392	47.9
Managers	278	33.9

Table 7.1 (cont)**F. YEARS ON JOB**

less than 1 month

to 1 year 200 24.4

2 to 5 years 360 44.0

6 years (+) 259 31.6

G. TOTAL JOBS

1 job 126 15.4

2 other jobs 127 15.5

3 other jobs 128 15.6

4 other jobs 90 11.0

5 other jobs 348 42.5

7.2.2 Measures

The measures used in this cross-cultural study have been described in chapters 5 and 6.

The results presented in this chapter were based on the data collected from the JAS, Work Activity Questionnaire and a questionnaire measuring job distress symptoms. These questionnaires were central to a cross-cultural assessment of the TABP and the influence of job stress on the Type A behaviour.

7.2.3 Procedure

Procedures used in collecting the data in PNG and Australia were identical and have been reported in chapters 5 and 6. Selected participants were mailed questionnaires and reply-paid envelopes to allow them to return their questionnaires by post to the researcher.

Questionnaires were self-explanatory and information on issues of research ethics were included in the questionnaire packages. It was emphasised that participants were to take part in the study at their own volition and their responses would be treated with utmost confidentiality, with the results reported in combined form so concealing individual responses.

7.3

RESULTS

The distributions of mean scores on the JAS for the total sample are reported in Table 7.2. Participants, on average, scored below the arbitrary mean of zero on all the JAS scales. Overall, the present findings showed that these participants were characteristically more Type B than Type A compared with the JAS norms (Jenkins et al., 1979). However, the distribution of the JAS scale scores between PNG and Australian participants reported in Table 7.3 showed a different pattern of result. Australian participants, on average, scored above the arbitrary mean of zero on the Global, S and J scales whereas PNG participants reported a mean above the arbitrary mean of zero only on the H scale. These differences in means reached statistical significance (see Table 7.3). Australian participants scored significantly higher than PNG participants on the Global, S and J scales. On the contrary, PNG participants scored significantly higher on the H scale than Australian participants. Overall, PNG participants expressed a preponderance of the Type B behaviour pattern as opposed to Type A behaviour, as reflected by their mean scores falling below the arbitrary mean of zero on the Global scale, and its sub-component J and S scales.

Table 7.2

Distribution of JAS scales scores for the total sample

JAS Scales	JAS standard scores (N = 819)			
	Mean	S.D	% > 0	% < 0
Global Type A	-2.09	8.59	37.0	63.0
Speed & Impatience	-2.69	9.45	34.4	65.6
Job Involvement	-2.89	8.92	38.1	61.9
Hard-Driving	-0.44	9.90	48.1	51.9

Table 7.3

Distribution of JAS scale scores between PNG and Australian participants

	Means	S.D	N	F
<i>Global Type A</i>				
PNG	-3.41	8.59	356	15.31***
Australia	1.06	8.99	463	
<i>Speed and Impatience</i>				
PNG	-6.37	7.84	356	108.29*****
Australia	0.15	9.61	463	
<i>Job-Involvement</i>				
PNG	-5.68	8.77	356	66.86*****
Australia	-0.74	8.43	463	
<i>Hard-Driving</i>				
PNG	3.43	8.87	356	108.87*****
Australia	-3.41	9.62	463	

*** p < 0.001; ***** p < 0.0001

The Global scale consists of items re-coded from the sub-components of the JAS, and it measures the Global Type A behaviour. The mean scores on this JAS scale suggested that PNG and Australian participants were not expressing Global Type A in a similar manner. Australian participants, on average, were characteristically more Type A than Type B compared with PNG participants.

Based on the descriptions and definitions of the sub-components of the JAS scales (see for example Byrne, 1981, 1987), the present results on the S scale suggested that Australian participants, on average, generally displayed undue haste and rapidity in motor and cognitive activities, expressed a general sense of self-imposed time pressure, were generally intolerant of slowness in others and expressed a general degree of irritability and distractibility compared with PNG participants. The results on the J scale suggested that Australian participants also, on average, were generally more competitive and achievement oriented, were ambitious, and over committed in their jobs, by for example working longer than normal (discretionary) hours and taking on workloads and tasks in excess of personal capacity. The H scale produced opposite results for the PNG and Australian samples as shown in Table 7.3. Participants in PNG, on average, scored above the arbitrary mean of zero compared with Australians, and based on the description of this scale (Byrne, 1981, 1987), this result suggested that PNG participants were generally concerned with job task and perceived activities and interactions as challenges to be accepted and dominated compared with Australian participants.

As an important addition to the cross-cultural comparative data reported in the present study, the pattern of JAS scale scores for the PNG and Australian samples were compared with the JAS norms based on similar sample of Administrative/Clerical, Technical, and Managerial samples in the US (Jenkins et al., 1979). The means in Table 7.4 showed that PNG and Australian participants reported higher levels of the Type B than Type A behaviours compared with the US norms. In rank order, North Americans generally expressed higher means on the JAS scales than Australian or PNG participants, and Australian participants expressed significantly higher mean scores on the JAS than PNG participants. North Americans were characteristically more Type A compared with Australians and Papua New Guineans, and Australians were characteristically more Type A than Papua New Guineans. Overall, PNG participants expressed the Type B behaviour pattern to a greater degree than the TABP compared to the US norms (Jenkins et al, 1979), and to Australians in this study, as well as to Australian normative data (Byrne & Reinhart, 1995; see also Table 8.1 in chapter 8).

Table 7.4

Distribution of scores on the JAS scales for the study samples
and the JAS norms

JAS Scales	PNG Sample		Australian Sample		Standard JAS Norms	
	Mean	SD	Mean	SD	Mean	SD
Global	-3.41	7.84	-1.06	9.00	-0.03	10.0
Speed	-6.37	7.84	0.15	9.61	-0.02	10.0
Job	-5.68	8.77	-0.74	8.43	-0.08	10.0
Hard	3.34	8.87	-3.41	9.62	0.02	10.0

note: American norms extracted from JAS Manual (Jenkins et al., 1979)

The data on TABP in PNG was consistent with other similar data based on the JAS reported in some European and non-Western countries. For example, in a prevalence study on the expression of the TABP among employed men and women in Finland, Reunanen, Hanses, Maatela, Impivaara, and Aromaa (1987) reported that Finns were substantially more Type B than white middle-aged Americans. Both males and females reported mean scores on the JAS scales that were below the cut-off arbitrary mean of zero on the JAS which is set to distinguish between the Type A behaviour and the Type B behaviour pattern. Similar pattern of results based on the JAS were also observed amongst the Japanese when they were compared with normative data from white American men (Cohen, et al., 1979). This study amongst Japanese found that only 18 percentage of participants scored as Type As compared to the white American males, and

this percentage was reported to be much lower than that observed for the American males (Cohen, et al., 1979).

The overall difference between the PNG and Australian sample could reflect the underlying socio-cultural values of the overall lifestyles of the two groups, or their work cultures. For example, the notion of time for Western work cultures is associated with personal gains in material wealth, prestige, and acceleration up the socio-economic status. Behavioural patterns associated with the TABP such as aggressive and competitive behavioural tendencies must prevail if an individual wishes to be successful (Price, 1982; Helman, 1987; Van Egeren, 1991). In non-Western societies, the notion of time as a factor associated with personal achievements such as material wealth is not given much consideration. For example, people of the South Pacific demonstrated a distinct lack of the expression of time urgency behaviours and displayed a relaxed attitude in the face of stress from their environment (Graves & Graves, 1985). These underlying cross-cultural differences on the emphasis placed on such a concept as time may help explain the cross-cultural data reported for the PNG and Australian participants on the expression of the Type A behaviour within a work environment.

7.3.1 Effects of Socio-demographic Factors on the JAS scales

The effects which socio-demographic characteristics of participants had on the expression of the TABP were assessed using the variables of gender, age, marital status, educational qualifications, and job classifications. It is common to examine the relationships between socio-demographic factors and the TABP (Keenan & McBain, 1979; Howard et al.,

1977; Chesney & Rosenman, 1980; Orpen, 1982; Sorensen et al., 1987; Jamal, 1990; Greenglass, 1991; Byrne & Reinhart, 1995), and the present study set out to do likewise. The reason for this is that some of these socio-demographic factors have been shown to exert influences either independently, or through interaction, on the expression of the TABP and the pattern of these influences may be instructive in understanding cross-cultural differences in the TABP. For example, the expression of the TABP and its components have been shown to vary across occupational categories and levels of educational qualifications, and both factors acting in concert do exert an influence on the expression of the Type A behaviour pattern (Chesney & Rosenman, 1990; Byrne & Reinhart, 1989, 1995).

The distributions of the JAS scale scores according to breakdowns of these variables were addressed in two parts. Firstly, PNG and Australian participants were combined and the overall effects of these variables on the TABP was analysed. Secondly, the differences between PNG and Australian participants on the effects of the socio-demographic variables on the JAS scales were assessed.

7.3.1.1 Gender Effect

The overall mean score for males was generally higher than that for females on the J scale of the JAS, and this difference reached statistical significance. Differences in mean scores for males and females on the S scale also approached statistical significance ($p = 0.07$). Females, on average, scored higher than males on the S scale. The effect of gender on other JAS scales did not reach statistical significance, and there were also no significant

differences between PNG and Australian participants by gender on the expression of the Type A behaviour. These results of the combined sample are reported in Table 7.5.

Table 7.5

Distribution of JAS scale scores on Gender

JAS Scales	Males	Females	F value
Global	-2.40 (8.58)	-1.63 (8.59)	1.58
Speed	-3.20 (9.53)	-1.96 (9.30)	3.20
Job	-2.02 (9.26)	-4.11 (8.27)	10.98***
Hard	-0.46 (10.11)	-0.44 (9.60)	0.01

note: Standard deviations in parenthesis; *** $p < 0.001$

7.3.1.2 Age Effect

The effect of age on the expression of the TABP was assessed using three age groups. These age groups were 20 to 29 years, 30 to 39 years, and 40 (+) years. There were no significant effect of age on the Type A behaviour pattern. In addition, the interaction effect between age and country of origin of participants on the JAS scales was not statistically significant.

7.3.1.3 Marital Status Effect

The effect of marital status on the JAS scales showed that scores for married participants on the S scale were generally higher than that of participants classified in the “alone” category, and this difference was statistically significant. The alone category consisted of

never married, single parent, divorced, widowed, and separated participants. Scores for participants grouped in the “alone” category on H scale were higher compared with those for married participants. This difference also reached statistical significance as shown in Table 7.6. The effect of marital status on the Global and J scales did not reached statistical significance.

Table 7.6

Distribution of JAS scale scores on Marital Status

JAS scales	Married	Alone	F value
Global	-2.35 (8.19)	-1.89 (8.78)	0.78
Speed	-1.63 (9.65)	-3.23 (9.65)	5.27*
Job	-2.66 (8.54)	-3.00 (9.10)	0.27
Hard	-2.99 (9.18)	0.87 (10.0)	28.88****

note: Standard deviations in parenthesis; *** p < 0.05; **** p < 0.0001

There was no significant effect of marital status between PNG and Australian participants on the expression of the TABP, although the difference between the samples combined on the H scale approached statistical significance ($F_{1, 818} = 2.83, p < 0.09$). The cell means on this scale showed that married (mean = 0.44) and non-married participants (mean = 4.08) in Australia scored above the arbitrary mean of zero on this JAS scale compared with married (mean = -3.96) and non-married participants (mean = -2.94) in PNG.

7.3.1.4 Educational Effect

The effect of education on the expression of the TABP was assessed using three categories reflecting universally accepted groupings of educational qualifications, namely college certificate, diploma and degree. The results on the effects of education are shown in Table 7.7. The mean scores for participants with degrees on the Global and S scales were generally higher than those for participants with college certificates and diplomas, and these differences reached statistical significance. With the J scale, scores for participants with degrees and diplomas were, on average, higher than the mean score of participants with college certificates, and this difference reached statistical significance. The mean score for participants with college certificates on the H scale was generally higher than those for college diplomas and university degrees. This difference was also statistical significant.

Table 7.7

Distribution of JAS scale scores on levels of Educational Qualifications

JAS scales	Certificate	Diploma	Degree	F value
Global	-3.06 (8.45)	-2.48 (7.74)	-0.24 (9.00)	8.86***
Speed	-3.36 (9.49)	-4.34 (8.52)	-0.63 (9.57)	9.53****
Job	-6.16 (8.01)	-3.72 (8.31)	2.95 (7.68)	104.45 ****
Hard	1.37 (9.87)	0.53 (9.43)	-3.94 (9.29)	25.05****

note: Standard deviations in parenthesis; *** $p < 0.001$; **** $p < 0.0001$

The only significant interaction effect between PNG and Australian participants on educational qualifications on the TABP was observed on the J scale ($F_{2, 818} = 3.35, p < 0.05$). The results in Figure 7.1 showed Australian participants in possession of college certificates and diplomas reporting significantly higher mean scores on the J scale compared with PNG participants holding similar educational qualifications. However, degree holders in both countries reported similar levels of the behaviours assessed by the J scale. In addition they scored, on average, above the arbitrary mean of zero on this JAS scale compared with participants with lower educational qualifications in both countries. No other significant effect on PNG and Australian participants and educational qualifications were observed on the other JAS scales.

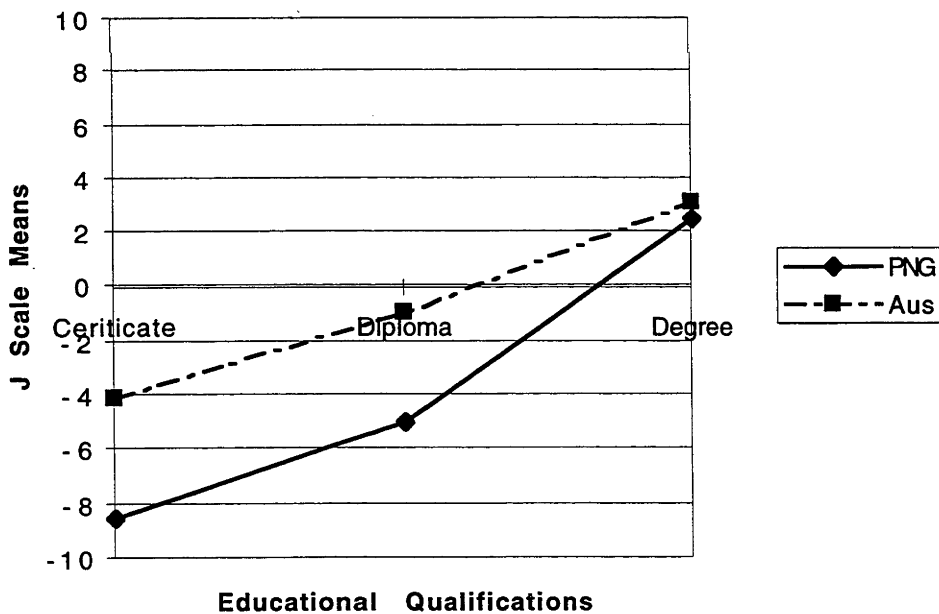


Figure 7.1 Interaction effect of country of origin and educational qualification on J scale

The effect of years participants spent in school on the expression of the Type A behaviour was also considered. Scores on the S scale for participants who were in school

for 11 to 15 years were generally higher than those for participants who were in school for up to 10 years, or 16 years or more, and this difference was statistically significant. With the J scale, scores for participants who attended school for 11 to 15 years, and those in school for 16 years or more were significantly higher than those who have been to school for up to 10 years. The scores on the H scale for participants who were in school for up to 10 years were generally higher than those who were in school for 11 to 15 years and 16 years or more. This difference reached statistical significance. The results are shown in Table 7.8.

Table 7.8

Distribution of JAS scale scores on Years in School

JAS scales	less than 10 yrs	11 to 15 yrs	16(+)yrs	F value
Global	-3.08 (8.13)	-1.97 (9.67)	-1.28 (8.68)	2.55
Speed	-4.11 (8.82)	-1.78 (9.88)	-2.76 (9.19)	4.22*
Job	-5.82 (9.31)	-3.45 (8.16)	0.87 (8.43)	35.83 ****
Hard	2.75 (9.92)	-1.31 (9.92)	-2.14 (9.29)	16.85 ****

note: Standard deviations in parenthesis; *** $p < 0.05$; **** $p < 0.0001$

7.3.1.5 Occupational Characteristic Effect

Jobs were classified in three broad categories, namely administrative, technical and occupations for purposes of ascertaining what effect these different categories of jobs has on the expression of the Type A behaviour pattern. Participants in managerial jobs reported significantly higher means on the Global scale compared with those in

administrative and technical jobs. Scores for participants in managerial jobs on the S scale were, on average, higher than participants in administrative and technical jobs, and this difference was statistically significant. Scores for managers on the J scale were also generally higher than those holding administrative and technical jobs and the differences in means on the J scale were statistically significant. These results are reported in Table 7.9. No significant effect was recorded for the H scale.

Table 7.9

Distribution of JAS scale scores on Occupation

JAS Scales	Administrative	Technical	Managerial	F value
Global	-2.96 (8.31)	-3.63 (8.28)	-0.01 (8.77)	12.91****
Speed	-2.61 (9.16)	-4.72 (7.90)	-1.69 (10.41)	5.03**
Job	-4.79 (8.58)	-3.70 (8.39)	-3.70 (8.83)	28.35****
Hard	-0.77 (9.90)	-0.44 (9.69)	0.02 (10.01)	0.52

note: Standard deviations in parenthesis; ** $p < 0.01$; **** $p < 0.0001$

The results on the interaction effect between PNG and Australian participants by occupational status on the JAS scales are shown in Figures 7.2 and 7.3. Figure 7.2 showed that Australian participants in the cross-sections of jobs reported significantly higher means on the S scale compared with participants holding similar jobs in Papua New Guinea ($F_{2, 813} = 3.46, p < 0.05$). In addition, managers in Australia scored higher mean scores on the J scale compared with administrative and technical participants in Australia. The distribution of mean scores across the jobs in PNG indicated that participants in these cross-section of jobs reported behaviours measured by the S scale in

a similar manner. The results on the J scale also reached statistical significance ($F_{2, 813} = 3.11, p < 0.05$), and Figure 7.3 showed that Australian participants across these jobs reported significantly higher mean scores on the J scale compared with participants holding similar jobs in PNG. In addition, the distribution of mean scores also showed that Australian and PNG managers scored notably higher mean scores on the J scale compared with participants in the other two job classifications in both countries. Technical participants scored moderately on the J scale relative to administrative and managerial participants, while participants in administrative jobs scored lower mean scores compared with those in technical and managerial jobs in both countries. The results on the interaction effect between country of origin by job classification on the Global and H scales did not achieve statistical significance at the alpha level of .05.

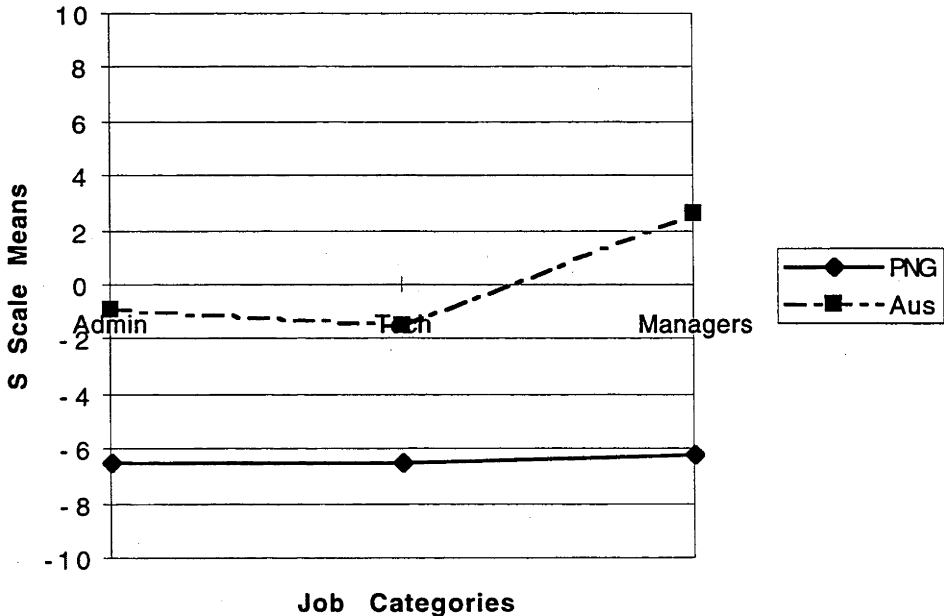


Figure 7.2 Interaction effect of country of origin and job classification on S scale

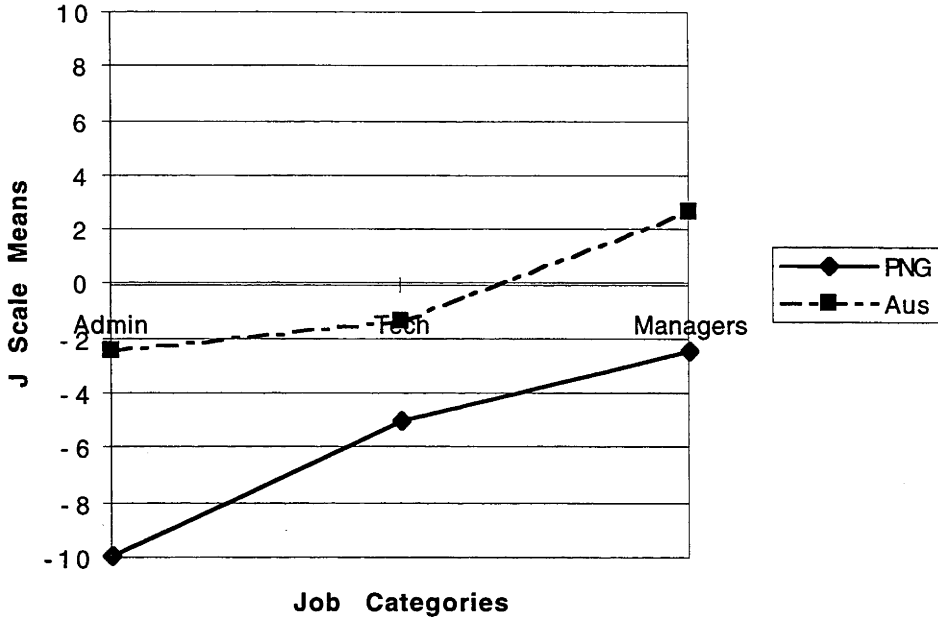


Figure 7.3 Interaction effect of country of origin and job classification on J scale

The results presented in Table 7.10 illustrated the effect years on jobs had on the expression of the TABP measured by the JAS scale. Participants who had been in their current jobs for 2 to 5 years scored significantly higher means compared with participants who have been in their job for less than 1 month to 1 year, and those who held their current job for 6 years or more. With the S scale, participants who have been in their jobs for 2 year to 5 years showed significantly higher means on the S scale compared with participants in the other two groups, whereas those in their current job for six years or more scored significantly lower means on this S scale compared with participants classified under the other two categories. With the J scale, the results showed that participants who have held their jobs from less than 1 month to 1 year and from 2 to 5 years scored significantly higher means on the J scale compared with those in their current jobs for over six years. The results on the H scale also showed that participants who have

been in their job for less than 1 month to 1 year scored significantly lower mean scores compared with the other two categories of participants whereas participants who held their jobs for over 6 years showed significantly greater mean scores relative to the other two groups.

Table 7.10

Effects of years on current job on JAS scales

JAS Scales	Years on Job	Means	S.D	F
Global Type A				6.36**
	< 1 mth to 1 yr	-1.46	8.61	
	2 to 5 yrs	-1.47*	8.70	
	6 yrs (+)	-3.95	8.02	
Speed & Impatience				18.06***
	< 1 mth to 1 yr	-2.38	9.31	
	2 to 5 yrs	-1.51*	9.67	
	6 yrs (+)	-6.08*	7.96	
Job Involvement				46.90***
	< 1 mth to 1 yr	-3.15*	9.56	
	2 to 5 yrs	-1.09*	8.41	
	6 yrs (+)	-7.84	8.24	
Hard-Driving				21.49***
	< 1 mth to 1 yr	2.09*	8.92	
	2 to 5 yrs	-1.93	9.69	
	6 yrs (+)	3.02*	9.76	

note: mth = months; yrs = years; ** $p < 0.001$; *** $p < 0.00001$

Table 7.11 presents the means relating to the effect of the number of jobs occupied by participants on the expression of the TABP measured by the Jenkins Activity Survey. The results showed that participants who have occupied 5 or more jobs displayed significantly higher mean scores on the S and J scales compared with those who had held less than 5

or more jobs. With the H scale, the results showed that participants holding 1 up to 4 jobs reported means above the arbitrary mean of zero compared to participants who have been employed in 5 or more jobs. The results on the Global scale was not statistically significant.

Table 7.11

Effects of total number of jobs on JAS scales

	Total Jobs	Means	S.D	F
Global Type A				2.34
	1	-2.89	8.57	
	2	-3.20	8.46	
	3	-3.07	8.40	
	4	-1.33	8.21	
	5 (+)	-1.20	8.73	
Speed & Impatience				8.96****
	1	-5.69	8.82	
	2	-3.97	9.76	
	3	-4.04	7.93	
	4	-2.76	8.96	
	5 (+)	-0.61*	9.76	
Job Involvement				15.26****
	1	-6.22	8.62	
	2	-5.35	9.55	
	3	-3.96	8.29	
	4	-2.98	8.40	
	5 (+)	-0.36*	8.43	
Hard-Driving				8.86****
	1	1.46*	9.51	
	2	1.77*	9.51	
	3	1.19*	9.94	
	4	0.45*	10.15	
	5 (+)	-2.75	9.66	

* p < 0.05; **** p < 0.0001

7.3.2 Effects of Occupational Stress on the JAS scales

It has been consistently reported that there is a strong positive correlation between the experience of job stress and expression of the TABP (Howard et al., 1977; Haynes et al., 1978b; Keenan & McBain, 1979; Sorensen et al., 1987; Jamal, 1990; Chew & Chee-Leong, 1991). The evidence produced has played an important role in shaping a theoretical pathway on the influence of occupational stress on the TABP in Western work environments (Friedman & Rosenman, 1974; Byrne & Byrne, 1991; Rosenman, 1993). In view of this theoretical position, the aim of this study was to ascertain whether experiences of job stress reported by participants in PNG will exert a similar positive influence on the expression of the TABP as has been observed in Western work environments. The Australian study was used to make this cross-cultural comparison.

The first analysis was to establish the reported experiences of job stress by PNG and Australian participants. The results on job stress experiences are reported in Table 7.12. Participants in PNG and Australia reported significantly different means on the stress experiences arising from challenges at work, co-workers relationship, and stress arising from work roles of role overload and role ambiguity. Participants in Australia reported experiencing higher levels of challenges at work, reported stress arising from co-workers relationship at work, and experienced greater levels of role overload and ambiguity at work compared with PNG participants. No significant differences in means were observed on the other job stress scales as shown in Table 7.12.

Table 7.12

Distribution of scores on job stressors between
PNG and Australian participants

Job Stressors	PNG	S.D	Australia	S.D	t value
Job Comfort	2.88	0.68	2.93	0.58	-1.09
Job Challenge	2.84	0.66	2.66	0.66	3.98***
Finance	2.76	0.83	2.86	0.75	-1.89
Relationship	2.94	0.76	2.78	0.76	2.85**
Resources	2.97	0.70	2.98	0.65	-0.29
Promotion	2.30	0.91	2.34	0.77	1.05
Role Overload	2.39	0.72	2.14	0.78	4.66***
Role Ambiguity	3.13	0.53	2.89	0.62	5.85***
Role Conflict	2.15	0.62	2.15	0.61	-0.16

p<0.01; *p< 0.001

As previously reported in chapters 5 and 6, the TABP measured by the JAS scales correlated positively and significantly with reported experiences of job stress measured by the job stressors listed in Table 7.11, and some stressors emerged as significant predictors of the Type A behaviour. It was therefore important to compare PNG and Australian participants on the influence of job stress on the Type A behaviour. The next set of results addressed this problem.

As discussed throughout the different chapters in this thesis, a concept central to the theme of the TABP is that challenges from the environment form a major precursor to Type A behaviour (Friedman & Rosenman, 1974). Empirical data in Western societies provided a wealth of evidence in support of this conceptual position on factors that elicit

Type A behaviour (Ganster, 1986; Jamal, 1990; Greenglass, 1991). The aim of this thesis was partly to ascertain if a form of demand at work, namely job stress will be linked positively with the expression of Type A behaviour both in the Australian and PNG samples. Given that it has been argued that the TABP is a common expression of human behaviour in Western societies (Van Egeren, 1991; Thoresen & Powell, 1992) and that job stress is strongly associated with this psychosocial construct (Ganster, 1986; Jamal, 1990; Greenglass, 1991), it was of empirical value to ascertain how the two samples will compare on the effect of stress on the expression of Type A behaviour. Are they going to report similar levels of the TABP in the presence of job stress experienced at work, or will differences be observed between the two samples? This question was addressed by assessing the effect job stressors had on the reported expression of the TABP in the two samples combined, as well as the possible differences that may be evident between PNG and Australian participants.

7.3.2.1 Global Type A Scale

The results in Table 7.13 indicated that stress associated with job discomfort, work resources, role overload (workload), and role conflict were significantly associated with the Global Type A scale. The scores were split at the average score of 2.4 with scores ranging from 1 to 2.4 representing evidence of stress, and scores ranging from 2.5 to 4 being indicative of an absence of reported stress experience as measured by the job stressors listed in Table 7.13. These split in the scores were used to create high and low categories for the purposes of data analyses. On average, participants in the two combined

samples who reported experiencing work stress as measured by these job stress scales reported higher levels of the Global Type A behaviour as opposed to those reporting low stress experience on these job stress scales, and the differences reached statistical significance. These results were generally consistent with expectation of an association between demands at work and positive evidence of the expression of the Type A behaviour pattern.

Table 7.13

Distribution of Job Stress scores on Global Type A scale

Job Stressors	Global Type A		
	High Stress	Low Stress	F
Job Comfort	-0.04 (8.99)	-2.68 (8.37)	13.78****
Job Challenge	-2.18 (8.60)	-2.03 (8.59)	0.57
Finance	-2.39 (8.40)	-1.98 (8.64)	0.33
Relationship	-1.72 (8.37)	-2.18 (8.65)	0.39
Resources	-0.82 (8.26)	-2.35 (8.63)	3.77*
Promotion	-1.58 (8.51)	-2.61 (8.65)	2.91
Role Overload	-0.86 (8.45)	-2.84 (8.59)	10.45***
Role Ambiguity	-1.83 (8.51)	-2.13 (8.61)	0.13
Role Conflict	0.32 (8.67)	-3.10 (8.35)	28.05****

note: Standard deviations in parenthesis, * P < 0.05; ***p < 0.001;**** p < 0.0001

7.3.2.2 Speed and Impatience

The results on the S scale were consistent with expectation of the link between job demands and reported expression of the Type A behaviour pattern. Scores on this scale showed that participants reporting job discomfort, co-workers relationship difficulties, availability of resources at work, role ambiguity and role conflict reported high levels of the Speed and Impatience behaviours compared with those reporting less problems associating with these indicators of job stress. The difference observed on the patterns of means on the effect of these job stressors on the S scale reached statistical significance. The results are shown in Table 7.14.

Table 7.14

Distribution of Job Stress scores on Speed and Impatience Scale

Job Stressors	Speed and Impatience		
	High Stress	Low Stress	F
Job Comfort	0.11 (10.34)	-3.52 (9.00)	21.91****
Job Challenge	-2.17 (9.43)	-2.94 (9.45)	1.20
Finance	-2.49 (9.56)	-2.75 (9.42)	0.11
Relationship	-0.92 (9.98)	-3.18 (9.24)	8.20**
Resources	-0.83 (9.43)	-3.09 (9.41)	6.86**
Promotion	-2.20 (9.45)	-3.20 (9.43)	2.29
Role Overload	-2.07 (9.48)	-3.07 (9.41)	2.16
Role Ambiguity	0.71 (10.30)	-3.34 (9.14)	20.86****
Role Conflict	-0.10 (9.60)	-3.79 (9.17)	29.96****

note: Standard deviations in parenthesis; **p < 0.01; **** p < 0.0001

7.3.2.3 Job Involvement Scale

Results on the job comfort and role conflict scales conformed with expectation of an association between job stress and expression of the TABP. Participants reporting stress associated with these stress indicators expressed high mean scores on the J scale relative to those reporting less experience of job stress measured by these job stress scales. However, part of the results on the J scale did not conform with expectation. Participants who reported stress associated with co-workers relationship at work, and promotion reported lower mean scores on the J scale as opposed to those who reporting experiencing stress associated with these indicators of job stress.

Table 7.15

Distribution of Job Stress scores on Job Involvement scale

Job Stressors	Job Involvement		
	High Stress	Low Stress	F
Job Comfort	-1.74 (9.28)	-3.23 (8.78)	4.05*
Job Challenge	-3.50 (8.62)	-2.59 (9.05)	1.92
Finance	-3.78 (8.46)	-2.61 (9.04)	2.53
Relationship	-5.09 (9.12)	-2.27 (8.77)	14.18***
Resources	-2.15 (8.91)	-3.05 (8.91)	1.22
Promotion	-3.59 (8.92)	-2.15 (8.86)	5.32*
Role Overload	-2.70 (8.67)	-3.00 (9.07)	0.22
Role Ambiguity	-2.29 (9.00)	-3.00 (8.90)	0.71
Role Conflict	-1.52 (8.76)	-3.47 (8.93)	8.26**

note: Standard deviations in parenthesis, * P < 0.05; **p < 0.01;*** p < 0.001

7.3.2.4 Hard-Driving and Competitiveness Scale

Scores for job stressors on the H scale showed that participants experiencing job discomfort, role overload, role ambiguity and role conflict, on average, reported higher on the H scale than those who experienced less stress levels measured by these job stressors. These results were consistent with the general expectation as described for the other JAS scales. The only result that was at odds with expectation was that of job challenge. Participants experiencing forms of challenging in their work environment reported higher levels of the Type B behaviour as opposed to those experiencing less stress associated with challenge at work. The difference in mean scores reached statistical significance. These results are shown in Table 7.16.

Table 7.16

Distribution of Job Stress scores on Hard-Driving Scale

Job Stressors	Hard-Driving		
	High Stress	Low Stress	F
Job Comfort	0.91 (9.57)	-0.83 (9.96)	4.48*
Job Challenge	-2.21 (9.66)	0.45 (9.90)	13.41****
Finance	-0.16 (9.03)	-0.52 (10.15)	0.19
Relationship	-0.33 (9.09)	-0.46 (10.12)	0.02
Resources	-0.51 (9.43)	-0.42 (10.00)	0.01
Promotion	0.09 (9.77)	-0.98 (10.01)	2.40
Role Overload	2.49 (9.79)	-2.26 (9.53)	47.16****
Role Ambiguity	-2.29 (9.01)	-3.00 (8.90)	16.27****
Role Conflict	1.46 (9.94)	-1.23 (9.77)	12.95****

note: Standard deviations in parenthesis, **p < 0.05;*** p < 0.001;
**** p < 0.0001

7.3.3 Country of Origin by Job Stress on JAS scales

The interaction effect between country of origin by experiences of job stress on the JAS scales was addressed in light of the view that the TABP is a behavioural disposition common only to Western work environments, and is largely triggered and reinforced by occupational challenges and stress (Friedman & Rosenman, 1974; Price, 1982, Van Egeren, 1991; Rosenman, 1993). It was therefore of empirical and theoretical interest to determine what effect country of origin interacting with job stress experience might have on the expression of the TABP measured by the JAS in this study. The results showed a significant interaction effect between country of origin and financial concerns on the H

scale ($F_{1, 818} = 5.42, p < 0.05$). The pattern of means presented in Figure 7.4 showed a noticeable overall difference between PNG and Australian participants with PNG participants scoring, on average, above the arbitrary mean of zero on the H scale compared with Australian participants. Furthermore, this Figure also showed that PNG participants who reported financial concern scored lower mean scores compared with other participants in PNG who did not find financial issues of concern to them. The results for the Australian participants showed that those who reported financial concern scored greater means on the H scale compared with participants reporting no financial concerns. The ANOVA results between country of origin and other job stressors were not significant at the alpha level of 0.05.

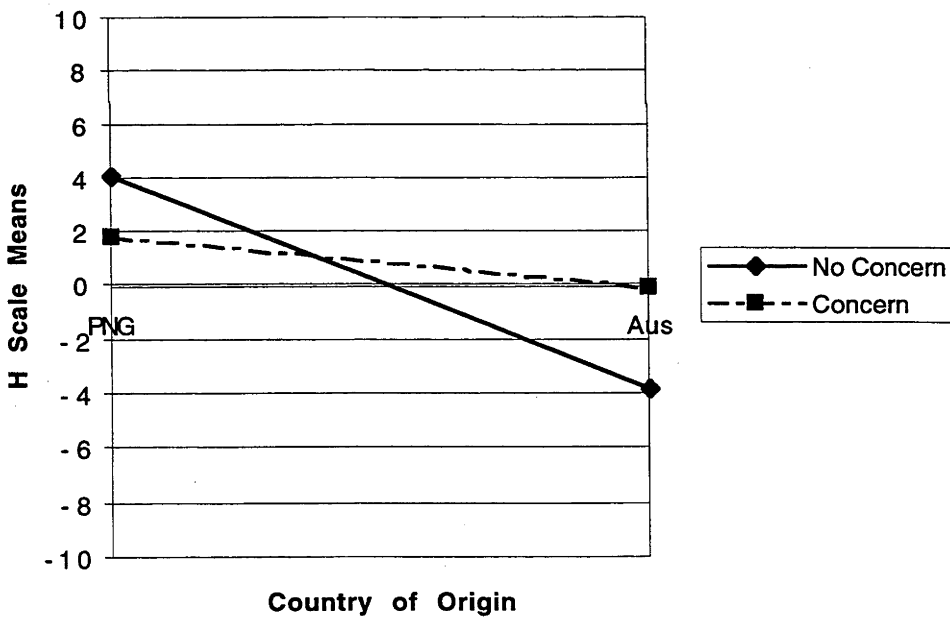


Figure 7.4 Interaction effect of country of origin and financial concern on H scale

7.3.4 Socio-demographic Factors by Job Stressors on the JAS scales

The interaction effect between socio-demographic variables by job stressors on the JAS was also considered in the data analysis. This analysis was considered on empirical considerations simply to ascertain what effect a combination of socio-economic factors and job stress may have on the expression of the Type A behaviour pattern. The analysis of data along this path is not dissimilar to previous empirical data showing strong association between some socio-economic variables and job stress. For example, it has been reported that workers holding blue-collar jobs, on average, reported higher job stress levels compared with white-collar workers (Marmot et al., 1978; Holt, 1993; Schultz & Schultz, 1994), and that the expression of the TABP has been linked to some categories of occupation, for example, high status jobs and higher educational achievements (Chesney & Rosenman, 1980; Rosenman, 1990, 1993). Given that both challenges at work and certain factors like occupational categories are linked to the expression of the TABP, it was of empirical interest in the present study to ascertain what interaction effect, if any, both socio-demographic factors and experiences of job stress will have on the expression of the Type A behaviour pattern.

7.3.4.1 Age by Job Stressors on the JAS scales.

Age interacting with job challenge experiences had a significant effect on the S scale ($F_{2, 818} = 3.06, p < 0.05$). The patterns of mean scores are presented in Figure 7.5, which showed that participants aged 20 to 29 years and aged 40 (+) years who experienced challenge at work scored significantly higher means on the S scale compared to

participants in the age group of 30 to 39 years. These results also showed that participants in age group 20 to 29 years who reported job challenge also scored higher mean scores on the S scale compared to participants in the same age group who did not experience job challenge. Similar results were observed for the participants in the age group of 40 (+) years. However, with the age group of 30 to 39 years, the results revealed that participants who did not experience job challenge reported greater mean scores on the S scale compared with participants in the same age group who reported job challenge experiences at work.

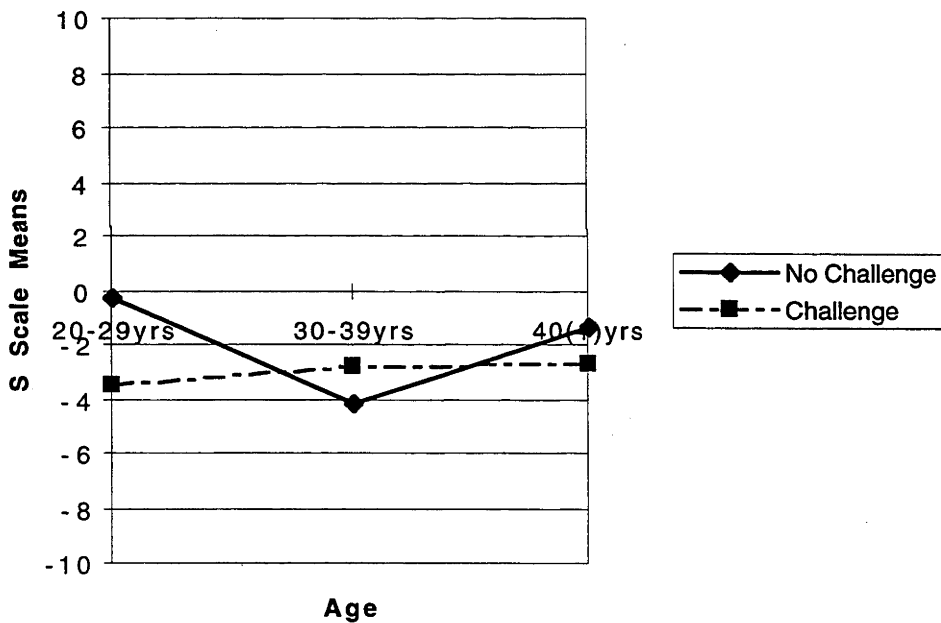


Figure 7.5 Interaction effect of age and job challenge on S scale

Age and job challenge also had a statistically significant effect on the J scale ($F_{2, 818} = 8.23, p < 0.0001$). The distribution of means are reported in Figure 7.6. The effects of age and reported experiences of job challenge declined with increased age. Participants in the age group of 20 to 29 years who reported job challenge scored greater means on the J

scale compared with participants in the two latter groups. In addition, there were also notable differences in mean scores within age groups by job stress on the J scale. Participants in the age group of 20 to 29 who reported job challenge also scored higher mean scores on the J scale compared with participants who reported no job challenge. However the results with the other two groups produced effects which were at odds with the expectations of an association between high stress and reported evidence of Type A behaviour.

Previous findings have demonstrated a positive association between the expression of the TABP and challenges of the work environment. For example, Greenglass (1991) reported that experiences of role conflict at work was positive correlated with high mean scores on the Jenkins Activity Survey. Other studies have also produced similar findings showing strong associations between reported experiences of job stress and positive expression of the Type A behaviour pattern (Howard et al., 1977; Boyd, 1984; Sorensen et al., 1987). These previous findings were consistent with the explanations of the origins of the TABP as being elicited by the challenges from the environment (Friedman & Rosenman, 1994; Rosenman, 1993). On the basis of these previous observations, the data produced in the present study was at odds with expectation of an association between job stress and expression of the Type A behaviour (Friedman & Rosenman, 1974; Rosenman, 1993). With the age group of 30 to 39 years, participants who reported no experiences of job challenge scored greater means on the J scale compared with participants in the same age group who reported job challenge. Similar results were produced in the age group of 40 (+) years.

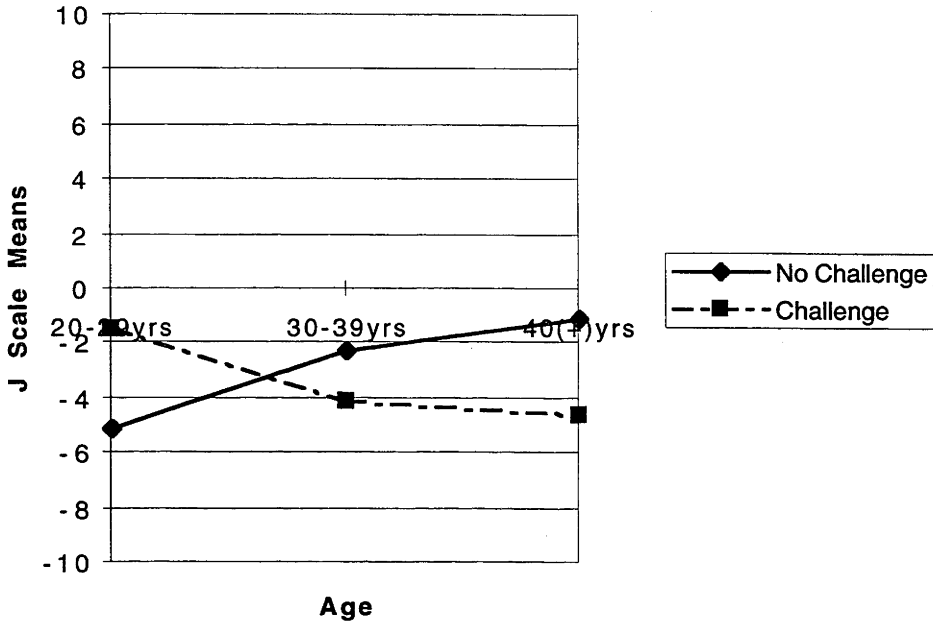


Figure 7.6 Interaction effect of age and job challenge on J scale.

7.3.4.2 Education by Job Stressors on the JAS scales.

Education qualification combined with role ambiguity exerted a statistically significant influence on the J scale ($F_{2, 818} = 6.68, p < 0.001$), and years in school combined with financial issues produced a statistical significant effect on the S scale ($F_{2, 818} = 6.50, p < 0.001$). The distribution of means on these results are reported in Figures 7.7 and 7.8. In Figure 7.7 the results showed that participants holding diplomas and degrees who experienced role ambiguity reported higher mean scores on the J scale compared with participants with college certificates. Assessing the effects within the different educational qualifications, the results showed that participants with college certificate who reported role ambiguity reported lower mean scores relative to those with certificate who reported no role ambiguity. Participants with a diploma who reported job ambiguity also scored

significantly higher mean scores compared with participants with diploma who reported a lack of role ambiguity. The results revealed an opposite effect on participants with degree. Those with degree who reported no role ambiguity scored lower mean scores on the J scale compared with those reporting role ambiguity in the same educational qualifications.

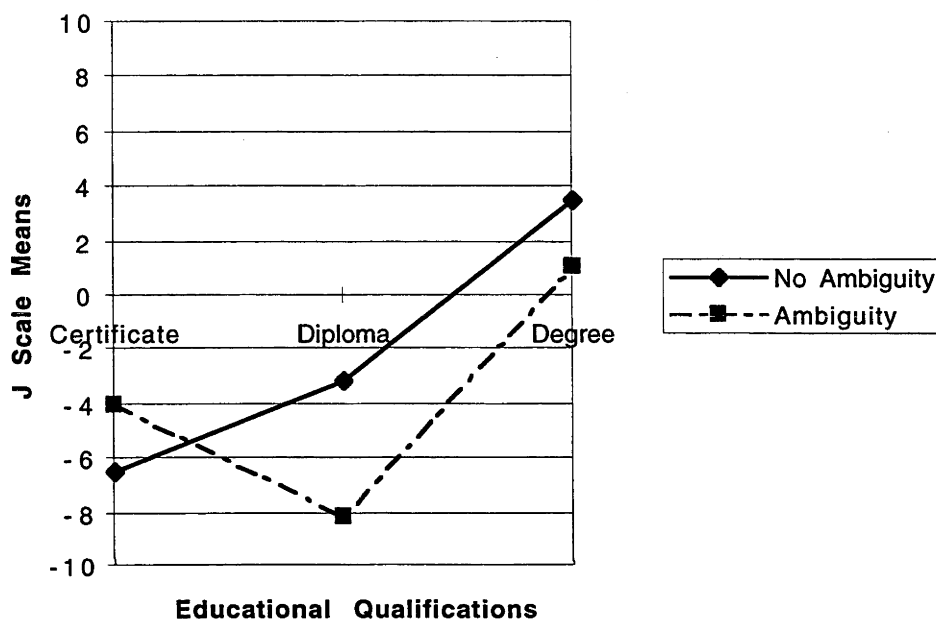


Figure 7.7 Interaction effect of educational qualification and role ambiguity on J scale

7.3.4.3 Years in school by Job Stressors on the JAS scales.

As presented in Figure 7.8, the results showed that those in school for 10 years who experienced financial problems at work scored lower mean scores on the S scale compared to participants who have been in school for 11 to 15 years and 16 years or more. Further more, the interaction effect also showed that participants who have been in school for 16 years or more and reporting no financial concern scored significantly lower mean scores on the S scale compared to those in school for 10 years and those in school

from 11 to 15 years. Along this analysis, participants with 11 to 15 years in school and reporting no financial concern scored greater means compared to participants in the other two groups. The results also showed that participants in school for 10 years and who reported no financial concerns scored higher means on the S scale compared with participants in the same group who reported financial concerns. A similar effect was established with those in school for 11 to 15 years and experiencing financial concerns. However, participants who have been in school for 16 years or more and reporting financial concern scored higher means on the S scale compared with those who have been in school for the same length of time, but reporting no financial concern.

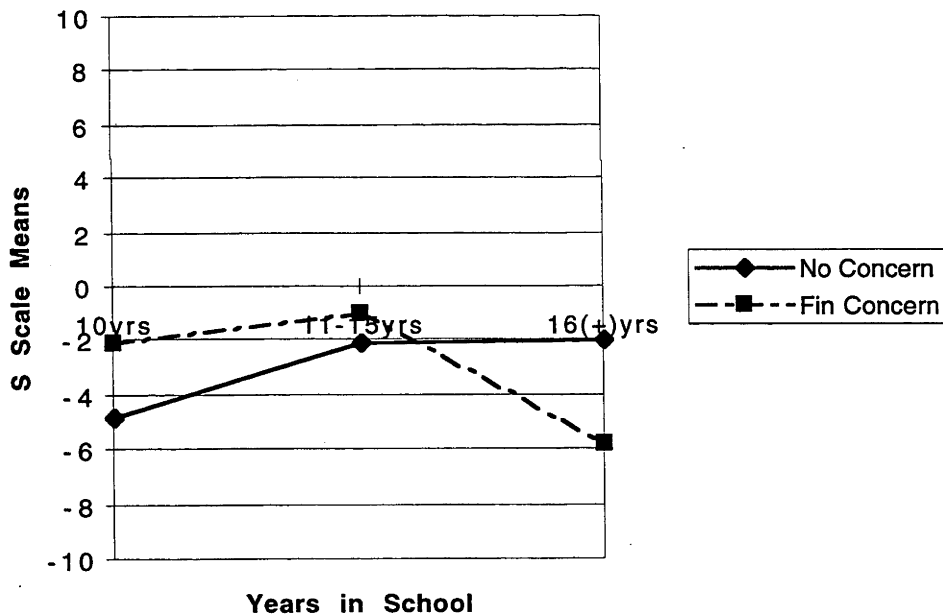


Figure 7.8 Interaction effect of years in school and role ambiguity on S scale

7.3.4.4 Occupation by Job Stressors on the JAS scales.

Job classifications combined with job comfort had a significant effect on the Global scale ($F_{2, 818} = 3.30, p < 0.05$), and a similar result was also observed on job classification combined with role conflict on the H scale ($F_{2, 818} = 3.04, p < 0.05$). The distribution of scores are shown in Figure 7.9 and Figure 7.10. The results showed that participants across the cross-section of jobs who reported job discomfort scored below the arbitrary mean of zero compared with participants who reported job comfort. In addition, the results also showed that participants in managerial jobs who reported job comfort scored higher mean scores on the Global scale compared with those reporting job discomfort. Administrative and Technical workers experiencing job comfort or discomfort did not differ significantly in their reported means on the Global scale compared with managerial participants as previously described.

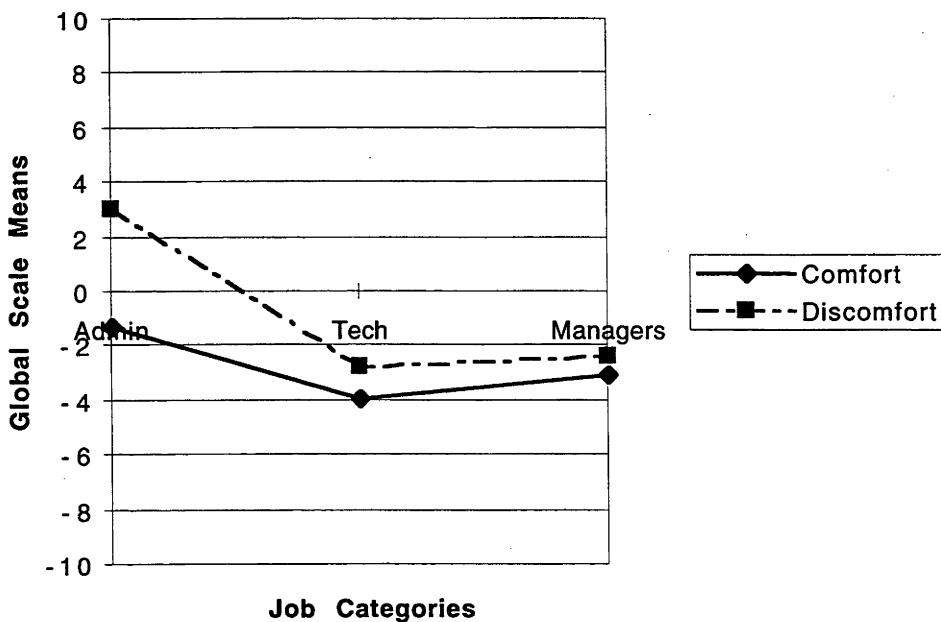


Figure 7.9 Interaction effect of job classification and job discomfort on Global Scale

The results in Figure 7.10 showed that participants holding administrative jobs and reporting role conflict scored above the arbitrary means of zero on the J scale compared with technical and managerial participants. The effect of occupation and role conflict on the J scale noticeably declined with increasing job status. The results also showed that managerial participants who reported no role conflict scored significantly higher mean scores compared with managers who reported role conflict.

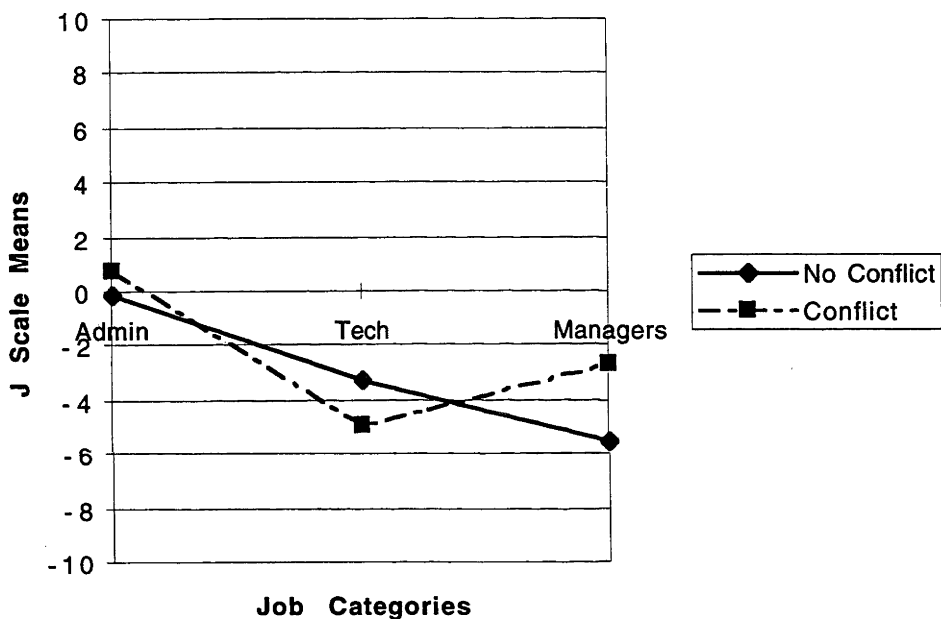


Figure 7.10 Interaction effect of job classification and role conflict on J Scale

7.3.4 Effects of JAS scales on Job Distress Symptoms

This cross-cultural study of the TABP also addressed what effects the expression of the TABP will have on reported experiences of job distress symptoms. While this issue was of secondary importance in this cross-cultural study, the relationship between the TABP and emotional affectivity formed a major re-conceptualisation of the views on Type A behaviour pattern (Rosenman, 1988; Byrne, 1996). One of this important idea is based on

the mediating effects of emotional distress on the TABP, and its predictive value on the risk of coronary heart disease (Byrne & Rosenman, 1986; Rosenman, 1993; Byrne, 1996). This view, in part, proposes that expression of some aspects of the TABP and in particular competitiveness has the capacity to trigger individual behaviours that also mark the TABP such as time urgency and achievement-oriented behaviours. The expression of competitive behaviours may also lead the individual to encounter an elevated state of emotional or affective distress. For example, the anxiety associated with a threat of failure has been associated with the expression of aggressive and competitive behaviours (Byrne & Rosenman, 1986; Rosenman, 1988; Byrne, 1996). This complex interaction of a host of behavioural, emotional, and physiological factors seemed more likely to elevate the risk of CHD associated with the TABP instead of the TABP acting independently as a CHD risk factor.

Some data are presented here simply to demonstrate what association the Type A behaviour had on the reported experiences of job distress symptoms in the two samples combined. As previously reported in chapters 5 and 6, Type A behaviour measured by the JAS scales correlated significantly with reported experiences of job distress symptoms. The JAS scales were significantly associated with experiences of job distress as measured by job distress scales shown in Table 7.17. These means distinguished between participants who described themselves as Type A or Type B in relation to the effect these patterns of behaviour had on reported experiences of job distress.

The results in Table 7.17 showed that participants who reported expression of the Global Type A behaviour reported experiencing job tension and somatic symptoms such as headache, and backache compared with those reporting the Type B behaviour. Participants who reported high scores on the S Scale also experienced elevated levels of job distress as indicated by job distress symptoms listed in Table 7.17. Identical results as the S scale was also produced on the J scale. Participants scoring high scores on the J scale also reported significantly high mean scores on job distress symptoms at work. A similar pattern of result was observed on the depressed scale. Participants who reported high scores on the H scale also reported higher means on the depressed scale. These differences observed between the JAS and job distress scales were statistically significant as shown in Table 7.17.

The association between expression TABP and emotional affectivity was not a core issue addressed in this thesis. However the findings in the present study suggests an interesting empirical possibility in assessing further what mediating effect TABP and emotions have on each other. In this regard, current views proposed in re-examining the TABP by considering the mediating effect of emotions on the pathogenic nature of the TABP has set a new challenging and exciting empirical pathway in addressing the TABP and especially the conflicting data produced previously on the pathogenic nature of the Type A behaviour pattern (Rosenman, 1988; Byrne, 1996).

Table 7.17

Distribution of mean scores of the JAS scales on job distress symptoms.

	Type A	S.D	Type B	S.D	t value
<i>Global Type A</i>					
Tension	1.45	0.32	1.31	0.31	6.14***
Somatic	1.37	0.29	1.32	0.27	2.68**
Fatigue	1.33	0.23	1.32	0.25	0.44
Depression	3.05	0.47	3.03	0.47	0.78
<i>Speed & Impatience</i>					
Tension	1.50	0.32	1.29	0.30	8.75***
Somatic	1.42	0.27	1.29	0.27	6.53***
Fatigue	1.38	0.24	1.30	0.23	4.34***
Depression	2.91	0.48	3.10	0.44	-5.68***
<i>Job Involvement</i>					
Tension	1.45	0.32	1.31	0.31	6.18***
Somatic	1.32	0.26	1.35	0.29	-1.51*
Fatigue	1.32	0.23	1.34	0.25	-1.08
Depression	3.08	0.45	3.01	0.47	2.31*
<i>Hard-Driving</i>					
Tension	1.33	0.31	1.39	0.33	-2.70**
Somatic	1.35	0.28	1.33	0.28	1.10*
Fatigue	1.34	0.23	1.31	0.25	1.73
Depression	3.07	0.47	3.00	0.47	2.71*

* p < 0.05; **p < 0.01; *** p < 0.001

This chapter presented comparative cross-cultural data on the expression of the TABP measured by the JAS among PNG and Australian public sector workers. It also addressed two underlying issues underpinning this thesis. The first was whether PNG workers will express the TABP in a similar manner as Australian participants, and the second objective was to ascertain if experience of job stress is linked with the expression of the TABP as is observed in Western societies as discussed in the different chapters of this thesis and especially chapters 1 and 3. These are the two underlying problems addressed in this cross-cultural study of the TABP in PNG and Australia.

Aspects of the work environment such as job stress, job status and educational achievements are strongly linked with the expression of Type A behaviour pattern (Chesney & Rosenman, 1980; Ivancevich & Matteson; 1984; Jamal, 1990; Rosenman, 1993), and the empirical evidence generated on the influence these factors have on the expression of the TABP conforms with theoretical expectations of environmental challenges (observed in Western societies) as a major precursor of Type A behaviours (Friedman & Rosenman, 1974). This poses an interesting, as well as challenging empirical question, is the expression of the TABP also evident in non-Western societies such as PNG, and if so, can challenges in the form of stress experienced at work and other associated occupational factors such as educational achievement, and occupational status exert some influence on the expression of the TABP? As pointed out in the

previous paragraph, these issues were investigated in this cross-cultural comparative study of PNG and Australian public sector workers.

The overall findings on the JAS showed that PNG participants reported themselves to be more Type B than Australian participants, however it seems the Type A behaviour still remained the same construct since associations with socio-demographic factors such as gender, education and occupation, and challenges in the form of job stress remained strikingly consistent across PNG and Australia. These were the two main findings of the present cross-cultural study on the Type A behaviour pattern.

7.4.1 Overall comparative data on the JAS scales

The patterns of means on the JAS scales showed that PNG and Australian participants in the present study scored, on average, below the arbitrary mean of zero the Global and J scales. Further statistical analyses of these results showed that PNG participants displayed patterns of behaviours that were characteristically more Type B than Type A compared with Australian participants and this difference reached statistical difference. Scores on the S scale showed that Australian participants scored above the arbitrary mean of zero on this JAS scales compared with PNG participants whose score fell below the arbitrary mean of zero on this scale. The difference observed on this scale was statistically significant showing Australian participants reporting higher levels of TABP on this scale compared with PNG participants. Finally, the results also showed PNG participants showed significantly higher means on the H scale compared with Australian participants. Their means fell above the arbitrary mean of zero whereas the mean score for the

Australian sample fell below the arbitrary mean of zero. Overall, the findings on the prevalence of the TABP measured by the JAS showed that Australian participants were more likely to express behavioural patterns which defined the Type A behaviour than were PNG participants.

The present overall results showing PNG participants expressing higher levels of the Type B behaviour pattern as opposed to the TABP seemed to support a major conceptual view, which proposed that this constellation of behaviours is most prominent in Western societies (Price, 1982, 1982; Van Egeren, 1991; Rosenman, 1993). The explanation provided is that challenging aspects of Western societies which encourage and rewards individualistic tendencies, competitive attitudes, and quest for material wealth triggers the expression of the Type A behaviour pattern (Thoresen & Powell, 1992; Helman, 1994). It is therefore likely that the results showing Australians scoring higher mean scores on the JAS scales compared with participants in PNG may have reflected this prevailing assumption of the TABP being characteristic of Western societies. The results from the Global scale may help clarify this theoretical point.

The Global Type A scale is an overall indicator of the TABP and on the basis of the description of this scale (see Byrne, 1987, p.123), PNG participants, on average, demonstrated through their behavioural patterns at work, a lack of self-imposed time pressure. They were as well, generally tolerant of others, less competitive and achievement oriented, and less committed to the ideals of occupational activities such as taking on workloads in excess of personal capacity, or working past normal work hours

compared with Australians employed on similar jobs. Many of these component behaviours of the constellation of behaviours as described in chapter 2 and 3 are perceived to reflect the fabric of the Western work culture (Price, 1982; Helman, 1987; Van Egeren, 1991; Helman, 1994). The present findings added some empirical support to the notion that TABP is largely a Western cultural phenomenon. However, what was also interesting about the results in the present study was that the effects of job stress and the socio-demographic variables on the JAS, overall, did not produce any obvious cross-cultural variations between PNG and Australian participants. Instead, the results at this level of analysis were strikingly similar to what has been demonstrated in Western societies.

7.4.2 Effects of Socio-demographic Factors on the JAS scales

The findings on the effects of gender, age, marital status, educational qualifications, and occupations were strikingly consistent with the established conceptual and empirical expectations of the effects of these variables on the Type A behaviour already demonstrated in Western societies.

There were no significant gender differences between PNG and Australian on any of the JAS scales. Instead, the results showed only a overall gender effect for the two samples combined with males and females reporting significantly different means on the J scale. Males scored significantly higher means on the J scale compared with females, suggesting that males were generally more involved on their jobs relative to female participants. This finding is consistent with the traditional view that the TABP is largely a male attribute (Friedman & Rosenman, 1974), yet the present finding does contradict

other more recent findings. For example, one study (Reunanen et al., 1987) using the JAS on employed males and females found that these participants did not differ significantly in their expression of behaviours measured by the J scale but they did differ significantly on the Global and S scales. A different study also reported high TABP score on all the JAS scales including the J scale among females holding academic jobs (Greenglass, 1991). The present finding also does not concur with a more recent view that males and females were generally more likely to report equal prevalence of the TABP measured by the JAS scale (Byrne & Reinhart, 1995).

Given this conflicting evidence, it is possible that the present finding on gender effect on the J scale may have reflected a general view that some characteristic features of the JAS scales are not as “socially” acceptable for females to freely express (Thoresen & Graff Low, 1991; Bedeian et al., 1990). Some examples of aspects of the TABP viewed to be socially inappropriate for females to express includes competitiveness and aggressiveness (Thoresen & Graff Low, 1991; Bedeian et al., 1990). Alternatively, this result may also have reflected the effect of occupational status on gender. The distribution of males and females on the cross-section of jobs showed that males were heavily clustered in managerial jobs whereas females clustered mainly in administrative jobs. It is now well established that the expression of the Type A behaviour is linked with high occupational status (Chesney & Rosenman, 1980; Byrne & Reinhart, 1985; Byrne et al., 1995), and the gender differences observed in the present study may have reflected the differences in the number of males and females occupying managerial and administrative jobs. No significant gender effect was observed on other JAS scales. This lack of

difference on other JAS scales concurred with the suggestion that if women were confronted with similar environmental challenges such as those found at work then they would be more likely to express similar patterns of behaviours to males, so that there is no real basis for claiming gender differences in the expression of the Type A behaviour, at least as measured by the Jenkins Activity Survey (Waldron, 1987; Byrne & Reinhart, 1995). Rather, it is therefore more likely that while socialisation processes (Thoresen & Graff Low, 1991; Bedeian et al., 1990) acted to reduce females' tendencies to express the TABP, institutional environments such as the work would act to promote the Type A behaviour. The present finding of a lack of significant difference between male and female participants on these other JAS scales may then have reflected this possibility, and provide some support to this recent theoretical proposition that there is no real basis for gender differences in the expression of the TABP, and that males and females will express similar levels of the TABP if faced with similar demands at work, or in other settings (Byrne & Reinhart, 1995).

It is now well established that the Type A behaviour is correlated with higher educational qualifications (Boyd, 1984; Reunanen et al., 1987; Greenglass, 1991). The present results showed that degree holders in PNG and Australia, on average, scored above the arbitrary mean of zero on the J scale compared with participants with certificates and diplomas. In addition, the results showed that Australians holding certificates and diplomas scored higher means on this scale compared with PNG participants with similar educational qualifications. Educational qualifications also exerted a significant overall effect on the JAS scales regardless of the country of origin of the participants. Participants

with higher educational qualifications scored significantly higher on the Global, S and J scales compared with participants with lower educational qualifications. With the H scale, participants with lower educational qualifications scored higher compared with participants with higher educational qualifications. These findings are consistent with previous data reported on the effect of educational qualifications on these JAS scales (Byrne & Reinhart, 1995) and the results further endorse the prominence of achievement orientation and goal directed behaviours as attributes associated with higher educational qualifications. The results on the H scale added further support to this conceptual view. It appears that the least educated overall were more likely to express hard-driven competitiveness behaviours as a way to attain their goals. The consistent results produced on the association between educational qualifications and the H scale can also be partly explained by the belief that attainment of socio-economic prestige and material wealth is achieved through educational qualifications (Price, 1982, 1982). In particular, achievement orientation and goal directed behaviours underpin the characteristics of the H scale, and therefore, the least educated appear to express greater levels of this component of the TABP in order to successfully achieve their ambitions as opposed to those who are well educated. This finding is consistent with on the effect of the education on the expression of the TABP (Byrne & Reinhart, 1995), and this accounts for why the expression of the hard-driving attribute is common amongst those with lower levels of education as opposed to those with higher levels of education.

It has been known for quite sometime now that high status occupations correlate strongly with the JAS scale measures of the Type A behaviour pattern (Boyd, 1984;

Reunanen et al., 1987; Greenglass, 1991; Byrne & Byrne, 1991). The results in the total sample in this study added further support to these previous data on the association between the JAS scales and occupational levels. Participants holding managerial jobs in both countries scored significantly higher on the Global, S and J scales compared with participants in technical and administrative jobs, which formed the other job classifications used in this cross-cultural study. This result is consistent with the general expectation of an association between expression of the TABP and occupation.

Significant interaction effects of country of origin and job classification on the JAS scales were also established in the present study. These differences were apparent on the overall effect of these categories of jobs by country of origin on the JAS scales, and within different job classifications. The results showed that participants in Australia in these categories of jobs scored significantly higher on the S and J scales compared to PNG participants. The S scale assessed behaviours such as self-imposed time pressure, intolerance of slowness in others and inordinate degree of irritability and distractibility and the J scale assess behaviours to do with acceptance or establishment of difficult and challenging deadlines or the tendency to work past normal (discretionary) hours (Byrne, 1987).

The difference observed on the J and S scales may have reflected cultural differences in the emphasis on the concept of time (Helman, 1987), or the generally relaxed unambitious lifestyles of some non-Western societies (Graves & Graves, 1985). For example, Helman (1987, 1994) described the socio-economic value and emphasis placed on time between

Western and non-Western societies as very different. In modern Western culture, time is tangible, and is linked to socio-economic advancement of society, as well as the individual. In some non-Western societies, the notion of time and the socio-economic emphasis placed on it is less prevalent, or absent insofar as how time is effectively managed in the presence of situational challenges (Levine & Bartlet, 1984; Helman, 1987). For example, Graves and Graves (1985) studying the expression of the TABP in people of the South Pacific reported that this group of people were unambitious, and displayed a relaxed and easy going attitude despite the situational stress of living in a Western urban environment. They also displayed a distinct lack of time urgency in the face of challenges from their environment compared with Europeans. The difference observed in the present study between PNG and Australian participants may reflected these underlying differences in work cultures and not so much the challenges of the work settings which forms the basis of a conceptual view on the expression of the Type A behaviour (Friedman & Rosenman, 1974).

7.4.3 Occupational Stress and Type A behaviour

The effect of job stress on the Type A behaviour was the other major issue addressed in this thesis. This problem was addressed in light of the conceptual view that the TABP is largely a Western construct, and its origins can be traced to the challenges and demands arising from occupational settings (Price, 1982; Van Egeren, 1991; Rosenman, 1993).

The present study attempted to ascertain whether participants in PNG and Australia who confronted similar job stress experiences at work will express the TABP in a similar

manner. This expectation is based on a wealth of empirical evidence showing a strong positive association stress associated with work and the reported expression of the TABP especially in Western societies (Howard et al., 1977; Ivancevich & Matteson, 1984; Jamal, 1990; Greenglass, 1991). Of particular relevance was the interaction effect of country of origin by job stressors on JAS scales. The only significant interaction effect based on this analysis was observed on country of origin by financial concern on the H scale. The pattern of means on this JAS scale revealed firstly an overall effect by country of origin on the H scale. On this level, PNG participants scored significantly above the mean of zero on the H scale compared with Australian participants.

The interaction effect based on this analysis showed that PNG participants who also reported financial concerns scored lower means on the H scale compared with Australian participants, who reported financial concerns. The Australian finding is as expected, however the PNG result is at odds with expectations of an association between occupational stress and expressions of the Type A behaviour. In the face of experiencing stresses associated with personal finance and security at work, the PNG participants continued to express high levels of the Type B behaviour pattern as marked by the H scale. It is not exactly known why the result produced here do not conform to expectations. However, drawing on Price's (1982, 1982) cognitive model of the TABP based on a set of beliefs which in part proposed that the TABP is quite often expressed in order to achieve economic welfare, materialistic wealth and occupational and social prestige. In Western societies, these are socially sought aspects of the Western lifestyle, and they can be achieved through individual effort. A persistent effort through

expressions of competitiveness and achievement orientation, as reflected in the job involvement behaviour pattern, will be expected to lead to a betterment in socio-economic status. Applying this proposition to the present result on financial incentive, the data produced in the present study seem to suggest a possibility that participants who self-reported as Type Bs may have perceived no form of future in their career path, hence abstaining from expressing hard-driving and competitiveness behaviour.

As described, one of the general view on the expression of the TABP is that it is associated with increased socio-economic status (Price, 1982; Margolis et al., 1983). Those who aspire for high socio-economic status generally tended to express higher levels of the TABP than those who express the Type B behaviour pattern (Price, 1982; Van Egeren, 1991). The results among PNG workers on the effect of finance on the expression of the Type A behaviour may be explained in part by this view. Further statistical analyses of the data on the possibility that the effect of occupation may have produced this odd result in PNG was not statistically significant. Participants in administrative, technical and managerial jobs reported the same result. It could be that the reward system available at work and in the society at large may not be as attractive to encourage competitive behavioural tendency as is observed in Western societies. For example, the working condition and climate may not be as attractive for the employed individuals in these categories of jobs to express the TABP as a way to achieving the positive rewards of a career.

The overall effect of the job stressors on the JAS scales also produced a number of interesting findings consistent with the expected direction of high job stress associating with the expression of the Type A behaviour (Keenan & McBain, 1979; Orpen, 1982; Ganster et al., 1989; Bedeian et al., 1990; Jamal, 1990; Spector & O'Connell, 1994). Participants who reported experiences of job discomfort and role conflict also scored high means on the Global scale. With the S scale, the results also showed that participants reporting discomfort, co-workers problems, role ambiguity and role conflict also scored higher on the S scales compared with those reporting none of these problems at work. Participants who reported job discomfort also scored higher on the J scale compared with participants who reported job comfort. Similarly, participants who reported job challenge, workload, and role conflict also scored higher on the H scale compared with those reporting an absence of job stress measured by the indicators of job stress listed in Table 7.12.

These results add some support to the view that the Type A behaviour is related to the challenges and stress of the occupational environment (Friedman & Rosenman, 1974; Rosenman, 1993). The original conceptualisation of the TABP links it to challenges from the environment (Friedman & Rosenman, 1974), and more recent views strongly implicate the work structure and culture of the Western occupational environment as factors which elicit the expression of the Type A behaviour (Rosenman, 1993; Byrne & Reinhart, 1995). Job stress, it is assumed, creates the contingencies that shape and reinforce the TABP and there is a wealth of evidence showing a strong positive correlation between the expression of the TABP and reported experiences of job stress

(Howard et al., 1977; Sorensen et al., 1987; Greenglass, 1991). The results produced in this cross-cultural study were consistent with previous data suggesting that the structure of the work environment and the demands it places on the individuals seem to have positive effects on the expression of the Type A behaviour as observed across cultures (PNG and Australia) in association with stress experienced at work.

Scores on some job stressor scales produced effects on the JAS scale scores that were at odds with conventional expectations of high stress in relation to reported expressions of the Type A behaviour pattern. Firstly, participants who reported experiencing stress associated with co-workers relationship scored lower on the J scale compared with participants who did not report stress associated with co-workers relationship. In addition, the results showed that participants who experienced promotional problems scored lower on the J scale compared with participants who did not experience promotional issues.

The effects of co-workers relationship at work perhaps suggest that interpersonal conflicts deterred participants from being more involved and committed to their occupations. The results on promotion also produced an effect, which was inconsistent with the conventional expectations of challenges at work correlating with reported expression of the Type A behaviour pattern. It could be that participants who perceived their future promotion prospects as discouraging resorted to expressing the Type B behaviour pattern because they felt that being involved and committed in their career may not improve their future prospect of promotion. An opposite effect was produced on the

H scale. On this scale, participants who reported job challenge and role ambiguity scored lower on the H scale than those who did not report any challenge and role ambiguity. The H scale measures behavioural patterns associated with issues like task commitment (Byrne, 1987). The job challenge scale measures issues like conflict demands from colleagues at work, complexity of job tasks, and ability to perform job tasks (Quinn & Staines, 1979). The role ambiguity scale measures job issues associated with authority to perform independently, and role responsibilities (Rizzo et al, 1970). The characteristics of both scales are similar in many respects, therefore it could be that the odd result produced when considering these two scales reflected participants' uncertainty about requirements of their roles at work as opposed to the challenges posed by these aspects of their jobs. This uncertainty may have prevented them from expressing the Type A behaviour. The H scale is marked by the prominence of achievement oriented and goal directed behaviours (Byrne, 1987; Byrne & Reinhart, 1995). A closely related view is the proposition that the expression of the TABP emerges partly as a function of the perception that socio-economic prestige and wealth comes about as a result of greater individual effort (Price, 1982, 1982). These findings which did not conform with expectations may have emerged because participants perceived their own work situation producing impediments to achieving the goals they may aspire for, thus discouraging them from aspiring to the Type A behaviour pattern.

7.4.4 Type A behaviour and Job Distress Symptoms

Of some interest was the effect of Type A behaviour on reported distress at work. The results revealed that those who showed high scores on the Type A scales also reported experiences of job distress symptoms. This result is consistent with the previous findings (Keenan & McBain, 1979; Orpen, 1982; Jamal, 1990) and suggests that the empirical pathway proposed to link emotional affectivity with the TABP as a potential alternative pathway in explaining the predictive value of the Type A behaviour pattern seemed a sound view (Byrne, 1996).

It has been reported (Byrne & Rosenman, 1986) that expression of the TABP is associated with the experience of both physical and affective distress, and that possession of the TABP may promote the experiences of psychological distress. The combined effect of the expression of the TABP and experiences of psychological distress may act in some complex biological pathways affecting the blood pressure levels or serum lipid levels, hence increasing the risk of CHD among those expressing the TABP and psychological distress (Byrne & Rosenman, 1986; Byrne & Reinhart, 1994; Byrne 1996). This re-conceptualisation of a host of psychological and biochemical factors in explaining the mechanisms through which the expression of the TABP increases the risk of CHD underpins the recent re-examination of the explanatory nature of the construct of the TABP and its pathogenic nature in cardiovascular epidemiology (Byrne & Reinhart, 1994; Byrne, 1996).

7.5

CONCLUSION

This cross-cultural study on the construct of the TABP showed that Papua New Guineans were characteristically more Type B in nature than Australians. However, when assessing the effects of socio-demographic factors, and job stress experiences on the expression of the TABP, the findings failed to provide distinct cross-cultural trends. Instead the results along these levels of data analyses produced findings which conformed with the expectations of data produced in Western societies. The results produced on the effects of factors like gender, education, and occupation were similar to expectations. For example, overall male and female participants reported similar levels of the TABP as measured by the JAS suggesting that environmental factors seemed to exert a far greater influence on the Type A behaviour than gender effect. Furthermore, the reported experience of stress at work and expression of the TABP were significantly correlated strengthening further the view that challenges from the environment are important precursors of the Type A behaviour.

The failure to produce distinct cultural differences in the expression of the TABP also demonstrates the robustness of the JAS in measuring the TABP across cultural settings, and suggest strongly that environmental considerations transcend ethnic differences insofar as these factors exert their influence on the expression of the Type A behaviour pattern. Nevertheless, it should also be cautioned that the overall findings of the expression of the TABP may be limited by the usefulness of the self-reported nature of the JAS, or bias in the study sample which reflected the well educated affluent population

groups in both countries who would be expected to share similar socio-economic backgrounds. Still, the effects of socio-demographic factors, and job stress on the expression of the TABP does point to the real possibility that the JAS is a useful measure of the Type A behaviour across cultures, and between different population groups. Further studies using other measures of the Type A behaviour may add to or dispute this observation. This remains, however, an important empirical question that can be pursued across cultures, and especially in developing countries like Papua New Guinea.

The TABP has been established as a CHD risk factor (NHLBI, 1981), and expressions of the TABP has also been linked to challenges of the work environment (Friedman & Rosenman, 1974; Rosenman, 1993). It will be of importance therefore to ascertain what groups of people in PNG are more likely to express the TABP, and what factors are more likely to elicit this pattern of behaviour. Furthermore, data on the TABP in non-Western countries like PNG may contribute significantly to a greater understanding of the clinical implications of the TABP across different cultures, and on questions arising, for example on the toxic elements of the TABP or measures assessing the Type A behaviour. On a more global level, issues relating to health policies, prevention programs, and educational awareness of lifestyle diseases will benefit immensely if psychosocial factors are considered seriously, and accepted as potential disease risk factors in health policies, mainly of developing countries like PNG.

Chapter Eight

8.1 General Discussion and Conclusion

The studies reported in this thesis examined the prevalence of the TABP among public sector workers in PNG and Australia, as well as the effects of job stress on the expression of the Type A behaviour and job satisfaction. The TABP was measured by the Jenkins Activity Survey. As alluded to in chapters 1 and 3, the theoretical foundation of this cross-cultural study was based on the proposition that challenges of living in a competitive environment, as seen in many Western industrialised societies, promote the expression of the Type A behaviour (Helman, 1987; Thoresen & Powell, 1992; Rosenman, 1993). In particular, challenges from the work environment may be viewed as a collective factor that elicit Type A behaviour (Friedman & Rosenman, 1974). Some factors associated with the work environment which play a prominent role in the basis of this theory, include job stress, type of job, and educational experiences. Evidence strongly suggests that these factors exert a direct influence on the expression of Type A behaviour (Byrne & Reinhart, 1989; Rosenman, 1993). The question then is, will challenges at work in non-Western societies also exert a similar direct influence on the expression of the Type A behaviour pattern. This fundamental question was addressed in this cross-cultural comparative study using PNG and Australian public sector workers.

The main results showed that participants in PNG broadly reported themselves as Type B compared with Australian participants. They scored, on average, below the arbitrary mean of zero on all the JAS scales except the H scale. By contrast, Australian participants

were characteristically more Type A than Type B. Their means on the JAS scales were consistent with Australian normative data (Byrne & Reinhart, 1995).

On the basis of the main results described, an obvious inclination would be to conclude that the TABP is largely a Western cultural phenomenon (Price 1982; Van Egeren, 1991; Thoresen & Graff Low, 1991; Rosenman, 1993). This would, however, be too hasty a conclusion because a central part of the results of the present study also showed that the effects of socio-demographic factors such as gender, type of jobs and level of education on the expression of the TABP were remarkably consistent across PNG and Australian participants. Further support for this consistent pattern of empirical data was observed from the positive correlation established between the expression of the Type A behaviour and reported experiences of job stress in the present study. The results generally showed that experiences of job stress reported by participants in the two countries sampled correlate equally well with the expression of Type A behaviour.

Overall, there were no differences between PNG and Australian participants on the influence of job stresses on Type A behaviour, which if they had occurred would alert us to the potential for possible cultural differences either in the nature and prominence of the TABP, or in its impact on measures reflecting the occupational environment. The same can be said of the overall effect of socio-demographic markers on the Type A behaviour pattern. The findings were very consonant with established expectations arising from studies of Western societies (Chesney & Rosenman, 1980; Rosenman, 1993; Byrne & Reinhart, 1995), recommending against a conclusion based on cultural considerations

alone, such as observed cultural differences on the emphasis placed on the notion of time (Graves & Graves, 1985; Helman, 1987). Instead, the occupational environment in the present study appears to emerge as a source from which explanations can be offered on the results produced in the present cross-cultural study. In this regard, there is a wealth of empirical data on the demanding aspects of the occupational environment which can elicit Type A behaviour pattern (Greenglass, 1991; Ganster et al., 1989; Byrne & Rosenman, 1986). The present cross-cultural findings are discussed in the context of expectation of an association between the Type A behaviour and demands from the occupational environment .

The TABP is one of the few psychosocial variables endorsed as a CHD risk factor and the positive pathogenic influence of the TABP on CHD has been confirmed as equal to and independent of other established risk factors for coronary heart disease (NHLBI, 1981). The TABP was first coined as an explanatory concept in CHD epidemiology by two Cardiologists who noticed their patients diagnosed with CHD expressing similar sets of behaviours such as extraordinary mental and physical alertness and profound inclination and eagerness to compete (Rosenman & Friedman, 1959). However the acceptance of the construct of the TABP as a CHD risk factor continued to be surrounded by controversy, mainly arising from conflicting data bearing on the pathogenic nature of the Type A behaviour. Some studies produced evidence clearly establishing this pattern of behaviour as a CHD risk factor (Rosenman et al., 1975; Frank et al., 1978; Blumenthal et al., 1978; Haynes et al., 1980; Kornitzer et al., 1981) while others have reported data

which failed to replicate this (Case et al., 1985; Ragland & Brand, 1988; Langeluddecke et al., 1988; Barefoot et al., 1989).

The explanations provided for the confusing body of evidence are many and the literature bears witness to these explanations. For example some studies have suggested that problems associated with the instruments designed to assess the TABP were responsible for the conflict data (Powell, 1987; Byrne et al., 1985; Edwards, 1991). An illustration is the debate over the usefulness of the self-reported measures versus the Structured Interview (SI) as methods of measuring Type A behaviour. Self-reported measures such as the JAS have been argued to measure attitudes rather than behaviours, as opposed to the Structured Interview, which measure aspects of behaviours such as verbal cues reflecting abrupt interventions by the interviewee to questions asked in a slow and hesitant manner by the interviewer (Jenkins, 1987). Some self-reported measures also do not measure all patterns of behaviour that form the constellation of behaviours defining the Type A behaviour pattern. For example, the JAS does not contain a sub-scale on the anger/hostility component of the TABP, which some have argued as the crucial toxic element of the Type A behaviour pattern (Williams et al., 1987). These issues meant that the TABP, and especially its pathogenic influence on manifestations of CHD have for most part since its formal recognition as a CHD risk factor (NHLBI, 1981) remained controversial and at best guided by what appears to be simplistic causal explanations of the risk associated with the Type A behaviour pattern. As yet, there are no definitive answers to the association between this construct and the risk of CHD. In addition no significant progress has been made to resolve how best the TABP can be measured,

particularly in regard to the limitations of self-reported measures as described in chapter 2, as well as the potential difficulties of using the Structured Interview, for example in large population studies, or without correct training on the use of this technique to assess the Type A behaviour pattern.

Efforts have been directed to finding possible explanations for the conflicting body of data produced on the Type A behaviour as a CHD risk factor. The search for single elements of the Type A behaviour in the hope of identifying the toxic element within the constellations of behaviours that constituted the TABP illustrates one pathway taken to search for answers to the apparent inconsistencies (Mueser et al., 1987; Seigman et al., 1987; Williams et al., 1987; Kneip et al., 1993). In this regard, hostility and aggression have been identified as possible prime toxic elements of the Type A behaviour pattern (Williams et al., 1987). However, like Global Type A behaviour, the results arising from studies of hostility, TABP, and CHD remain inconclusive (Seeman & Syme, 1987; Barefoot et al., 1989).

In recent years, renewed interest has been directed to the interactive influence of psychosocial, physiological, and environmental factors in the search for answers to the conflicting evidence produced on Type A behaviour as a CHD risk marker. This approach has offered some prospect of developing a clear and sound theoretical understanding of the construct of the TABP and its relationship to coronary heart disease. A promising recent approach in addressing the controversial nature of the Type A behaviour has been a shift from the traditional linear epidemiological model of explanation to a more

interactionist view allowing for the consideration of the effects of a broad range of psychosocial, physiological, and environmental factors on the expression of the TABP, and on its pathogenic nature (Byrne & Reinhart, 1994; Byrne, 1996). This recent shift has created new empirical opportunities to further explore the TABP and its association with the risk of coronary heart disease. One such avenue presented by this multidimensional model is the empirical opportunity to assess this construct cross-culturally within the framework of the mediating influence of challenges and stress arising from the occupational environment. This thesis addressed this vacuum of data between two very different societies, namely PNG and Australia.

8.2 The Influence of the Occupational Environment

One empirical pathway within the proposed interaction model (Byrne & Reinhart, 1994; Byrne, 1996) that offers some promise in addressing the TABP is the influence of the occupational environment on the Type A behaviour. This stems from two observations. Firstly, it is now well documented that stress from the work environment is a major precipitant of the TABP (Ganster, 1986; Rosenman, 1993), and many characteristic features of the TABP are closely associated with the overall underlying nature of the work setting (Ivancevich & Matteson, 1984). Secondly, stress from work has been independently linked to the risk of coronary heart disease (Cooper & Marshall, 1976). Given these unidimensional pathways (see Figure 1.1 in chapter 1), the interaction between challenges from work and expression of the TABP offers a logical alternative in further examining the pathogenic risk of the Type A behaviour pattern. This pathway is

less clearly understood, however it has been proposed that challenges from the work setting elicit and reinforce the expression of Type A behaviour (Friedman & Rosenman, 1974; Rosenman, 1993). Alternatively, Type A individuals may set upon themselves high daily task loads in their jobs and this course of action may lead to an increased competitive work situation hence increasing the likelihood of triggering the expression of the TABP among individuals confronting job challenge at work (Byrne & Rosenman, 1986; Rosenman, 1993; Byrne & Reinhart, 1994). The role that the occupational environment has as a precursor of the Type A behaviour is consistent with the original view of the TABP as being stimulated and reinforced by the challenges from the environment (Friedman & Rosenman, 1974). The prominence of the external environment in understanding and explaining the construct of TABP has led to the proposition that the TABP is also uniquely a Western cultural construct, and this is embedded in the socio-cultural fabric of Western societies and especially of their work cultures (Price, 1982; Manfredo & Al-Falaij, 1987; Helman, 1987; Van Egeren, 1991; Thoresen & Powell, 1992; Rosenman, 1993; Helman, 1994). Based on this assumption, the TABP can conveniently be explained and understood within the context of the challenges and stress of Western industrialised work cultures (Margolis et al., 1983; Rosenman, 1993).

The emphasis on the TABP as a Western cultural construct raises the question of whether work challenges in non-Western societies can exert similar influences on the expression of Type A behaviour as is observed in Western societies. There is indeed a lack of empirical evidence on this issue, and this underscores the importance of assessing the prevalence of the TABP in similar non-Western work environments. This is especially

important given the implications of the TABP as a CHD risk factor. The present cross-cultural study addressed this absence of data on the expression of the Type A behaviour in non-Western societies by assessing the TABP among public sector workers in PNG and comparing their reported expression of the TABP with a matched sample of public sector workers in Australia. It is hypothesised that workers in PNG will express the TABP in a similar manner as employed individuals in Australia, and that the challenges and demands of work will be associated with the reported expression of the Type A behaviour in the same way they do in Western cultures.

8.3 The PNG Study

A significantly greater number of PNG participants self-reported the Type B behaviour pattern than did the Type A behaviour. The distribution of the scores on the JAS revealed a high percentage of participants scoring below the arbitrary mean of zero on the Global, S and J scales, and scoring above the arbitrary mean of zero on the H scale. The results also showed that socio-demographic factors such as age, gender, educational qualification and occupation exerted significant influences on the expression of the Type A behaviour. These results were consistent with previous empirical data on the effects of these factors on the expression of Type A behaviour (Howard et., 1977; Boyd, 1984; Bedeian et al., 1990; Greenglass, 1991), and with data establishing norms on the TABP both in Australia (Byrne & Reinhart, 1995) and elsewhere (Chesney & Rosenman, 1990; Rosenman, 1993). For example, participants in the age group of 30 to 39 years scored significantly higher means on the J scale compared with participants in the age groups of

20 to 29 years and 40 (+) years, and the data also showed that participants in the age group of 40 (+) years scored significantly lower means on this scale than those in the 20 to 29 years age group.

The findings on the effects of age on the expression of the TABP provided further support for two views; one suggests that the expression of the TABP takes on a greater sense of importance and urgency among workers in the prime of their career than those who are approaching retirement, or have reached the peak of their career (Howard et al., 1977). The results in the present study showing participants in the ages of 30 to 39 years scoring significantly higher means on the J scale may have reflected the view of a greater sense of importance and urgency placed on a career by employed individuals in this age category. It is also possible that participants in this age group perceived the importance of being more involved and competitive in their jobs as the only way to acquire the prestige and socio-economic wealth generally viewed to be attached to high social status. This suggestion is linked with one of the explanations given on the expression of the TABP in Western societies as a way to achieve desired goals, material wealth and socially envied status such as occupational and social prestige (Price, 1982, 1982).

The results showing a decline in the expression of the TABP by participants in the age group of 40 (+) years may also reflect a second view that, the TABP declines with increasing age (Byrne & Reinhart, 1989). The lower mean scores reported by participants in this age category suggests that the TABP appear to take on a less meaningful and

important role as people grow older or have reached the peak of their career (Byrne & Reinhart, 1989).

Participants in senior managerial jobs and those earning higher incomes reported higher scores on the JAS scales compared to those in low status jobs. In addition, participants who had university education scored higher on the Global, S and J scales compared with participants with lower educational qualifications. These findings are as expected since education and occupation, and intercorrelated, and both variables have strong correlations with the expression of the Type A behaviour pattern (Chesney & Rosenman, 1980; Byrne & Reinhart, 1995). The findings are also consistent with the expectation that the TABP was generally related to occupational prestige, education and income (Chesney & Rosenman, 1980; Rosenman, 1993). What was also strikingly similar to expectations (Byrne & Reinhart, 1995) was that participants in the present study with college certificates scored higher means on the H scale compared with those in higher educational status. This finding adds further cross-cultural validation to the prominence of achievement orientation and goal directed behaviours as attributes associated with higher educational qualifications (Byrne & Reinhart, 1995). A similar view adding further weight to Byrne and Reinhart's (1995) proposition is based on Price's cognitive explanation of the construct of the Type A behaviour. Price (1982, 1982) proposed that the expression of the Type A behaviour is mediated by a set of beliefs that individuals hold. One of the beliefs dwells on limitations of resources that are required to be successful. The belief is that resources needed to be successful are scarce

so competition or ambitious aggressive behaviour must be displayed in pursuit of desired goals such as higher socio-economic status (Price 1982; 1982). This belief system promotes the expression of hard-driving and competitive behaviour. This combined with educational achievement explains in part why the least educated tended to display higher levels of hard-driving and competitiveness behaviour pattern to exert control over their lives.

One of the main aims to this cross-cultural study was to ascertain whether a relationship exist between the experiences of job stress and the expression of the Type A behaviour pattern. As described in chapters 1 and 2, it has been proposed that challenges from the occupational environment trigger the expression of Type A behaviours (Friedman & Rosenman, 1974; Ganster et al., 1989; Rosenman, 1993). For example, occupational demands marked by conflicting work roles and lack of support at work have been linked positively with Type A behaviours (Greenglass, 1991; Sorensen et al., 1987), and various components of the TABP, like sustained drive towards poorly defined goals, preoccupation with deadlines, and competitiveness are associated with the challenges uniquely associated with the work culture (Chesney & Rosenman, 1980; Byrne & Reinhart, 1989).

The present cross-cultural data in PNG added further empirical support to the established expectation of an association between demands at work and the expression of the Type A behaviour. The demands in the form of participants' work roles correlated significantly with the expression of the TABP, and the same results were maintained in

regression analyses assessing the association between these job stressors and the expression of the Type A behaviour pattern. The regression data showed that work in the form of role conflict, role ambiguity and workload emerged as significant correlates of the JAS scale scores adding further empirical data consistent with previous findings showing an association between these forms of work role stresses and the expression of the Type A behaviour (Keenan & McBain, 1979; Jamal, 1990; Greenglass, 1991).

Overall, the findings in the PNG study suggested that self-reports of the Global Type A behaviour seemed to increase with educational qualifications, position on the occupational strata, and higher income levels. In addition, the stress experienced at work in the form of work roles were significantly correlated with the reported expression of the TABP in the present study in PNG. The results were generally consistent with the normative data as described in the various chapters in the thesis, therefore the importance of these findings cannot be understated because they have clear implications for a population at risk of CHD in PNG, and focus on those in the affluent end of the socio-economic scale in Papua New Guinea. In addition, factors such as education, job status, and stress at work appear to transcend cultural considerations insofar as their positive impact on the expression of the Type A behaviour is concerned. These factors seemed to influence the expression of the TABP than the overall global expression of the TABP, and this observation of the effect of socio-economic factors on the TABP is consistent with expectations (Price, 1982, 1982; Van Egeren, 1991; Rosenman, 1993). However, these results are limited in terms of generalisation to other sections of the community, for

example, those unemployed, or people in rural areas, because the study in PNG focused only on the educated working population groups. Nevertheless, it can be argued that these findings do add support in a cross-cultural context to the utility of the JAS to tap the influence which socio-demographic factors have on the expression of the Type A behaviour. The relevance of the proposed interactional model as a useful pathway in assessing empirically the construct of the Type A behaviour within a cross-cultural framework is therefore underscored.

8.4 The Australian Study

The present sample of Australian participants was, on average, also more likely to self-report Type B as opposed to the Type A attributes. On average, participants scored below the arbitrary mean of zero on the Global, J and H scales of the JAS. In addition, on average, participants also scored above the mean of zero on the S scale. The results also revealed that the expression of the Type A behaviour as reported by these participants correlated significantly with stress experienced at work. The experience of stress at work was assessed by a number of job stress markers described previously in chapter five. The challenges at work, manifest in the form of stressful work roles, namely role overload (workload) and role conflict, were significantly and positively correlated with the four JAS scales. Further statistical examination confirmed these job stress markers as significant correlates of the Type A behaviour pattern. The data produced in the Australian study on the expression of the TABP, the effects of the socio-demographic factors on the JAS scales, and the influence of job stress on the Type A behaviour was consistent with

previous empirical data (Howard et al., 1977; Chesney & Rosenman, 1980; Boyd, 1984; Jamal, 1990; Greenglass, 1991; Rosenman, 1993; Byrne & Reinhart, 1995).

The data in the present study of Australian public sector workers remained consistent with other similar data (see for example, Byrne & Reinhart, 1989, 1990). The present findings point to the influence of the occupational environment and its structure as a powerful correlate of the expression of the Type A behaviour. The results also add some weight to the suggestion that the occupational environment is relevant as a source in explaining the origins of the Type A behaviour (Rosenman, 1993; Ganster et al., 1989; Byrne & Reinhart, 1989, 1995). For example, the original view of expression of the TABP proposed that this pattern of behaviour arises from the challenges presented by the environment. Recent re-conceptualisation of this position proposed the challenges of the occupational environment as a source in which explanations can be found on the origins of the Type A behaviour (Byrne & Reinhart, 1989; 1990; Byrne & Byrne, 1991). The present data showing positive correlations between reported experiences of job stress and expression conforms with this expectation, and re-affirms job stress as a strong correlate of the Type A behaviour pattern.

8.5 Cross-cultural Comparisons of TABP in Australian and PNG participants.

Comparison of Australian and PNG participants, as described in the introductory paragraph of the present chapter, showed that PNG participants were more likely to self-report as Type B than Type A compared with Australian participants. The JAS results for the Australian participants were relatively consistent with Australian normative data on the

Type A behaviour (Byrne & Reinhart, 1995). A comparison of the results showing the pattern of means in the present cross-cultural study and the Australian norms is shown in Table 8.1.

Table 8.1

Distributions of Type A behaviour scores in the present study samples
and the Australian normative data.

JAS Scales	PNG Sample		Australian Sample		Australian Norms	
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>
Global	-3.41	7.84	-1.06	9.00	-2.30	9.08
Speed	-6.37	7.84	0.15	9.61	-1.60	9.65
Job	-5.68	8.77	-0.74	8.43	-3.21	10.12
Hard	3.43	8.87	-3.41	9.62	-3.97	9.16

note: Australian norms extracted from Byrne & Reinhart, 1995.

The Global scale of the JAS consisted of items extracted from the S, J and H scales, and was designed to measure Global Type A behaviour as a broad construct. The results produced in this cross-cultural study showed clearly that both PNG and Australian participants were characteristically more Type B than Type A because both samples scored below the arbitrary mean of zero, however the differences in the means reached statistical significance suggesting that PNG participants displayed a greater tendency to express the Type B behaviour pattern than the Australian participants. The norms also

showed that Australians, on average, reported as characteristically more Type B than Type As as shown in Table 8.1.

The findings on the S scale revealed that, on average, participants in PNG scored below the arbitrary mean of zero, whereas Australian participants scored marginally above the arbitrary mean of zero. This difference reached statistical significance though, suggesting that PNG participants, on average, generally displayed a lack of undue haste and rapidity in motor and cognitive activities, and a sense of time urgency compared with Australian participants. In addition, PNG participants appeared to be tolerant of slowness in others relative to Australia participants on this JAS sub scale measuring speed and impatience behavioural tendencies. Drawing from studies on the TABP in the South Pacific (Graves & Graves, 1985), and in Asia and South America (Levine & Bartlet, 1984), which reported people demonstrating a distinct lack of the expression of time urgency behaviours, perhaps offers an explanation of the results produced on the S scale among PNG participants. This result may have reflected a common underlying difference on the notion of time between Western and non-Western societies (Helman, 1987, 1994). For example, time for a Westerner is driven by the underlying ideals of industrialisation, capitalism, and personal gains in material wealth and prestige. These concerns do not generally fall in the world view of a non-Westerner (Helman, 1987), and therefore may explain why people in many non-Western societies (Levine & Bartlet, 1984; Graves & Graves, 1985; Helman, 1987) including the participants from PNG reported a distinct lack of behaviours that mark Speed and Impatience.

With the J scale both samples scored below the arbitrary mean of zero, however the difference in means in the two samples was significantly different. With this difference reaching statistical significance, the results suggested that, on average, PNG participants were less pre-occupied with occupational activities such as taking on challenging deadlines, working past normal (discretionary) hours, or taking on workload in excess of personal capacities compared with Australians. These are characteristic features of structured work, and they identify with the J scale of the Jenkins Activity Survey. The J scale is marked by difficult and challenging deadlines, tendency to work past normal hours, taking on workload in excess of personal capacity, and the conviction that job demands should take precedence over all other considerations (Byrne, 1987). The lack of the expression of behaviours that marked Job Involvement among PNG participants is closely related to a previous observation reported by Graves and Graves (1985) that South Pacific islanders were “unambitious”, and displayed a relaxed and easy - going attitude despite the situational stress of living a Western lifestyle.

The findings on the H scale showed that, on average, PNG participants scored above the arbitrary mean of zero whereas Australian participants, on average, scored below the arbitrary mean of zero. The lower mean scores in the Australian sample is consistent with the Australian norms, however the results produced on the H scale in PNG failed to conform with the Australian norms (see Table 8.1). The H scale of the JAS is concerned with task commitment, expenditure of effort, and the perception of activities and interaction as challenges to be accepted and dominated (Byrne, 1987).

A possible explanation for this major cross-cultural difference in the expression of the Hard-driving and competitiveness behaviour can be found in the recent reconstructed model of the TABP which featured competitiveness prominently as a CHD risk factor (Rosenman, 1988; Byrne, 1996). The expression of the TABP is generally a way to cope with environmental experiences, for example, the challenges from the work environment. The demands from the environment can also present various threats to an individual, for example the failure to succeed socio-economically; a belief that contributes to explanations of the origins of the Type A behaviour (Price, 1982). This potential threat of failure may in turn lead to greater levels of the Type A competitiveness, aggressiveness, accelerated pace of activities, and hostility (Rosenman, 1988). Similarly, the presence of a potential threat may create within the individual a desire to exert greater control over the environment. This may in turn create a situation demanding the expression of Hard-driving and competitiveness as way to control ones' environment (Byrne, 1996). Based on these observations, it is possible that the underlying transitional changes bearing the characteristics of urbanisation, and industrialisation witnessed in PNG (Sinnott & Whyte, 1978; Kevau, 1990), and especially within the work environments may have created an air of uncertainty leading to employed PNG workers expressing greater levels of this component of Type A behaviour. The expression of higher levels of Hard-driving and competitiveness behaviour by PNG participants may have been to exert greater controls over their present working environments in view of the potential anxiety associated with this transition of urbanisation, and modernisation. This overall explanation may equally explain the results on other JAS scales which failed to conform with expectations.

8.6 Socio-demographic Factors and the Type A behaviour pattern

The results on the TABP in relation to the socio-demographic factors did conform with expectations. Examination of the effect of gender on the expression of the Global Type A behaviour showed that male participants in PNG and Australia scored significantly higher on this JAS scale compared with females. These results supported the proposition that the TABP is largely a male attribute (Friedman & Rosenman, 1974). Alternatively, this result can be interpreted using a different conceptual view, that is that the expression of the TABP among females is socially sanctioned. The view here is one of a social stereotype that women are generally raised to express less overtly competitive and hostile behaviour relative to men (Thoresen & Graff Low, 1991). The results in the present study showing male participants expressing the TABP as opposed to females affirms the view of the TABP as generally a male attribute (Friedman & Rosenman, 1974).

Examining for the effect of educational qualifications also showed no cross-cultural differences but an overall educational effect on the JAS scales. Participants with higher educational qualifications reported significantly higher means on the Global scale, and on the S and J scales compared with those with college certificates. These results were consistent with the expectations of higher mean scores on these JAS scales among those with higher educational qualifications (Byrne & Reinhart, 1995) and is associated with the view that the TABP is generally related to occupational prestige, education, and income (Chesney & Rosenman, 1980; Rosenman, 1993). Furthermore, education and occupation are strongly interrelated (Chesney & Rosenman, 1993; Byrne & Reinhart, 1995) and

therefore it is within expectations to observe high means on the JAS scales by participants with higher educational qualifications given that high mean scores were also reported by participants holding managerial jobs in the present study. It is also generally expected that the H scale was more likely to be evident in participants with lower educational qualifications (Byrne & Reinhart, 1995). The comparative data produced in the present cross-cultural study confirmed this expectation. As alluded to in chapters 1, 5 and 6, it may be possible that the influence of education on Type A behaviour is reflective of the belief that the expression of the TABP interacting with educational achievement will facilitate a pathway to achieving what Type A persons aspire for in terms of material wealth, socio-economic prestige, and the overall desire to be in control of ones environment (Price, 1982; Helman, 1987; Thoresen & Powell, 1992; Byrne & Reinhart, 1995). The overall effect of education on the H scale by participants with lower level of education can be explained by the perceived importance of being competitive and in control of ones' destiny. Without the rewards that are generally associated with high educational achievements such as higher occupational status (Chesney & Rosenman, 1980; Price, 1982), it is possible that those who are less well educated must express greater levels of hard-driving and competitiveness behaviours to survive the challenges of the external environment compared with those who are highly educated.

The present cross-cultural study also showed an overall effect of occupation on the expression of the Type A behaviour. Participants holding managerial jobs self-reported as characteristically more Type A compared with participants in technical and administrative jobs. Similar results also emerged for the S and J scales adding further cross-cultural

confirmation on the expectation of an association between occupation and the TABP as measured by the JAS (Byrne & Reinhart, 1995), and support the view that the expression of the TABP is linked to occupational status (Chesney & Rosenman, 1980; Rosenman, 1993). These comparative cross-cultural results are not at odds with previous data showing a positive association between level of education or job type and the expression of the Type A behaviour (Chesney & Rosenman, 1980; Rosenman, 1993). It also adds to the view that it may just be possible that Type A individuals seek out higher educational qualifications in the belief that this action will assist them progress in their occupation, and that a lifestyle prompted by individual effort and competitive spirit, and education and occupational prestige will facilitate an upward mobility through the use of the expression of Type A behaviour pattern (Byrne & Reinhart, 1989, 1995).

8.7 Occupational Stress and Type A behaviour pattern

The only difference on the effect of job stress on the expression of the TABP between PNG and Australian participants was observed on financial stress and the H scale. The results showed that Australian participants who reported stress associated with finance expressed greater levels of Hard-driving and competitive behaviours. The Australian data is consistent with previous evidence showing stress arising from work as being closely associated with the expression of the Type A behaviour (Jamal, 1990; Greenglass, 1991). However, PNG participants who expressed the financial stress tended to score as Type Bs, a finding that is generally at odds with the expected link between job challenge experiences and expressions of the Type A behaviour patterns. It is not known exactly

why an opposite effect was observed on the association between the TABP and the H scale among PNG participants. One logical explanation is based on the view put forward and tested empirically by Byrne and Reinhart (1989, 1995), and that is that the association between aspects of occupations on the expression of the Type A behaviour are closely related, for example, to educational achievements and advancement in a job. Within the context of this view, it may be argued that participants in PNG who perceived an absence of financial incentives in their career path saw no rewarding reasons to be excessively committed and competitive in their careers. This is because in the absence of a perceived financial future, behaviours that are marked by ambition and competitiveness will not translate into increased socio-economic status as may be the case in Western societies (Price, 1982). As described previously in this chapter and other chapters, namely chapters 1, 5 and 6, upward mobility facilitated by the expression of the TABP in a socio-economic hierarchy is closely linked to a sense of prestige and material wealth. These are potential benefits that accompany the expression of the Type. If the rewards are perceived to be easily achieved, there would be a greater tendency for a display of the TABP in the belief that this pattern of behaviour will facilitate the process of achieving these goals. A perceived absence of these positive rewarding external factors may have discouraged participants from expression of the Type A behaviour. This may offer a tentative explanation on the association between financial stress and the H scale observed among PNG participant. In general however, a major part of the results produced here were consistent with previous empirical data (Keenan & McBain, 1979; Orpen, 1982; Jamal,

1990) suggesting the uniform influence the occupational environment has on the expression of the Type A behaviour pattern.

Of course, some of the results on the effect of job stress on Type A behaviour for the total sample of PNG and Australian participants combined were not consistent with the empirical pathway that underpins this thesis, which is based on the expectation of a positive correlation between the TABP and job stress. In particular, some participants reporting promotional concerns scored as Type B on the J scale compared with participants who reported a lack of promotional concern. It may be possible that participants who perceived that being involved and committed in their career did not improve their future prospect of promotion, saw no basis for being genuinely involved in their job to enhance their general socio-economic status, as is generally expected, in association with the expression of the Type A behaviour (Price, 1982, 1982; Helman, 1987). The results derived from the job challenge and role ambiguity scales also showed that some participants who self-reported as Type Bs reported experiences of job challenge and role ambiguity. The overall expectation is that evidence of job demands in one form or another, such as the two highlighted, will correlate positively with the expression of the Type A behaviour (Rosenman, 1993). The present finding is at odds with this expectation. It is not entirely clear why these results emerged from in this study, however it may be possible that the effects observed between the TABP and the job challenge and role ambiguity scales reflected a lack of competence in performing a job task hence producing a result where participants who experienced these problems scored as Type Bs.

Alternatively, the results produced here may share the same explanation provided for the odd effect evident between the experiences of financial problems and the expression of the hard-driving and competitiveness behaviour by PNG participants described previously in this chapter. The reasoning is based on the rewarding aspects of the expression of the TABP and that is the potential of a betterment in socio-economic status if greater levels of the TABP are expressed (Price, 1982, 1982). This position is also advanced by Margolis, McLeroy, Runyan and Kaplan (1983) with the proposition that, reward systems in Western societies foster aggressive competition and achievement striving patterns of behaviour. It may be possible that such reward systems such as better pay, living conditions, or potential for increased material wealth do not exist for these participants discouraging them from being ambitious, achievement oriented and competitive.

8.8 Type A behaviour and Job Distress

The association between the TABP and job distress symptoms was also examined in this study, although this issue was of secondary importance compared with the questions on the prevalence of the TABP and the influence of job stress on the expression of the Type A behaviour. The overall results in the PNG study showed that the TABP measured by the JAS scales correlated consistently with symptoms of job distress. This finding was most obvious with the S scale, and this JAS scale also emerged as a significant correlate of job distress symptoms. Similar results on the correlation between the S scale and job distress symptoms were evident in the Australian study. In addition, the results showed the JAS scales as significant correlates of depressed mood at work. As stated, it was not

the primary intention of this study to look at the link between the TABP and reported experiences of psychological distress, however the data produced in this cross-cultural study provide some support on the possibility that the pathogenic nature of the TABP could be understood and explained within an interactionist pathway (Byrne & Rosenman, 1986; Rosenman, 1993; Byrne, 1996), and a lack of difference cross-culturally on the association between the TABP and job distress also suggests that the interactional theory on assessing the construct of the TABP can be used across different cultures. This area remains a challenging and interesting empirical pathway for future cross-cultural research.

The present data showing cross-cultural similarities in the association between the TABP and job distress further strengthen the proposition that there is some sort of interplay between the TABP and experiences of psychological distress symptoms, which appears to transcend cultural boundaries, and prevails as a useful empirical pathway in assessing the risk of CHD attributed to the Type A behaviour pattern. In addition, and perhaps more importantly, these findings draw out the importance of the mediating influence that emotional affectivity may exert on the association between the TABP and the risk of CHD (Byrne & Rosenman, 1986), and empirically support a re-conceptualisation of the explanatory nature of the TABP as a CHD risk marker within an interactive framework of a host of mediating psychosocial, physiological, and biochemical factors (Byrne & Rosenman, 1986; Byrne, 1996). This theory presently offers the most promising way in assessing the risk of CHD associated with the Type A behaviour.

8.9 Implications of Cross-Cultural Results

There are at least two major implications of the overall findings in this cross-cultural study. Firstly, this comparative cross-cultural data strengthens the use of the JAS as a measure of the TABP with broad cross-cultural utility, and more importantly its ability to reliably predict future risk of CHD among non-Western population groups which were not originally considered when developing the construct of the Type A behaviour pattern. Furthermore, the positive interaction between the TABP, and the socio-demographic factors observed in the present study suggest that the interactionist model offers the most logical pathway in addressing the construct of the TABP generally, as well as its pathogenic nature through the interaction effect of a host of closely related psychosocial factors as opposed to assessing the TABP as a single entity in CHD epidemiology (Byrne & Reinhart, 1994; Byrne, 1996).

The present cross-cultural data showed that there were cross-cultural differences in the expression of Global Type A behaviour pattern. Papua New Guineans generally expressed the Type B behaviour pattern as opposed to the TABP compared with Australian participants. This finding is consistent with a widely held view that, the TABP is a behavioural expression common to Western societies (Price, 1982; Van Egeren, 1990). However, this view is increasingly being challenged empirically (Cohen & Reed, 1985; Emara et al., 1986) with evidence pointing to the prominence of challenges from the environment as a relevant alternative pathway in addressing the Type A behaviour pattern. The data also showed quite convincing consistent and positive mediating effects

of most of the variables associated with the work environment such as job stress, education, and job categories on the expression of the Type A behaviour between two culturally different samples matched on these socio-demographic factors. This evidence cannot be understated because it demonstrates that a host of other variables such those highlighted can serve as useful sources in assessing the TABP across cultures. One of these is that, whilst greater levels of the Global expression of the TABP were observed amongst Australian participants as opposed to participants in PNG, the absolute meaning of this observation was generally challenged by cross-cultural comparative data which demonstrated socio-demographic factors and work stress exerting strong influence than the overall independent expression of the TABP. Furthermore, by assessing the construct of the TABP within the framework of a host of other mediating psychosocial variable, this may prove to be the most useful approach in providing a sense of direction on what empirical and clinical pathways can be taken when approaching the controversy surrounding the TABP as a CHD risk factor.

Secondly, what is perhaps more important for this present cross-cultural comparative data is the important influence the occupational environment has on Type A behaviour. The overall results in the present study showed that PNG participants on average self-reported as Type Bs compared with Australian participants, however when considering the effects of the socio-demographic factors, and job stress on the expression of the TABP, the results were consistent with expectations as described consistently in the various chapters of this thesis. This lack of a cross-cultural difference between PNG and

Australian participants suggests that the influence the occupational environment has on the expression of Type A behaviour far outweighs the potential biases that may be associated with different work cultures. The expression of the TABP and its association with job challenges across cultures will lead to a greater understanding of the work cultures of diverse societies, and how they may influence the expression of the Type A behaviour. In addition, it also has important implications and lessons for assessing work attitudes and ethics in different work cultures, as well as issues related to the health status of the working population. For example, can the combined effect of the TABP and occupational stress offer a consistent and more importantly, universal cross-cultural explanations on the risk of CHD amongst those in active employment in diverse work cultures.

Of secondary importance, especially in view of the central aims of this thesis is the potential inference that can be drawn on the future risk of CHD among those expressing the TABP in Papua New Guinea. The TABP is a major independent risk factor of CHD (NHLBI, 1981), and the TABP has been linked to various manifestations of coronary heart disease (Byrne & Reinhart, 1989). Given that CHD is a major cause of death in Western countries like Australia (National Heart Foundation of Australia, 1996), and that part of the variance in factors that leads to the risk of CHD can be explained by non-traditional risk factors such as psychosocial and behavioural factors, the present data does point to the real possibility of the TABP becoming a major CHD risk factor in PNG in future. Indeed in recent years, cardiologists in PNG designing awareness programs on CHD have acknowledged psychosocial stresses as potential risk factors (Kevau, 1990).

8.10 Methodological Limitations and Suggestions

It would be too hasty to conclude that the TABP is a culturally sanctioned behaviour unique to Western societies. This is because there were few significant differences between PNG and Australia participants on the influence of factors such as age, educational qualifications and occupation, and job stress on the expression of the Global Type A scale or the sub-scales of the JAS to alert us of the possible differences on the overall influence of these factors on the expression of the Type A behaviour. The overall differences described in the expression of the TABP between PNG and Australian participants should not be taken too far as the expectation in both countries. Like most cross-sectional studies, this study has its share of problems limiting conclusive statements about the expression of the TABP across-cultures, and especially in Papua New Guinea. The JAS is a self-reported measure of the TABP, and it may be possible that the JAS is susceptible to biases of self-report, and self-appraisal. Further assessment of the TABP through other measures, and in particular the Structured Interview will allow for more definite statements on the prevalence of the TABP in Papua New Guinea. It was difficult to use the Structured Interview in this cross-cultural study because of the sample size of 2000 participants, time and financial constraints, and a lack of training on the correct use of the Structured Interview by the researcher.

The second major limitation of this cross-cultural study was the use of a specific group of people, namely educated, employed, affluent population groups. The results produced by the use of the JAS scales in the present study may be a reflection of the general biases

arising from the use of these groups of people. Further studies on the expression of the TABP using other well established measures of the TABP such as the Structured Interview are needed to validate the present cross-cultural data, and especially the JAS data reported in the PNG study. For example, it may be that the JAS is only a useful measure insofar as it is able to tap into behavioural patterns which are associated with one situation, namely the work environment. What will be of empirical value is the generalisability of the JAS in different population groups, for example house wives or the self-employed in developing countries like Papua New Guinea. Alternatively, it may be a useful exercise to assess employed individuals in public sector organisations versus private sector organisations to establish how these groups express the Type A behaviour pattern. The different work ethics that are evident between these different organisations may reveal some insights into why challenges of the work environment remain a reliable predictor of the expression of the Type A behaviour pattern. The data here will provide more insight on the type of work cultures that are likely to elicit and reinforce the Type A behaviour pattern.

8.11

CONCLUSION

The construct of the Type A behaviour has largely been claimed as a Western cultural construct. Here, the influence of the occupational environment has been paramount in explaining the antecedents of this pattern of human behaviour. There is a large body of empirical data documenting this theoretical underpinning of the Type A behaviour pattern. This raises an interesting empirical question; will the occupational environment in non-

Western work settings exert a similar positive influence on the TABP based on the claim that occupational challenges are responsible for the expression of the Type A behaviour pattern? The present cross-cultural research addressed this question.

The results overall showed that PNG participants were characteristically more Type B than Type A compared with Australians, lending some support on the view that the TABP is a Western cultural construct. However, the nature of the sampling, with only educated PNG participants at grade 10 level of education or above used in this study, restricts generality of the conclusions. The use of other groups, for example participants who are not educated or those employed and working in rural areas may produce a different expectation on the outcome of the expression of the Type A behaviour. In addition, this study was also restricted to employed participants in structured work environments, restricting once again the generality of the results to those living a subsistence lifestyle, or those who are unemployed. Still, the consistency of data on the effects of socio-demographic factors, and work stress in correlation with the JAS scales across the PNG and Australian samples suggests a good cross-cultural robustness of the use of the JAS, and on the interaction effect between these factors and the expression of the Type A behaviour pattern. These findings also suggest that the construct validity of the TABP holds across-cultures, thus making the way for interesting cross-cultural studies of the TABP and coronary risk associated with the Type A behaviour pattern.

The results also suggests that the occupational environment plays a more prominent role in influencing the expression of Type A behaviours than had been previously

recognised, regardless of cross-cultural differences that may be inherent in the work cultures of Western and non-Western societies. The interactionist view put in assessing the TABP within the framework of the influence of other closely associated factors such as emotions, job stress, education or occupation (Byrne, 1990; Byrne & Byrne, 1990, 1994; Byrne 1996) not only has relevance in assessing what mediating effects these host of psychosocial, behavioural, and biological factors may have on the pathogenic pathway to the risk of CHD, but this model opens up an exciting opportunity to assess, for example, the unique and combined effects of these factors on the risk of the TABP, and the opportunity to address, the influence of some of these factors on TABP across various social settings and across-cultures.

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APPENDIX A

**OFFICE USE
ONLY**

- Technical worker with a degree.....5
- Technical worker with a certificate.....6
- Administrative officer with a degree.....7
- Administrative officer with a diploma ,or certificate.....8
- Clerical Worker (secretary, typist ...etc).....9
- Other (write name).....10

9. How long have you held your current job? (not how long you have worked with the current organisation/division)

- Less than 1 month.....1
- 1 to 6 months.....2
- 7 months to one year.....3
- Between 1 and 5 years.....4
- Between 5 and 10 years.....5
- More than 10 years.....6

10. All in all, how many other jobs have you held before your present job?

Number please.....

11. What is your annual salary?

- Under K5,000.00.....1
- K5,000 - K8,000.....2
- K9,000 - K12,000..... 3
- K13,000 - K19,000.....4
- K20,000 - K25,000.....5
- K26,000 or more.....6

APPENDIX B

BACKGROUND INFORMATION

This section is designed to collect some information about yourself. All information you provide will be kept in **STRICTEST CONFIDENCE**. No one or organisation will have access to any of your information provided by you in this booklet of questionnaires.

PLEASE CIRCLE THE ANSWER THAT BEST DESCRIBES YOU.

OFFICE USE ONLY

- 1. Your sex: Male.....1
Female.....2
- 2. Your age:.....years (write your age)
- 3. Your current marital status:
 - Never married.....1 Divorced.....4
 - Married.....2 Widowed.....5
 - Single parent.....3 Separated.....6
- 4. The highest certificate, or degree you have completed.
 - Grade 12 certificate.....1 Bachelors degree.....2
 - Masters degree.....3 Trade certificate.....4
 - College certificate.....5 Others 6
- 5. All in all, how many years have you been in school before taking up a paid job (this include college, and other tertiary education)

Number in years.....(write number)
- 6. What is your job title?.....(name please)
- 7. Would you describe yourself as (see next page for more):
 - Senior Executive Manager.....1
 - Middle Manager (e.g., head of Division).....2
 - Lower level Manager (i.e., head of a sub-division).....3
 - Supervisor in a section.....4
 - Technical officer.....5
 - Administrative officer6
 - Other (write name)..... 7

9. How long have you held your current job? (not how long you have worked with the current organisation/division)

- Less than 1 month.....1
- 1 to 6 months.....2
- 7 months to one year.....3
- Between 1 and 5 years.....4
- Between 5 and 10 years.....5
- More than 10 years.....6

10. All in all, how many other jobs have you held before your present job?

Number please.....

11. What is your annual salary?

- Under \$30,000.00.....1
- \$30,000 - \$40,000.....2
- \$ 50,000 - \$80,000.....3
- \$90,000.00 or more.....4

APPENDIX C

WORK ACTIVITIES QUESTIONNAIRE

This questionnaire is designed to find out what you think about your current job. Each statement contains the following answers: *very true*, *somewhat true*, *a little true*, and *not at all true*. Circle only one answer that best reflects your thoughts about your present job.

1. I have enough time to get the job done.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
2. The hours are good.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
3. Travel to and from work is convenient.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
4. The physical surroundings are pleasant.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
5. I am free from the conflicting demands that other people make of me.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)*
6. I have an opportunity to develop my own special abilities.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
7. I am given the chance to do the things I do best.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
8. The problems I am expected to solve are hard enough.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
9. The job security is good (e.g., chances you being terminated is nil).
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
10. My fringe benefits (e.g. over time allowance, superannuation scheme, accommodation) are good.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
11. I am given a lot of chances to make friends.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____
12. The people I work with take a personal interest in me.
Very true (4) *Somewhat true (3)* *A little true (2)* *Not at all true (1)* _____

- 13. I receive enough help and equipment to get the job done.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 14. I have enough authority to do my job.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 15. My supervisor is successful in getting people to work together.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 16. My supervisor is helpful to me in getting my job done.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 17. Promotions are handled fairly.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 18. The chances for promotion are good.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 19. I am not given enough time to do what is expected of me on my job.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 20. It often seems like I have too much work for one person to do.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 21. The performance standards expected of my job are too high.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 22.* I feel certain about how much authority I have.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 23. Clear, planned goals and objectives exist for my job.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 24. I know that I have divided my time properly.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 25. I know what my responsibilities are.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 26. I know exactly what is expected of me.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
- 27. Explanation is clear of what has to be done.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____

28. I have to do things that have to be done differently.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
29. I receive an assignment without the manpower (e.g., support staff, co-workers, supervisors, subordinates) to complete it.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
30. I have to bend a rule or policy in order to carry out an assignment.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
31. I work with two or more groups who operated quite differently.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
32. I receive contradictory requests from two or more people.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
33. I do things that are bound to be accepted by one person and not accepted by others.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
34. I receive an assignment without adequate resources and materials to execute.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____
35. I work on unnecessary things.
Very true (4) Somewhat true (3) A little true (2) Not at all true (1) _____

APPENDIX D

JOB SATISFACTION ITEMS

Now we would like you to think about the TYPE of work you do in your job.

1. If you had to decide over again whether or not to take the type of job you now have, what would you decide?

- | | | |
|--|---|--|
| Without hesitation I would take the same type of job | 1 | |
| I would have some second thoughts | 2 | |
| I would definitely not take this type of job | 3 | |

2. If you were free right now to go into any type of job you wanted, what would your choice be?

- | | | |
|------------------------------------|---|--|
| The same type of job as I now have | 1 | |
| A different type of job | 2 | |
| A different level/classification | 3 | |
| Not work at all | 4 | |

3. If a friend of yours told you he/she was interested in working in a job like yours, what would you tell that person?

- | | | |
|---|---|--|
| I would recommend it | 1 | |
| I would have doubts about recommending it | 2 | |
| I would advise against it | 3 | |
| I would just give the facts and not evaluate it | 4 | |

4. All in all, how satisfied would you say you are with your job?

- | | | |
|----------------------|---|--|
| Very satisfied | 1 | |
| Fairly satisfied | 2 | |
| Not too satisfied | 3 | |
| Not at all satisfied | 4 | |

APPENDIX E

ANXIETY-STRESS QUESTIONNAIRE

This questionnaire assesses some of the general health problems experienced at work. Read each statement and circle the answer that best reflects how your health has been in your present job.

- | | | | | |
|-----|--|----------|-----------|-------|
| 1. | I would consider myself in good or excellent health (R). | TRUE (2) | FALSE (1) | _____ |
| 2. | My job tends to directly affect my health. | TRUE (2) | FALSE (1) | _____ |
| 3. | I work under a great deal of tension | TRUE (2) | FALSE (1) | _____ |
| 4. | I have felt nervous as a result of my job. | TRUE (2) | FALSE (1) | _____ |
| 5. | If I had a different job, my health would probably improve | TRUE (2) | FALSE (1) | _____ |
| 6. | Problems associate with my work have kept me awake at night. | TRUE (2) | FALSE (1) | _____ |
| 7. | I have felt nervous before attending work meetings | TRUE (2) | FALSE (1) | _____ |
| 8. | I often "take my job home with me" in the sense that I think about it at home while doing other things | TRUE (2) | FALSE (1) | _____ |
| 9. | I am often bothered by acid indigestion or heartburn | TRUE (2) | FALSE (1) | _____ |
| 10. | I sometimes feel weak all over. | TRUE (2) | FALSE (1) | _____ |
| 11. | I have trouble getting to sleep or staying asleep. | TRUE (2) | FALSE (1) | _____ |
| 12. | I get irritated or annoyed over the way things are going. | TRUE (2) | FALSE (1) | _____ |
| 13. | I may now have an ulcer but I am not sure of it. | TRUE (2) | FALSE (1) | _____ |
| 15. | I would consider myself in fair health | TRUE (2) | FALSE (1) | _____ |
| 16. | I do not have a very good health | TRUE (2) | FALSE (1) | _____ |
| 17. | I wake up with stiffness or aching in joints or muscles. | TRUE (2) | FALSE (1) | _____ |
| 18. | I seem to tire quickly | TRUE (2) | FALSE (1) | _____ |

APPENDIX F

DEPRESSED MOOD AT WORK QUESTIONNAIRE

Check how you feel when you think about yourself and your job:

- | | | | | | |
|-----|---|----------------------|-------------------|------------------|-------|
| 1. | I feel downhearted and blue (R) | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 2. | I get tired for no reason (R) | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 3. | I find myself restless and can't keep still (R) | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 4. | My mind is as clear as it used to be. | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 5. | I find it easy to do the things I used to do. | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 6. | I feel hopeful about the future. | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 7. | I find it easy to make decisions. | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 8. | I am more irritable than usual (R). | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 9. | I still enjoy the things I used to. | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |
| 10. | I feel that I am useful and needed. | | | | |
| | <i>Often (4)</i> | <i>Sometimes (3)</i> | <i>Rarely (2)</i> | <i>Never (1)</i> | _____ |

APPENDIX G

CHEST PAIN QUESTIONNAIRE

This questionnaire assesses chest pain, and associated discomforts. The questionnaire has three main sections: 1, 2, & 3. IT IS IMPORTANT THAT YOU FOLLOW THE INSTRUCTIONS CORRECTLY when filling out the three sections of this questionnaire. You may not complete all the questions. For example, if you say NO to question 'a' of SECTION ONE, you will have to ignore the rest of the questions in SECTION ONE and move on to SECTION B. Please read the instructions carefully when completing this questionnaire.

SECTION ONE.

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

YES.....1 (if YES, complete *b* to *g* in SECTION ONE) _____
 NO.....2 (if NO, go to SECTION TWO) _____

b). Do you get this pain when you walk up hill 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 SAME PACE.....3 _____

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

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

f). How soon?

10 minutes.....1 More than 10 minutes.....2 _____

g). Where do you get this discomfort? _____

SECTION TWO

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

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

 (Move on to Section 3 even if you answer NO to section two)

SECTION THREE

a). Do you ever get pain in either leg on walking?

YES.....1 NO.....2
(If YES, complete *b* to *h* - SECTION THREE)
(If NO, ignore the rest of SECTION THREE)

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 (claves)? - back muscles below your knees

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

d). Do you get this pain when you walk up hill 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 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 THE SAME PACE.....3

h). What happens to it if you stand still?

Usually continues for more than 10 minutes.....1
Usually disappears in 10 minutes or less.....2
