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CORRELATES OF THE MULTIDIMENSIONAL COMPONENTS OF TYPE A BEHAVIOUR

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Dissertation submitted to the Faculty of Science, University of the Witwatersrand, in Partial Fulfilment of the Requirements of the Degree of Doctor of Philosophy.

Johannesburg, 1992

I hereby declare that this thesis is my own work and that I have not submitted it for the degree of Doctor of Philosophy to any other university.



W. Burns

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ABSTRACT

The aim of the present thesis was to develop and test a multidimensional model of the components of Type A behaviour. A review of the literature revealed that the definition of Type A behaviour consisted of five conceptual components, namely achievement striving, impatience-irritability, anger, hostility, and competitiveness. However, despite the identification of five conceptual components, no attempt has been made to examine a multidimensional model of Type A behaviour in association with health and work related outcomes. Conclusions are that information is lost when Type A behaviour is conceptualised and operationalised as a global construct. As a result, recent investigators have chosen a multifaceted conceptualisation of Type A behaviour. This strategy originatethrough the suggestion that there may be positive and negative components of Type A behaviour, that need to be examined independently. The adoption of a multifaceted conceptualisation has assisted in providing more consistent results than previous global Type A findings.

Type A research has been criticised for poor measurement technology in attempting to operationalise the conceptual components of Type A behaviour. Thus, before it was possible to examine the independent relations of the components, it was necessary to develop an appropriate instrument to measure the conceptual components of Type A behaviour. In addressing this need, the initial study was aimed at developing the Multidimensional Type A Behaviour Scale (MTABS). Factor analysis revealed that the 23-item scale developed consisted of five independent components that were labelled achievement striving (AS), impatience-irritability (II), anger, hostility and competitiveness. Internal and temporal consistency were found to be satisfactory for the MTABS. Construct validity was assessed by correlating the scale with popularised Type A measuring instruments. Significant, but modest

correlations were found for the MTABS in association with the two most popularised measuring instruments in the Type A literature, namely the Jenkins Activity Survey and the Framingham Type A Scale. The results revealed that the components of Type A behaviour, when assessed independently, were differentially related to health and work related outcomes. The differential relationships suggested that it was incorrect to operationalise Type A behaviour as a global construct, since important information is lost in the summation of the independent components.

In the main study, a model of the differential outcomes of the components was developed and tested. The relationship between AS, II, anger, hostility and competitiveness and depression, physical symptoms complaints, job satisfaction, intention to leave and sales performance was assessed using multiple regression. The sample consisted of 463 salespeople from 28 regions of a South African life insurance company. Results indicated that AS was positively related to job satisfaction, intention to remain and sales performance and negatively related to depression and physical symptoms complaints. Conversely, II and competitiveness were positively related to depression, II and anger were positively related to physical symptoms complaints, II was negatively related to job satisfaction and intention to remain and anger was negatively related to sales performance.

The differential relations of the components confirmed that important information is lost when Type A behaviour is operationalised as a global construct. Rather, the results suggest that Type A behaviour should be conceptualised as a multifaceted construct. Conceptual and empirical support for the findings were offered. The theoretical and practical implications of the study followed an explanation of the results. This was succeeded by a discussion of the limitations of the findings. Finally, a revised model of a multifaceted conceptualisation of

Type A behaviour was presented with a view to integrating the present results with future research considerations. The model proposed consisted of antecedents, moderators, diverse physical, behavioural, psychological and organisational consequences, and a feedback loop between all stages of the model.

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How shall I talk of the sea to the frog,

if he has never left his pond?

How shall I talk of the frost to the

bird of the summer land if it has never

left the land of its birth?

How shall I talk of the life with a sage

if he's the prisoner of his doctrine?

Chang Tsu 4 B.C.

SUMMARY of CHAPTER OUTLINE

The aim of the present thesis is to develop a multidimensional model of the components of Type A behaviour. To address this aim, a theoretical framework of the components of Type A behaviour is developed. A summary of the chapters within the present thesis are as follows: The first chapter discusses the origin and definition of the construct of Type A behaviour from a traditional perspective. The second chapter focuses on the theoretical models of Type A behaviour that have attempted to explain the acquisition and maintenance of Type A behaviour. The third chapter highlights the consequences of Type A behaviour and a critique of a global conceptualisation is offered. In the fourth chapter, a multidimensional model of the conceptual components is proposed. The aim and rationale of the thesis is presented in Chapter 5; the methodology and the results obtained from the Multidimensional Type A Behaviour Scale (MTABS) are presented in Chapter 6. In Chapter 7, the model is empirically validated by examining the differential relationship of the components in association with health and work related outcomes and the findings are discussed in Chapter 8. This finally culminates in the development of a revised model of the components of Type A behaviour discussed in Chapter 9.

CHAPTER 1

INTRODUCTION

THE ORIGIN OF TYPE A BEHAVIOUR

The original conceptualisation of an association of emotions and cardiovascular function originated over 360 years ago (Jenkins, 1978). An enthusiastic physician by the name of William Harvey (1628, p. 13) wrote, "Every affection of the mind that is attended with either pain or pleasure, hope or fear, is the cause of an agitation whose influence extends to the heart." Heberden (1772) and Fothergill (1781) extended this assertion to implicate emotional states, in particular anger and hostility, as predisposing factors to coronary heart disease (CHD; De Bakey & Gotto, 1977).

Many years later, the celebrated English surgeon, Dr. John Hunter, personalised the connection in stating, "My life is in the hands of any rascal who chooses to annoy me..." (Jenkins, 1978, p. 544). A fatally correct prediction, for in 1793, Dr. Hunter died from a coronary occlusion while attending a board meeting at St. George's Hospital (Jenkins, 1978). As Sir William Osler (1910, p. 839) described the event, "In silent rage and in the next room, he gave a deep groan and fell down dead." The event spurred Sir William Osler (1910, p. 839) to make some significant contributions to the medical literature in observing that atherosclerosis and it's attending episodes of angina pectoris[1] were not scattered randomly throughout the community, but tended to attack a specific type of person (Jenkins, 1978). William Osler (1910, p. 840) described the coronary patient as "...not the delicate, neurotic

[1]The term angina pectoris was introduced by Dr. William Heberden, who used it to convey a message of strangling. The site of discomfort attributed to angina symptoms are usually across the centre of the person's chest. Principally, angina pectoris occurs when the demand for blood by the heart exceeds coronary artery supply (Hordon & Gibbons, 1991; Oxford Concise Medical Dictionary).

person...but the robust, the vigorous in mind and body, the keen and ambitious man, the indicator of whose engine is always at full speed ahead." Osler's (1910) description of the coronary patient (striving for achievement and success under self generated pressure), was elaborated upon by Menninger (1938), an American psychiatrist, who averred that strong aggressive tendencies were inherent within coronary patients. Kemple (1945) affirmed this pattern of aggressiveness in his observations of CHD patients and added that they were very often ambitious and would strive compulsively to achieve power and prestige, while exhibiting insensitivity to nuances in the environment. Coronary-prone people were described as obsessively engaged in the incessant struggle for mastery (Arlow, 1945; Gildea, 1949), but at the expense of emotional reactions, which appeared to be the contributory causes to their diseased state (DeBakey & Gotto, 1977).

A key point derived from these anecdotal accounts of behavioural factors is the focus on anger, time urgency, and aggressive-hostility as significant predictors of CHD (Abbott & Peters, 1988; Dembroski, Macdougall, Herd & Shields, 1983). However, it was the introduction of Type A behaviour that brought substance to these early observations in the medical literature (Dembroski & Costa, 1987). The dynamic evolution from patient observation to extensive epidemiological, physiological, cardiological, behavioural-medical and psychological research is the focal inquiry of the present thesis.

Historical Perspectives on Type A Behaviour

The greatest contribution towards describing the behavioural factors in the development of

cardiovascular disease is the identification of Type A behaviour[2] (Dembroski & Williams, 1989; Taylor & Cooper, 1988), attributed to the pioneering work by cardiologists Meyer Friedman and Ray Rosenman (1959, 1974). The evolution of the Type A behaviour construct derived primarily from Friedman and Rosenman's (1974) observations of their own coronary patients. Controlling for dietary differences, systolic blood pressure, cigarette smoking, alcohol consumption, cholesterol and diabetes, it was found that those patients with CHD, exhibited extreme levels of anger, time urgency and aggressive-hostility. This translated into the question whether overtly competitive, aggressive, chronically restless, and impatient individuals were prone to CHD (Rosenman, 1986, 1989).

To address the possibility of a behavioural complex as a predictor of CHD, Friedman and Rosenman (1959) decided to examine a group of tax consultants. Of specific relevance to their observations was the choice of the 15 April tax deadline, since it was presumed to have a significant effect on the level of time urgency of the participants in their study (Friedman, Rosenman & Carroll, 1958; Rosenman, 1989). Blood samples from the accountants were taken every fortnight over a period of 5 months, so that blood clotting and serum cholesterol levels could be recorded and monitored. At each visit, the accountants were required to answer questions about their reported level of time urgency (Friedman & Rosenman, 1974). The findings revealed that the stimulus of a work deadline led to a notable rise in serum cholesterol level and accelerated blood clotting, which was reported to be independent of weight, diet, and exercise patterns (Friedman & Rosenman, 1959). This led to the

[2] With regard to the expression of the term, Friedman (1978) indicates that Type A behaviour was a suggestion by Dr. C.J. van Slyke at the National Heart, Lung, and Blood Institute (NIH) to replace the initial term emotional stress. The reason for the change was designed to enhance their chances at obtaining a resubmitted grant application. Thus, Type A behaviour was suggested as a neutral label which referred strictly to a complex of emotional reactions and disclosed no implications of psychological abnormality (distinct from aberrant human functioning classification; Friedman, 1978).

identification of a behavioural pattern, subsequently named Type A behaviour, as a significant predictor of CHD (Friedman & Rosenman, 1959). The results of the study were soon confirmed (Dreyfus & Czazakes, 1959; Grundy & Griffin, 1959; Hammarsten, Cathey, Redmond & Wolf, 1957; Jenkins, Hames, Zyganski, Rosenman & Friedman, 1969; Rosenman & Friedman, 1974; Thomas & Murphy, 1958; Wertlake, Wilcox, Haley & Peterson, 1968). These confirmatory findings led to the formal acceptance by the medical literature of a behavioural complex, namely Type A behaviour, as a predictor of CHD (Cooper et al., 1981).

Towards a Definition of Type A Behaviour

Type A behaviour[3], when originally defined by Friedman and Rosenman (1959), consisted of six components, namely, 1) a competitive vogue, 2) a strong need to overcome undefined tasks, 3) continuous involvement in daily activities which are subject to time restrictions or deadlines, 4) an intense desire for recognition and patronage, 5) mental and physical vigilance and 6) a propensity toward accelerating the mental and physical functions (Rosenman, 1989).

As a descriptive label, Friedman and Rosenman (1974, p. 67) went on to define Type A behaviour as: "a characteristic action-emotion complex which is exhibited by those individuals who are engaged in a relatively chronic struggle to obtain an unlimited number of poorly defined things from their environment in the shortest period of time and, if necessary, against the opposing effects of other things or persons in this same environment."

Major facets of Type A behaviour include a collection of overtly expressive emotions and

[3]Used in its traditional sense, Type A behaviour is a global construct (Friedman & Rosenman, 1974). Carver (1989) explains this point in a recent review on the nature of global constructs and their meaning. In his estimation, Friedman and Rosenman (1974) may have adopted a global definition to attain conceptual simplicity and accessibility of an idea that was contemporary to the medical community. That is, the adoption of a global conceptualisation assisted in simplifying their data analysis and their conceptual explanation of the findings through the recognition of the "type" of patient they were used to being confronted with. However, more recent advances in the Type A literature have noted that such a strategy is not without a cost. Specifically, the summation of the facets can confound the independence of the conceptual elements (Carver, 1989). This trade-off has been the major criticism of the definition of the construct (Ray, 1991).

behaviours (Musante, MacDougall. Dembroski & Van Horn, 1983) that is distinguished most importantly by a fierce competitiveness, free-floating hostility, an impatience with being slowed down, anger, chronic time urgency and achievement striving (Evans, 1990; Friedman & Rosenman, 1974; Friedman & Ulmer, 1984; Glass, 1977a; Haynes & Matthews, 1988; Matthews & Haynes, 1986; Rosenman, 1987; Wright, 1988). In reviewing the book Type A behaviour and your heart, Friedman and Rosenman (1974, p. 53) emphasise that Type A behaviour is a "complex of emotional reactions" that forms the core of the construct. Thus, in defining the construct, Type A behaviour is not a personality trait, but a behavioural complex of responding by persons who possess the predisposing personality characteristics[4] (Musante et al., 1983).

Conversely, Type B behaviour was characterised as the exact opposite of Type A behaviour (Friedman & Rosenman, 1974). The relative absence of ambition, sense of time urgency, desire to compete, aggressiveness, hostility and impatience at being slowed down (Friedman & Rosenman, 1974; Friedman & Ulmer, 1984; Rosenman, 1986) were considered to be part of the definition of Type B behaviour.

Conceptual Understanding of Type A Behaviour

A persistent theme attributed to the definition of Type A behaviour is 'modernity' and 'Western culture' (Helman, 1987). The credibility of this view is affirmed by Friedman and Rosenman's (1974) contention that contemporary Western life creates pressures unparallele

[4] A multiplicity of terms such as 'Type A personality' (Caplan & Jones, 1975), 'Type A individuals' (Ortega & Pipal, 1984), 'Type A's' (Burke, 1982), 'persons endowed with Type A behaviour' (Byrne & Rosenman, 1986) reflect the conceptual confusion in viewing Type A behaviour as a personality trait. Scherwitz (1989) notes that it is important to move away from a trait definition and to focus on behavioural expression as the core construct of Type A behaviour; a key observation that is noted within the present thesis.

in previous decades. In fact, Rosenman (1978) regards Type A behaviour as 'the 20th century' epidemic which derives from unique psychosocial factors of modern day and age. Recent researchers have extended this conceptualisation by suggesting that the notion of a fast, stressful society is the precursor of the behavioural expression of Type A behaviour (Byrne & Reinhart, 1989; Chesney, Black, Chadwick, & Rosenman, 1981; Helman, 1987; Maes, Vingerhoets & Van Heck, 1987; Matthews & Brunson, 1979). These researchers assert that Type A behaviour is a reflection of the value system inherent in society (Helman, 1987). For example, Van Egeren (1990) contends that Type A's pursue the success drive with such single-mindedness that important values, including creativity, reflectiveness and social feeling, are neglected. Consequently, Type A behaviour is a paradox since it is so persistent and pervasive in Western society, yet appears to be so unsatisfying in its rewards (Van Egeren, 1990).

Type A behaviour has been characterised in a number of ways in the literature (Friedman, 1989). The analysis has included authoritarianism (Bozek, 1980; Byrne & Reinhart, 1989a; Ray & Simons, 1982), a need to control the environment (Glass, 1977a), a "Sisyphus pattern" (striving without joy) (Wolff, 1969) and workaholism (Burke, 1984; Helman, 1987). In Friedman's (1989) estimation, the most popularised characteristic, to date, is an habitual sense of time urgency, more commonly referred to as "hurry sickness" (Friedman, 1989).

Ganster, Schaubroeck, Sime and Mayes (1991) note that such a broad and vague conceptualisation of Type A behaviour has been a major drawback to understanding the

comprehensiveness of Type A behaviour.[5] This point is clearly illustrated through Eysenck and Fulker's (1983, p. 24) obscure definition in suggesting that Type A behaviour can be defined as a "...chimera, resulting from indecorous psychometric analysis of authenticated extroversion and neuroticism." This definition fails to provide an adequate understanding of the true nature of the construct and is perhaps an accurate reflection of the conceptual ambiguity that prevails in the field (Booth-Kewley & Friedman, 1987a). As such, there is disagreement regarding the conceptual components of Type A behaviour (Matthews, 1982).

A literature review of the behavioural characteristics underlying Type A behaviour confirmed Matthews' (1982) observation that a construct approach is needed in refining the definition of Type A behaviour. The literature search revealed Type A's to be more ambitious and achievement orientated (Chesney et al., 1981; Ganster et al., 1990; Snow, 1978), aggressive (Chesney et al., 1981; Strube, Turner, Cerro, Stevens & Hinchey, 1984), angry (Greenglass, 1987a, 1987b; Lopez & Thurman, 1986; Spielberger, Krasner & Solomon, 1988), assertive (Byrne, Rosenman, Schiller & Chesney, 1985, Chesney et al, 1981; Irvine, Lyle & Allon, 1982; Jenkins, Zyganski & Rosenman, 1979; Musante et al., 1983), competitive (Van Egeren, 1979a, 1979b; Van Egeren, Sniderman & Roggelin, 1982), domineering (Chesney et al., 1981; Yarnold, Grimm & Bryant, 1987), extraverted (Chesney et al., 1981; Cooper et al., 1981; Eysenck & Fulkner, 1983; Ganster et al., 1991; Lovallo & Pushkin, 1980), hostile (Carver & Glass, 1978; Check & Dyck, 1986; Chesney et al., 1981; Siegman, Dembroski & Ringel, 1987; Van Egeren et al., 1982), irritable (Glass et al., 1974; Howard et al., 1976; Kushnir &

[5] In addition to the set of characterisations mentioned in the text, nonverbal expression has been included within the definition of Type A behaviour (Friedman, Hall & Harris, 1985). Expressive cues interpreted as symbolic of Type A behaviour have included: direct eye contact when speaking with peers, clenching of teeth during daily activities and rapid arm movements (Chesney et al., 1981a; Powell, 1987). Friedman (1989) criticises such an exhaustive list of cues by stating that they are not consistent with the original definition of the construct. Therefore, in his estimation, future Type A investigators should steer away from an examination of these characteristics as part of the definition of Type A behaviour (Friedman, 1989).

Melamed, 1991; Rosenman, 1978; Waldron, Zyganski, Shekelle, Jenkins & Tannenbaum, 1977), job involved (Burke & Weir, 1980), tense and unrelaxed (Frost & Wilson, 1983), time urgent (Burnam, Pennebaker & Glass, 1975; Gastorf, Suls & Sanders, 1980, Glass, Snyder & Hollis, 1975; Steufert, Streufert & Gorson, 1981), controlling of the environment (Byrne, Rosenman, Schiller & Chesney, 1985; Frost & Wilson, 1983; Keegan, Sinha, Merriman & Shipley, 1979), demonstrate a high need for power (Ganster et al., 1991), impatient (Jennings, 1984), impulsive (Chesney et al., 1981), self-confident (Bryant & Yarnold, 1990; Howard, Cunningham & Rechnitzer, 1977) and self-involved (Burnam, Pennebaker & Glass, 1975; Lovallo & Pishkin, 1980; Scherwitz, Berton & Leventhal, 1978), compared to their Type B counterparts.

As a result of such an exhaustive list of behavioural characteristics, the comprehensiveness of Type A behaviour is criticised (Price, 1982b). In Matthews (1982) estimation, it is important for the survival of the field that researchers evaluate precisely what the conceptual components of Type A are. By describing such an extensive list of potential dimensions for inclusion in the definition, the comprehensiveness of the Type A construct is questioned (Ray, 1991). Consequently, there is a need to define the core dimensions, and ignore peripheral components to achieve conceptual integrity (Ganster et al., 1991).

> This is clearly illustrated by Friedman and Rosenman (1974, p. 58) in stating: One of our earliest difficulties was to determine precisely what emotional traits had relevance. This determination has not been easy and now, well over a decade since we first began this analysis, we are still adding feature to the total complex of characteristics we have designated Type A Behavior Pattern."

To secure a more accurate understanding of Type A behaviour in the context of its original conceptualisation, the central underlying psychological states and behavioural components

need to be identified (Matthews, 1982; Price, 1982). In addressing this end, the original meaning of Type A behaviour needs to be understood more clearly (Booth-Kewley & Friedman, 1987; Matthews, 1982; Price, 1982a). Also, Type B behaviour has been avoided as a research construct of interest (Sager, 1991).

A Description of Type B Behaviour

Type B's are described as easy-going, relaxed and subdued in comparison to their Type A counterparts (Perloff, Yarnold & Petzer, 1988). Type B's rarely struggle, unlike Type A's, to accomplish an endlessly growing number of achievements within the constraints of time (Friedman & Rosenman, 1974; Streufort, Streufort & Gorson, 1981). Friedman and Rosenman (1974) maintain that Type B behaviour is exhibited when the person harbours no free-floating hostility, no sense of time urgency and low levels of competitiveness and is able to relax without feelings of guilt in a similar way to working at tasks without agitation. Unlike Type A's, who are characterised as unaware of their virtues and unable to tolerate deficiencies, Type B's appreciate the value of their virtues and face up to personal limitations (Friedman & Ulmer, 1984).

Price (1988) expands on this view by suggesting that Type B's match effort to task requirement, have a problem solving attitude, and a flexible, general sense of fulfilment. As such, the differences between Type A and Type B behaviour do not appear to reflect achievement motive differences, but rather different behavioural responses to time urgent and competitive situations (Sager, 1991). To use a metaphor adopted by Sager (1991, p. 4), "Type B's operate at a lower rpm."

Recent reviews in the literature suggest that Type B behaviour is poorly defined (Sager, 1991; Strube, 1989). Strube (1989) maintains that a major criticism in operationalising Type B behaviour is that it is characterised by a lack of intensity in responses. Rather, to achieve conceptual integrity, theoretical frameworks must be able to account for completely different styles of responding by Type A's and Type B's, to avoid gradual, incomplete, or partial acquisition of defining behaviours (Strube, 1989). Failing this, the construct should be redefined (Sager, 1991). Also, Type B's may be as goal orientated as Type A's, the difference being that they seek satisfaction of their needs in a way that does not create stress (Friedman & Rosenman, 1974; Sager, 1991).

The literature suggests that by adopting a multifaceted conceptualisation of Type A behaviour, the debate regarding whether Type A/B behaviour should be regarded as a categorisation, or on a continuum, is avoided (Matthews, 1982; Strube, 1989). Rather, by reconceptualising Type A behaviour as a multifaceted construct, the components are treated as independent constructs that overcome this problem. Thus, the recognition that not all of the components are limited to the domain of Type A behaviour, suggests that there is a considerable amount of "noise" in the understanding of differences between the Type A and Type B definitions. The section below illustrates this point in evaluating and comparing popularised measuring instruments of Type A behaviour. Clearly, from an appraisal of how Type A behaviour has been operationalised, it is suggested that the distinction between Type A and Type B behaviour is confusing and in need of clarification.

Contemporary Approaches to the Measurement of Type A Behaviour

Hinkin and Schriesheim (1989) report that any progress within the theoretical domain of a construct demands adequate measurement technology. Addressing this view, Type A measuring instruments have been criticised for failing to operationalise the conceptual components of Type A behaviour (Edwards et al., 1990a). Only through examining the construct validity of the popularised Type A measuring instruments is it possible to obtain more comprehensive Type A measuring instruments (Lee, King & King, 1987; Powell, 1987). The section below will attempt to describe and appraise the popularised measuring instruments of Type A behaviour.

Global Type A Measuring Instruments

Since 1960, Type A behaviour has been assessed by approximately 20 different measuring instruments (Powell, 1987). Some of these instruments have reported satisfactory construct validity and reliability (Matthews & Haynes, 1986; Powell, 1987). Others, have failed to demonstrate more than face validity (Matthews & Haynes, 1986; Powell, 1987). By definition, a Type A behaviour measuring instrument demonstrates predictive validity if it predicts health, work attitudinal and behavioural outcomes conceptually related to the construct (Powell, 1987). The three most prevalent Type A measuring instruments found within the Type A literature are the Structured Interview (SI), Jenkins Activity Survey (JAS) and the Framingham Type A Scale (FTAS; Edwards, Baglioni & Cooper, 1990; Powell, 1987). These three measuring instruments are discussed below with special relevance to their definition, content domain, and construct validity.

Structured Interview. The Structured Interview (SI) contains 25 questions about the interviewee's response characteristics to a variety of situations that are designed to elicit Type A behaviour in the predisposed individual (Anderson & Waldron, 1983; Bortner & Rosenman, 1967; Rosenman, 1978; Scherwitz, Berton & Leventhal, 1978). For example, as a measure of time urgency, respondents are asked about their reactions to waiting in long queues, or driving behind a slow car (Suarez, 1986). More importantly than assessing content of response, the SI relies on the identification of aggression and easily aroused hostility, impatience and competitiveness, that are observed during the interview itself (MacDougall, Dembroski, Dimsdale & Hackett, 1985; Matthews, Krantz, Dembroski & MacDougall, 1982; Musante et al., 1983; Scherwitz, 1989; Scherwitz et al., 1987). In some studies, interviewers are trained to note a variety of motoric activities such as gestures while speaking, grimaces and nodding when a point is being made (Cooper et al., 1981; Matthews, 1982; Matthews & Glass, 1981; Matthews & Haynes, 1986; Matthews, Krantz, Dembroski & MacDougall, 1982; Wright, Contrada & Glass, 1986). Interviews are tape-recorded and post-hoc evaluations are made (Cooper et al., 1981; Friedman, Hall & Harris, 1985; Rosenman, 1978; Matthews, 1982). The manner in which SI questions are presented is crucial to interpretation (Powell, 1987; Suarez, 1986).

The classification of Type A behaviour is a clinical judgment whereby individuals are classified into one of four categories: A1 (strong Type A), A2 (attenuated Type A), X (an equal representation of Type A and Type B characterisitics), and Type B (absence of Type A characterisitics; Matthews, 1982; Suarez, 1986).

Appraisal of the SI

The SI was originally devised by Friedman and Rosenman and is the means by which Type A is defined (O'Looney, 1984). Therefore, it is important to appraise the SI before attempting to develop an improved measure of the behavioural characteristics of the SI (Yarnold & Bryant, 1988). In examining the construct validity of the SI, it has been found to be related to CHD (Blumenthal et al., 1978; Frank et al., 1978; Rosenman et al., 1964; Williams et al., 1980), physiological responsiveness (Contrada et al., 1985; Houston, 1983) and marital conflict (Sanders, Smith & Alexander, 1991). Matthews (1988) conducted a meta-analysis where it was shown that the SI revealed a significant relationship with CHD incidence. The significant relationship reported was attributed to hostility as an important component of the SI.

Construct validity would ordinarily depend on the agreement between the SI and other validated measures (Powell, 1987). However, the SI has been treated as the "gold standard" against which other measures should be compared (Powell, 1987). This has generated criticism in recent years since the lack of a standard of comparison has created a 'drift' in the administration and scoring of the SI. A future recommendation therefore is to conduct studies on degree of concordance between the SI and the Rosenman SI (Powell, 1987).

The literature points to two main components of the SI, namely 'clinical ratings', which is characterised by the experience and expression of anger and hostility and the 'pressured drive' factor consisting of time urgent behaviour (Blumenthal, O'Toole & Haney, 1984; Matthews et al., 1982; Musante et al., 1983). Bass (1984) notes that the SI is an important measure of

behavioural expression since it is able to monitor speech patterns, posture and gestures. Also, the SI is able to correct for respondents who misinterpret their behaviour or report it incorrectly (Bass, 1984a). However, a number of criticisms have been directed at the SI (Yarnold & Bryant, 1988). A review of some of the relevant criticisms are discussed below.

Researchers are reported to differ significantly in their method of scoring and interpretation of the key components (Powell, 1987; Price & Clark, 1978). More specifically, assessors tend to weight the components differently (Powell, 1987; Yarnold & Bryant, 1988). Furthermore, the subjectivity involved through interpreting the interview has been criticised (Yarnold & Bryant, 1988). Adding to this confusion is the lack of a comprehensive understanding of the key components that define Type A behaviour (O'Looney, 1984; Yarnold & Bryant, 1988). In other words, consensus on what the key components of global Type A behaviour are, has not been achieved (Matthews & Angulo, 1980). Other potential biases include the pace of the interview, the attitude of the interviewer. nonverbal messages delivered by the interviewers, rules governing the assignment of weight to the various stylistic components and the gender, age and cultural background of the interviewee (Dembroski, MacDougall, Herd & Shields, 1979; Powell, 1987; Suarez, 1986). In addition, the time and training costs required for administration, is perceived to be a major drawback against the use of the SI (Powell, 1987).

In 1981, The Review Panel on coronary prone behaviour recommended that the traditional classification scheme of Type A behaviour be abandoned (Cooper et al., 1981). Two problems associated with behavioural categorisation were recorded. First, clinical judgements of risk were not considered appropriate to large-scale research (Powell, 1987). This stemmed from the observation that interviewers were granted too much flexibility in probing the

relevant cues (Scherwitz et al., 1985). Also, the halo effect has been interpreted as a stumbling block for effective categorisation (Powell, 1987).

Despite the limitations of the SI, it has proved to be the best predictor of physical and CHD outcomes. This has partly been attributed to the operationalisation of the hostility dimension, which has been found to be a significant predictor of CHD (Matthews, 1988). Thus, it is suggested that any attempts to design an improved measure should continue to identify hostility, competitiveness and anger as important components for assessment (Suarez, 1986; Yuen & Kuiper, 1991).

Self-report Inventories

In identifying the need for a more objective, cost effective, and generally accessible testing procedure, a number of self-report measures of Type A behaviour have been developed since the formulation of the SI (Powell, 1987). The present chapter will focus on the Jenkins Activity Survey and the Framingham Type A Scale, since they are the most popularised self-report Type A measuring instruments, to date (Edwards & Baglioni, 1991; Edwards, Baglioni & Cooper, 1990).

Jenkins Activity Survey. The Jenkins Activity Survey (JAS; Jenkins, Zyganski & Rosenman, 1979) is a self-report, multiple choice inventory, designed to be a standardised measure of Type A behaviour. In developing the JAS, empirical, clinical and theoretical considerations were highlighted (Jenkins, 1978; Matthews & Haynes, 1986). That is, the test items were

constructed from a protocol of the SI (Rosenman, 1978).[6]

The JAS is a self-report inventory which by nature of its construction is insensitive to the verbal and motoric mannerisms of the respondent (Yarnold, Bryant & Grimm, 1987). Unlike the SI, the item domain of the JAS is not based on provocation (Scherwitz, Berton & Leventhal, 1978). Of the 52 items that comprise the JAS, 21 items are substantially weighted by the computer scoring system (Matthews, 1982) and comprise the global Type A Scale. The remaining items are subdivided into three factors, namely H for hard driving competitiveness, S for speed and impatience and J representing the job involvement fact 1978).

Appraisal of the JAS

The JAS has been found to be significantly related to chronic emotional s ss (Suls & Wan, 1989), psychological distress (Dimsdale, Hackett, Block & Hutter, 1978), neuroticism (Irvine et al., 1982), psychopathology (Chesney et al., 1981), self-reported illness (Suls & Marco, 1990), respiratory problems (Offutt & Lacroix, 1988) and marital distress (Sullaway & Morell, 1990) which points to psychometric adequacy of the JAS as a global measure of Type A behaviour. However, closer examination of the construct validity of the JAS has found it to be inconsistent with the definition of Type A behaviour (O'Looney, 1984).

Research establishes that the classification accuracy of the JAS in association with the SI is

[6] In devising items regarded as consistent with the construct validity of the SI, 64 items were initially considered for evaluation (Jenkins et al., 1979). Based upon the ability of items to verify statistically between Type A or Type B classification in the SI, a 40 item pool was generated. These 40 items, congeneric with 21 new test items, comprised the first published edition of the JAS in 1965. This 61-item version underwent further discriminant analysis in 1966, whereupon a final edition consisting of 52 items was published in the same year (Jenkins et al., 1979).

in the vicinity of 60 to 70% (Bortner & Rosenman, 1967; Jenkins et al., 1988; Matthews, Krantz, Dembroski & Macdougall, 1982; Musante et al., 1983). Statistically, this is not satisfactory since the JAS was originally designed to reflect the content domain of the SI (Matthews, 1982). Matthews (1982) affirms that a 60 to 70% overlap between the JAS and SI constitutes about a 15% chance level improvement. The modest correlations between the SI and JAS suggest that these Type A instruments are measuring separate dimensions of Type A behaviour (Corse, Manuck, Cantwell, Giordani & Matthews, 1982; Edwards & Baglioni, 1991; Edwards et al., 1990a; Harding & O'Looney, 1986; Lee, King & King, 1987; Mayes, Sime & Ganster, 1984; O'Looney, 1984).

Of special note, the anger and aggressive-hostility components are under-represented in the JAS (Boyd & Begley, 1987; Fekken, Jackson & Holden, 1985; Matthews, 1982; O'Looney & Harding, 1985; Yarnold, Bryant & Grimm, 1987). Consequently, the JAS is inconsistent with the conceptual definition of Type A behaviour since it omits anger and aggressive-hostility items Ditto, 1982; Matthews et al, 1982; Musante et al., 1983; O'Looney & Harding, 1985). For example, Jennings (1984) reported a modest relationship between the JAS and hostility dimension of the SI. In response to the poor construct validity of the JAS, the need for a multidimensional Type A measuring instrument has been suggested (Edwards et al., 1990; Wright, 1988).

Framingham Type A Scale. The Framingham Type A Scale (FTAS) consists of 10 questions derived from an item inventory administered to the Framingham cohort (Haynes, Levine & Scotch, 1978). This was developed for measuring the level of Type A behaviour in male and female respondents. The same questions were advanced for working men and working

women, but housewives and working women were separated, whereby job-related questions were rephrased in relation to working at home for the housewife respondents. Questions included the extent to which respondents considered themselves to be hard driving and competitive, time urgent and how they felt at the end of a working day (Haynes et al., 1980). Thus, in view of the original definition of the FTAS it was designed to assess aggressiveness, ambition, chronic time urgency, high need for achievement and competitive drive (Haynes et al., 1978, 1980).

Appraisal of the FTAS

A review of the empirical findings on the FTAS has shown it to be significantly related to angina like chest pain complaints (Smith, Follick & Korr, 1984; Costa & McCrae, 1985), symptom reports (Smith, O'Keefe & Allred, 1989), chronic emotional distress (Suls & Wan, 1989), suppressed hostility (Haynes et al., 1980), anxiety (Haynes et al., 1980; Smith & O'Keefe, 1985), self-reported illness (Suls & Marco, 1990), marital distress (Sullaway & Morell, 1990), communication difficulties (Sullaway & Morell, 1990) and CHD (Haynes, Feinleib & Kannel, 1978). Thus, the FTAS has been found to demonstrate psychometric adequacy. But, on closer examination of the construct validity of the FTAS, it has been found to be inconsistent with the original definition of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990a).

Haynes et al. (1978) developed the FTAS to reflect characteristics of competitiveness, achievement striving, aggressiveness, haste, impatience, restlessness, external time pressure and job commitment. However, Edwards et al. (1990) conducted factor analyses on the FTAS

and found the definition to be inconsistent with the operationalisation of these underlying constructs. Rather, the literature at best, has found two dimensions to underlie the FTAS, namely competitiveness and time pressure (Smith, Houston & Zurawski, 1985). In attempting to demonstrate construct validity, the FTAS has been correlated with the JAS in the region of 0,53 (Haynes et al., 1980) and approximates 60 % agreement with the SI (Chesney et al., 1981; Haynes et al., 1980)

O'Looney (1984) questions whether the FTAS is sufficiently powerful to discriminate between individuals in suggesting that 10 items is the minimum number that can be sensibly used to identify specific subgroups within a sample population. Furthermore, the accuracy of the FTAS as a measure of the dimensions of Type A behaviour has been questioned (Edwards et al., 1990), once again echoing the call for a multidimensional Type A measure.

Summary of Measuring Instruments

In reviewing the three most popular Type A measuring instruments, a common criticism expressed is that they fail to operationalise all of the conceptual components of Type A behaviour (Landy, Rastegary, Thayer & Colvin, 1991). The association between the SI, JAS and Framingham scale is modest (Bass, 1984). The modest correlations suggest that the SI, JAS and Framingham Type A scale are assessing different facets of the Type A construct (Bass, 1984a; Edwards et al., 1990a).

From the appraisal of the measuring instruments discussed, the SI appears to measure hostility and a general hyper-reactivity to situations the person is faced with (Suarez, 1986); the JAS

chronic time urgency and achievement orientated behaviour (Bass, 1984a), and the FTAS appears to operationalise time pressure and competitive behaviour (Smith et al., 1986; Bass, 1984b). The notion that these three measures of Type A behaviour operationalise different underlying constructs, casts doubt on the characterisation of a universal Type A syndrome (Landy et al., 1991; Yarnold & Bryant, 1988). Martin, Kuiper and Westra (1989) attribute poor measurement technology to impurity and lack of coherence in understanding the psychological definition of the Type A construct. Furthermore, operationalising a categorical assessment is inadequate and inexact (Powell, 1987).

Glass (1989, p.1153) notes, "Science demands well-defined hypotheses; it also demands replication." This step is nearly impossible to attain in the absence of sufficient standardisation. Thus, after more than 25 years of research on the Type A behaviour construct, conceptual confusion surrounding its measurement prevails (Glass, 1989; Yarnold & Bryant, 1988). As a result of the limitations in the conceptualisation and measurement of Type A behaviour, new directions for research have been suggested. Edwards et al. (1990) recommend that future research consider the multifaceted nature of Type A behaviour (see Chapter 4).

Before it is possible to understand what the core components are, a refined conceptual understanding of Type A behaviour is needed (Matthews, 1982). An extension of this work outlines the need for a model of the components of Type A behaviour. Only through developing a model, is it possible to discern the critical components that underlie Type A behaviour (Price, 1982a). The identification of a model forms an important link to Chapter 2.

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Conclusion

The present chapter has attempted to discuss the origin and definition of Type A behaviour. A literature review of the definition of Type A behaviour has shown the conceptual understanding of Type A behaviour to be vague and unclear (Evans, 1990). This has led to conceptual ambiguity on the interpretability of the Type A construct (Matthews, 1982). On the whole, research has generated a list of personality traits, linked to Type A behaviour, that do not facilitate a comprehensive understanding of the construct validity of Type A behaviour. Rather, as pointed out in the present chapter, some of the personality correlates have confounded the psychological meaning of the construct (Eysenck & Fulker, 1983). In response to the conceptual ambiguity, it is important for future research to refine the definition of the construct. Surprisingly, since Friedman and Rosenman's (1959) pioneering work over three decades ago, very few attempts have been made to refine the psychological nature of the Type A construct. Also, a review of the current global Type A measures in the present chapter pointed to inadequate measurement technology, which probably derives from a poor understanding of the conceptual meaning of the construct (Ganster et al., 1991). The need for a more refined understanding of the definition of Type A behaviour forms an important link to Chapter 2. As Serlin (1987) suggests, without a well defined theoretical explanation for the cause of a construct, it is impossible to understand and comprehend its meaning.

CHAPTER 2

THEORETICAL MODELS OF TYPE A BEHAVIOUR

In Chapter 1, a literature review on the historical development, conceptualisation and operationalisation of global Type A behaviour was presented. The broad and vague conceptualisation of the definition of Type A behaviour was discussed (Ganster et al., 1991). Price (1982a) notes that a more precise understanding of Type A behaviour can be achieved through the development of a theoretical model. In her estimation, a theoretical model of Type A behaviour assists towards a more comprehensive understanding of the conceptual components of Type A behaviour (Price, 1982a). Such an approach assists in addressing the conceptual confusion that exists in the field.

The aim of the present chapter is to evaluate and discuss the psychological theories that have attempted to explain the acquisition and maintenance of Type A behaviour (Price, 1982b). It is largely due to a poor conceptual understanding of the theoretical processes underlying Type A behaviour that inconsistent findings and conceptual ambiguity have been reported in the literature (Contrada, Wright & Glass, 1985; Glass, 1989; Goldstein, Edelberg, Meier, Orzano & Bloufuss, 1985; Matthews, 1982). In responding to the conceptual ambiguity, a model assists in explaining the causal mechanisms that underlie the behavioural expression of Type A behaviour (Glass, 1977b).

Three models on the causes of Type A behaviour have been proposed; namely, the control model (Glass, 1977a), the self-esteem model (Price, 1982a) and the self-appraisal model (an integration of the control and social learning model; Strube, 1985, 1987). The assumptions

underlying these models are discussed in the present chapter, and then critically appraised. This follows Fletcher's (1990) commendation that models need to be empirically evaluated to determine their functional role. The chapter concludes by drawing comparisons between the models to assist toward future research considerations.

Contemporary Approaches to Explaining the Causes of Type A Behaviour

Type A behaviour and the Need for Control: The Work of David Glass

The initial work by Glass and his colleagues (Glass, 1977a, 1977b; Glass & Carver, 1980; Glass, Snyder & Hallis, 1974), and more recent contributory theorists (Clark & Miller, 1990; Perloff, Yarnold & Fetzer, 1988), have supported the notion that Type A behaviour is characterised by a strong need to control the environment (Cooney & Zeicher, 1985; Janisse, Colguer & Dyck, 1981; Jorgensen & Houston, 1981; Matthews, 1982). Specifically, Type A behaviour is defined as a characteristic style of coping with, and responding to, stressful situations within the environment (Chesney & Rosenman, 1980; Clark & Miller, 1990). Conversely, Type B's are described as relatively free of the desire to achieve and maintain control over threatening situations (Glass, 1977b). The set of coping (mastery) responses elicited as an attempt to achieve and maintain control over stressful events, include elevated achievement striving, impatience, aggressiveness, hostility and competitiveness (Brunson & Matthews, 1981; Carver, 1980; Glass, 1977a).

Perceived control is defined by Greenberger and Strasser (1986) as the beliefs a person has

in his/her ability to influence their environment in a desired direction, at a specific point in time. Thus, perception of control is a cognitive construct which is influenced by subjective perceptions (Glass, 1977a). Benight and Kinicki (1988) contend that the greater the uncertainty of perceived control in dealing with stressors, the greater the effect of Type A behaviour on stress. Consequently, Type A's manifest more behavioural outcomes of stress if the stressor they are faced with is perceived to be uncontrollable (Benight & Kinicki, 1988). This relationship, in turn, suggests a link between Type A behaviour and physical illness (Glass, 1977b), which is an important point to be considered in Chapter 7.

In the event of repeated failure to control the threatening environment, Type A's are described as prone to give up and to react with learned helplessness (hyporesponsiveness; Glass, 1977b; Glass & Carver, 1980), which results in depression, passivity and lowered self-esteem (Ganster & Fusilier, 1989; van Doornen, 1980).

Appraisal of Glass' Need for Control Model

Two independent reviews of control theory by Kushnir and Melamed (1991) and Matthews (1982) state that the control model is the most systematic approach to describing the psychological processes underlying Type A behaviour. In Matthews' (1982) estimation, the need for control provides an adequate explanation of how Type A's cope with stressful aspects of the environment. But, despite the popularity and acceptance of the model within Type A research, there are some questions that remain unanswered.

Although the notion of a need for control is informative as an explanation of how Type A

behaviour is acquired (Benight & Kinicki, 1988; Ganster & Fusilier, 1989), criticism has been levelled because of an insufficient explanation for how Type A's evaluate levels of personal control within their lives (Hurrell, 1985). Through the influence of other control frameworks at the time (Langer, 1975; Seligman, 1975), personal control was conceptualised as a unidimensional construct (Glass, 1977a). A unidimensional view conceptualises control along a single, global continuum, that ranges from the absence of control to complete control (Bryant, 1989). This is not consistent with more comprehensive evaluations of the nature of control within the literature (Averill, 1973; Gregory, 1978; Paulhus, 1983). For example, it is suggested that Type A's may evaluate control over events separately from control over feelings in response to events (Bryant, 1989). Furthermore, there is a need to explain the causal mechanisms of the need for control more closely (Hurrell, 1985; Kushnir & Melamed, 1991). Thus, future research on explaining the acquisition of Type A behaviour, through the need to control the environment, could follow Hurrell's (1985) call for a refinement of the control concept.

Empirical support in favour of Glass' (1977) model has been demonstrated through studies which have found that when Type A's are threatened by a loss of control, they actively resist by accelerating their efforts to control the situation (Clark & Miller, 1990; Contrada et al., 1985; Dembroski, MacDougall & Musante, 1984; Fazio, Cooper, Dayson & Johnson, 1981; Jorgensen & Houston, 1981; Pittner, Houston & Spridigliozzi, 1983; Sanders & Malkis, 1982; Strube & Werner, 1985). Furthermore, Type A's have been reported to be reluctant to relinquish control, even where such action is perceived to be the most rational strategy to

adopt at the time[7] (Brunson & Matthews, 1981; Strube, Berry & Moergen, 1985). In sum, from these research studies reported, the propensity by Type A's to retain the controlling response, support the assumptions underlying Glass' (1977) control model. Before discussing the social learning model and self-appraisal model, some concluding remarks on Glass' (1977a) model are noted.

The importance of the control model is that it was the first psychological model to offer an explanation for the causes of Type A behaviour (Matthews, 1982). However, despite the utility of the model in explaining the acquisition and maintenance of Type A behaviour (Benight & Kinicki, 1988), there has been no comprehensive explanation for how the need for control, through a cognitive explanation, is linked to the components of Type A behaviour (Hurell, 1985; Kushnir & Melamed, 1991). Rather, as Evans (1990) suggests, Type A's may be more concerned with controlling the "image" that they present to others. Such a view would infer that control-seeking is secondary to theories that focus on the importance of self-concepts (Evans, 1990). This has left a gap in the literature, which is addressed more comprehensively by Price's (1982a, 1982b) model to be discussed on the following page.

[7] The reluctance to relinquish control is clearly demonstrated in an experiment by Miller, Lack and Asroff (1985), where control preferences between Type A and Type B respondents were compared when confronted with an aversive situation. Each respondent that participated in the experiment was paired with a partner. The respondent was informed that the partner had a faster reaction time; understood to be more advantageous to avoiding a noise blast. The experimental task required a rapid response by one of the pair (chosen according to personal preference of the pair) which would serve to prevent the noise blast. The option of maintaining control of the response, or relinquishing it to the more competent partner, was offered to the independent groups concerned. Results showed that Type A's were more likely to retain the controlling response, despite indications of a slower reaction time, compared to Type B's (Miller et al., 1985).

Type A Behaviour and Self-Esteem:

The Work of Virginia Price

Price (1982a) specified the need for a theoretical model of Type A behaviour that would explain the psychological processes underlying the construct. Price (1982a) proposed a self-esteem model of Type A behaviour based on Bandura's (1977) cognitive social learning theory. The model suggests that human functioning depends on a comprehensive evaluation of the interactive role of behavioural, cognitive, environmental and physiological factors (Price, 1982a; Watkins, Ward & Southard, 1987).

In describing the causes of Type A behaviour, Price (1982a) maintains that our daily living creates a variety of personal beliefs which develop into fears that promote the development of Type A behaviour. Specifically, personal beliefs influence how the person perceives the environment, their response, and the effect of the experience on future actions (Price, 1982a). Thus, the behavioural characteristics of Type A behaviour are a reflection of how individuals cope with the fears and anxieties associated with their beliefs about the environment (Price, 1982a). The personal beliefs, in turn, are dependent on the sociocultural values that are communicated to individuals through schools, peers, family and the news media (Price, 1982a).

Based on her clinical observations, three personal beliefs underlie Type A behaviour, each with accompanying fears (Lee, 1992; Ward et al., 1987). The first belief is that Type A's are in constant need to prove themselves (material success leads to positive self evaluation). Conceivably, Type A's attempt to equate their level of self-esteem with the number and

quality of tangible accomplishments (Price, 1982b); which may be the contributory cause of excessive achievement striving and competitive behaviour (Ward et al., 1987). The threats to self-esteem are based on the accompanying fear of being judged by others to have insufficient self-worth (Watkins, Fisher, Southard, Ward & Schechtman, 1989). This is believed to increase the fear of not being valued, or respected (Watkins et al., 1989). Consequently, Type A's believe that to attain peace of mind, they must achieve a lot so people will admire their achievement (Price, 1982b).

The second personal belief underlying Price's (1982a) model is that no universal moral principles remain. This proposition is independent of whether a universal moral principle exists or not (Price, 1982b). Rather, at issue is how the belief in no moral principles influences the persons' actions. Price (1982a) contends that this personal belief engenders the fear that good actions invariably result in negative self-appraisal. The accompanying fear, engendered by this personal belief, is that there is little hope for universal justice (Price, 1982b). As a result of the fear that justice may not triumph, revenge behaviour is a possible outcome (Price, 1982a). Revenge behaviour, in turn, may serve as the important source for displays of anger, impatient behaviour and hostility (Price, 1982a). Consistent with this notion, the principle of expediency avoids the decision to act on what feels "right" (Price, 1982a). Rather, impatience-irritability, hostility and competitiveness tend to be based on personal short-term consequences (Price, 1982a).

The third personal belief of the model is that all meaningful resources are in limited supply (the zero sum game of life). Price (1982a) proposes that this personal belief often leads to the interpretation that the other person's gain is at a personal expense, which is a possible

explanation for competitive behaviour (Ward et al., 1987). The accompanying fear of insufficient time, achievements, and recognition is also a possible explanation of subjecting oneself to multiple and diverse deadlines and achievement striving (Price, 1982b; Yuen & Kuiper, 1992).

Figure 2.1 summarises how the three personal beliefs can lead to the behavioural expression of the components and how the components of Type A behaviour function as antecedents and consequences of other components (Price, 1982b). The importance of the model is that it highlights achievement striving, impatience, anger, hostility and competitiveness as conceptual components of Type A behaviour and provides explanations for how they interrelate. The identification of the key components of Type A behaviour, by Price (1982a), is an important observation to be examined more closely in Chapter 4, where a model of the conceptual components of Type A behaviour is developed.

Appraisal of Price's Self-Esteem Model

The literature points to evidence, direct and indirect, to support the notion that competitiveness, hostility, impatience and achievement striving stem from a belief that self-esteem is dependent on accomplishments (Evans, 1990; Watkins et al., 1989). Burke (1982) supports the propositions of the model in reporting Type A behaviour to be correlated with the need to express and receive affection, and with various coping styles (denial, isolation, projection and turning against oneself). This finding confirms Price's (1982a) proposition that the need for affection and recognition, are underlying causes of the behavioural expression of Type A behaviour (Burke, 1982). Further contributory evidence to the model is provided

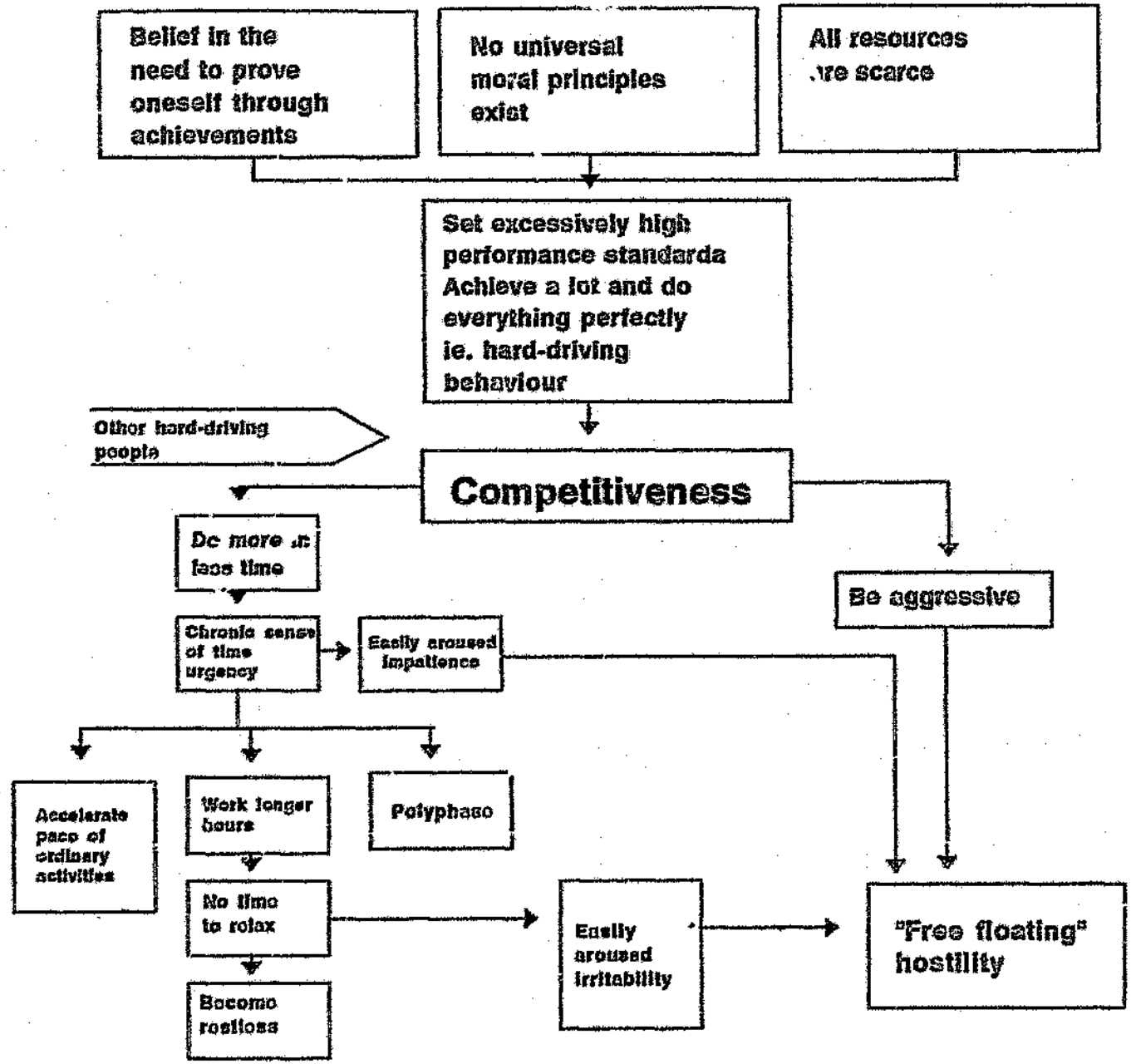


Figure 2.1 Adapted model of Price's (1982a, p.75) Self-esteem model of Type A Behaviour

by Matthews and Siegel (1983) where achievement striving was found to be a result of coupling "ambiguous standards of evaluation" with high productivity needs. The "ambiguous standards of evaluation", in turn, led to a constant seeking of information concerning value of performance in comparison to others (Matthews & Siegal, 1983). From their findings, Matthews and Siegel (1983) concluded that achievement striving and competitiveness are a reflection of how Type A's evaluate themselves and their need to compare their achievements with others (Matthews & Siegal, 1983). This finding was in direct support of Price's (1982a) proposition for such a relationship.

However, not all of the propositions are supported empirically by Price's (1982a) model. Furnham, Hillard and Brewin (1985) conducted a study that examined attributional style and found Type A's to perceive themselves as the causal agents for uncontrolled outcomes and expressed self-directed anger and hostility in response to these outcomes. Furnham et al. (1985) concluded that Type A's demonstrate an inherent tendency to compare their performance with unrealistically high internal standards, as opposed to the performance standards of their peers. This finding contradicts Price's (1982) assumption that Type A's are in constant need to prove themselves to others. Hansson, Hogan, Johnson and Schroeder (1983) support this view in arguing that Type A's are unable to influence and anticipate the behaviour of others (low in self monitoring[8]). As a result (contrary to the assumption that Type A's have a need to prove themselves to others), the lack of interpersonal perceptiveness and sensitivity within Type A's is unlikely, in Hansson et al.'s (1983) estimation, to lead to

[8]The construct of self monitoring was developed by Snyder (1974, 1979) and refers to a broad based difference in the way people orient themselves in social interaction. Specifically, people high in self monitoring are 1) sensitive to cues elicited by others that signify appropriate behaviour, 2) relatively adept at expressive behaviour that optimizes self-presentations and "\ concerned with the social appropriateness of their actions when faced with interpersonal situations, even if it means portraying themselves very differently in different contexts (Snyder, 1987)

a realistic evaluation of what others think of him/her (Hansson et al., 1983).

One possibility, in explaining the inconsistency in findings, is the need to adopt a multifaceted conceptualisation of Type A behaviour (Lee, 1992; Lobel, 1988). Consistent with this view, the literature has reported a negative relationship between aggression and need for approval (Berkowitz & Embree, 1987). Conversely, competitiveness and drive to win (Lobel, 1988), anger (Watkins, Ward & Southard, 1987) and job involvement (Burke, 1984) have been related to a higher need for approval, compared to Type B's (Lobel, 1988). Lee (1992) suggests that by disentangling the components, and assessing them separately, the differential relations of the components to the need to prove oneself can be understood more clearly. This is an important research area for the future.

In summarising the above, Price's (1982a) model conceptualises Type A behaviour as a maladaptive style of interacting with one's environment whereby cognitive processes are crucial to exploring overt, physiological and emotional responses (Watkins et al., 1989). Furthermore, the model assists in defining the key behavioural charactersitics that underlie the definition of Type A behaviour. Although Price's (1982a) formulations are comprehensive, empirical support has been limited (Yuen & Kuiper, 1992). In reviewing the model, Yuen and Kuiper (1992) note that a possible area for future consideration is to examine the role of Type A beliefs in the process of self-evaluation and negative emotional states that are associated with Type A behaviour. Consistent with the proposal that aberrant self-evaluations underly Type A behaviour, Strube (1985) developed the self-appraisal model.

Type A Behaviour and Self-Appraisal:

The Work of Michael Strube

Several recent studies suggest that Type A's appraise certain situations as involving greater challenge and demand than Type B's (Strube, Berry & Moergen, 1985; Strube, Boland, Manfredo & Al-Falaij, 1987). These differences in appraisal (labelled the self-appraisal model) have been treated as the cause of the behavioural expression of Type A behaviour and physiological responses (Strube, 1987; Strube et al., 1985). Rather than being viewed as an alternative explanation for the psychological processes underlying Type A behaviour, Figure 2.2 depicts how the self-appraisal model can be regarded as an integration of the cognitive factors underlying Glass' (1977) and Price's (1982a) model.

The self-appraisal model claims that Type A's, in comparison to Type B's, have a greater need for feedback on perceptions of their task-related abilities (Freedman & Phillips, 1989; Phillips, Freedman, Ivancevich & Matteson, 1990; Strube, 1990). Consequently, when faced with an uncertainty about their ability, Type A's are more likely to engage in adaptive behaviour which is designed to provide them with additional diagnostic information (Phillips et al., 1990; Shalon & Strube, 1988), compared to their Type B counterparts. As shown in Figure 2.2, situational factors (e.g., lack of control, inconsistent feedback or the lack thereof, violation of performance expectations), combine with the desire of Type A's for accurate appraisal, to produce four outcomes, namely behavioural, cognitive, emotional, and physiological reactivity consequences (Strube et al., 1987).

Initially, in the face of uncertainty about an ability, Type As will engage in adaptive

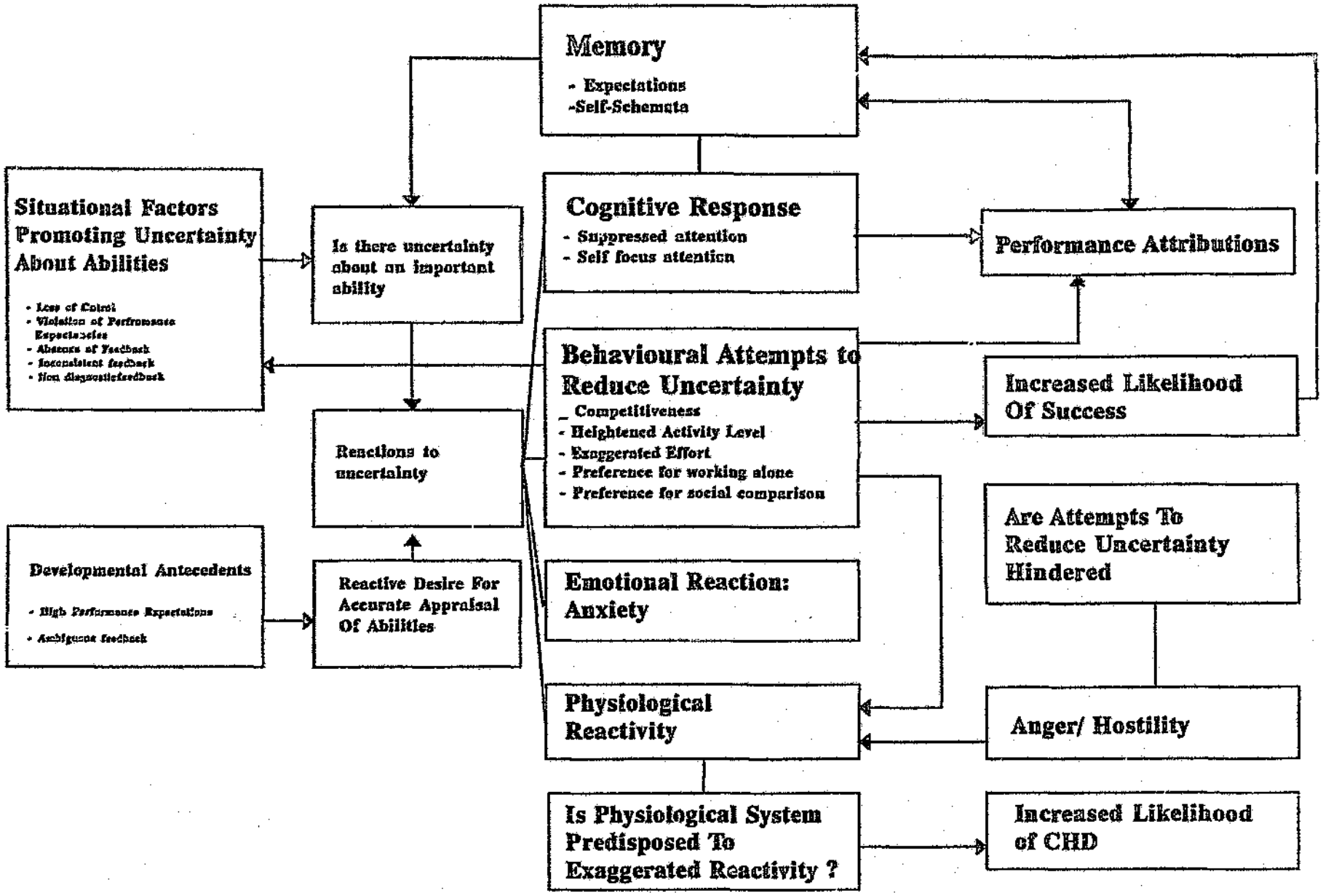


Figure 2.2 Strube's Self Appraisal Model of Type A Behaviour

behaviour designed to provide additional diagnostic feedback (Strube, 1987). The need for additional diagnostic information causes hard-driving and competitive behaviour, as well as a sense of time urgency (Phillips et al., 1991). In the event of reduced ability to alleviate uncertainty, the behavioural expression of anger/hostility is postulated, which, in turn, triggers high levels of physiological reactivity (Strube et al., 1987). Also, through high levels of uncertainty about their abilities, Type A's experience more anxiety in comparison to their Type B counterparts (Shalon & Strube, 1988).

Appraisal of Strube's Self-Appraisal Model

The comprehensiveness of the self-appraisal model, in explaining the causes of Type A behaviour, is empirically supported by the literature (Freedman & Phillips, 1989; Phillips et al., 1990; Smith & Brehm, 1981, Strube & Boland, 1986). Overall, research by Strube and colleagues has demonstrated that Type A's actively search for ability-related information, persist longer at a task in the effort to reduce uncertainty, suspend their efforts to obtain ability information when they do not have the perceived ability, and experience higher levels of anxiety when uncertain about their ability levels (Shalon & Strube, 1988; Strube & Boland, 1986; Strube et al., 1987). Together, this research suggests that Type A's actively construct an environment that assists in gathering information about their abilities (Yuen & Kuiper, 1992).

As shown in Figure 2.1, cognitive factors are important in explaining the acquisition and maintenance of Type A behaviour. In support of this process, Type A investigators have shown memory and attention to play a key role in explaining the acquisition of Type A

behaviour (Cooney & Zeichner, 1985; Furnham, Hillard & Brewin, 1985). However, a criticism of the model is that memory and self-schema are briefly mentioned and no comprehensive explanation for their role in explaining Type A behaviour is provided. Thus, there is no adequate explanation for the way in which the stored elements are organised to explain the acquisition of Type A behaviour (Yuen & Kuiper, 1992). Consequently, future theoretical accounts of the self-appraisal model should attempt to explain these mechanisms to account for a more comprehensive understanding of the cognitive beliefs underlying Type A behaviour (Yuen & Kuiper, 1992).

An important contribution of the self-appraisal model is that it assists in delineating the important conceptual components of Type A behaviour (Yuen & Kuiper, 1992). For example, Strube et al. (1986) found Type A's to view themselves as more time urgent, aggressive, competitive and achievement orientated compared to Type B's. However, the model can be criticised for failing to provide a clear explanation for the underlying need of Type A's to reduce personal uncertainty regarding their abilities (Yuen & Kuiper, 1992). Thus, in Yuen and Kuiper's (1992) estimation, the model fails to integrate the cognitive belief system of Type A's with the self-evaluative tendencies that Strube (1985) defines as central to the model. The task for future research, then, includes the evaluation of this link since the belief system of Type A's may have a maladaptive affect on their level of self-appraisal (Yuen & Kuiper, 1992). In achieving this end, a more comprehensive evaluation of the cognitive mechanisms underlying Type A behaviour may be achieved in the future (Yuen & Kuiper, 1992).

Summary of the Models and Future Developments

The three models described in the present chapter have attempted to explain the acquisition and maintenance of Type A behaviour. As discussed, the models have contributed to an improved understanding of the psychological causes of Type A behaviour (Matthews, 1982). More importantly, however, is the identification of the conceptual components of Type A behaviour by the models.

A common theme of the three models is the identification of achievement striving, impatience, anger, aggression, hostility and competitiveness as the conceptual components of Type A behaviour (Glass, 1977; Price, 1982a; Strube, 1985). However, a criticism of the models (to be expanded on in Chapter 4), is that they have failed to provide a conceptual definition of the behavioural components comprising Type A behaviour. The psychological literature has shown anger, hostility, and competitiveness to be multifaceted constructs (Kohn, 1986; Siegel, 1984; Spielberger et al., 1983) that need to be refined in order to determine the defining features consistent with the definition of Type A behaviour (Edwards et al., 1990). Although Price (1982a) has attempted to provide definitions of the components within her model, the multifaceted nature of the components has generally been overlooked.

A common element described by the models is the identification of physiological reactivity[9]

[9]To study reactivity, it is important to consider the relevance of a change in the measure of cardiovascular performance between resting and stressful conditions (Cincirpini, 1986). In other words, cardiovascular reactivity (CVR) refers to the difference in blood pressure, heart rate, or other cardiovascular indicators observed between rest periods and the presentation of a stressor (Cincirpini, 1986; Houston, 1983). As such, respondents can be ranked on a continuum of reactivity ranging from large amounts of change between the resting and stressor conditions to very little difference between conditions of rest and stressor presentation (Cincirpini, 1986). The range of reactivity indices include changes in ST segment depression of the ECG, rate-pressure conduct, pulse transit time, cardiac output, peripheral resistance, left ventricular ejection time changes in catecholamines, and cortisol (Harbin, 1989; Williams, 1989).

as the mediating mechanism between Type A behaviour and physical health outcomes (Contrada et al., 1985). For example, as discussed under the control model, the choice by Type A's to retain (rather than delegate control), is a predetermining factor that increases the frequency and duration of their engagement in active coping processes (Smith & Rhodewalt, 1986). Active coping is regarded as the contributing factor to enhanced physiological reactivity (Contrada et al., 1982; Pittner, Houston, & Spiridigliozzi, 1983). Consequently, a direct link between need for control and physiological reactivity has been reported (Glass, 1989; Glass & Contrada, 1984; Smith & Rhodewalt, 1986). Price (1982a) argues that physiological reactivity is activated through environmental, behavioural and cognitive stimuli underlying the belief system of Type A's that promote the development of physical illness. Similarly, the self-appraisal model (Strube et al., 1987) predicts that challenges facing the individual may result in uncertainty within Type A's, which subsequently leads to heightened physiological arousal and physical illness outcomes (Strube, 1987).

The importance of physiological reactivity to the models is that it provides an important conceptual link between anger, hostility, competitiveness and physical health outcomes. However, the models can be criticised for providing an inadequate explanation for the pathophysiological mechanisms that contribute to CHD (Contrada et al., 1985; Smith & Anderson, 1986; Smith & Rhodewalt, 1986) and physical symptoms complaints. For example, the control and self-appraisal models assume that situational factors influence physiological reactivity by an increase in effort or motivation (Contrada et al., 1985; Suls & Smith, 1989; Smith & Anderson, 1986). This is a general limitation of the models since the precise nature of the linkages between Type A behaviour, effort, motivation and physiological response has not been empirically validated (Yuen & Kuiper, 1992; Wright, 1988), nor conceptually

explained.

In addition, the models are overly concerned with the mechanisms that translate into CHD, presumably by neuroendocrine processes (Smith & Rhodewalt, 1986; Williams, 1984), but ignore other equally important health and work related consequences. Thus, there is a future need for the models to provide a more refined explanation of the mechanisms that cause physical illness[10], and to broaden the predictive utility of Type A behaviour beyond health outcomes. This is an important point to be expanded on in Chapter 3, where the consequences of Type A behaviour are discussed more fully.

Van Egeren (1990) maintains that three questions remain unanswered by the theories discussed in the present chapter. First, Van Egeren (1990) criticises the models for failing to explain why Type A's do not modify their faulty success goals. Second, Van Egeren (1990) criticises the theoretical models for avoiding an explanation for why so many individuals, classified as Type A, try to control their surroundings. Third, Van Egeren (1990) criticises the models for failing to explain why Type A's adopt, what is potentially unrealistic and ambiguous goals (Van Egeren, 1990). It is important that the models address these issues in attempting to understand the psychological causes of Type A behaviour. For example, Van Egeren (1990) contends that Type A behaviour is a paradox since it is so unsatisfying in its' rewards, yet so persistent in modern day society. Yet, no conceptual explanation has been

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[10] Williams (1984) attempts to explain these mechanisms more comprehensively through the development of the biopsychosocial model. The key aspect of the model is that anger, hostility and aggression affect health and disease via the brain's transduction of situational events that elicited these components to produce a set of motor messages that are sent to the body (Williams, 1984). Three motor effector systems are described; namely, the somatomotor nerves, autonomic nerves and neuroendocrine system (Williams, 1984). The action of these mechanisms, over time, is regarded as the contributing mechanism to physical symptoms complaints and CHD (Dienstbier, 1989; Everly, 1989; Williams, 1989). The importance of the model is that it provides a link between the behavioural expression of anger, hostility and aggression and physiological processes (Williams, 1984, 1989). This explanation will be considered in discussing the findings in Chapter 8.

provided for this apparent contradiction.

Van Egeren (1990) maintains that Type A behaviour is persistent since the nature of the construct produces multiple consequences, some of which are rewarding, and others which have health consequences. The adoption of a global conceptualisation is a possible explanation for the contradictory nature of the consequences (Edwards & Baglioni, 1991; Ganster et al., 1991). Therefore, a future consideration of the models is to delineate positive and negative outcomes of the cognitive beliefs of Type A behaviour (see Chapter 4).

Conclusion

Throughout the present chapter, emphasis has been placed on describing the self-evaluations of persons exhibiting Type A behaviour. A brief overview of three key models in the Type A literature was discussed. In summarising the models, the need for control model asserts that Type A behaviour is a response style to environmental demands which are perceived as threatening to the individual's sense of perceived control (Clark & Miller, 1990; Glass, 1989). Price (1982a) contends that the behavioural expression of the components can be explained by the belief that one needs to prove oneself. Conversely, Strube (1985, 1987) maintains that the desire for accurate self-appraisal is the psychological explanation for the behavioural expression of the components of Type A behaviour.

A common theme of the models is the focus on the way in which Type A's evaluate themselves. Such an approach has assisted in attaining a more comprehensive understanding of the cognitive processes that underlie Type A behaviour; a gap that Friedman and Rosenman

(1974) were unable to fill because of their grounding outside psychological theory. A further contribution of the models is the delineation of achievement orientation, time urgency, anger, hostility and competitiveness as conceptual components of Type A behaviour. As noted in the present chapter, the models have assisted towards a more comprehensive evaluation of the components underlying the definition of Type A behaviour. The important issue is to examine the predictive utility of Type A behaviour, which is discussed more fully in Chapter 3.

CHAPTER 3

THE CONSEQUENCES OF TYPE A BEHAVIOUR

In Chapter 2, three psychological theories that have attempted to explain the acquisition of Type A behaviour were discussed and appraised. A review of the models described in Chapter 2 pointed to a number of consequences that arise through the behavioural expression of the components. Of special note is the relationship between Type A behaviour and medical and psychological outcomes. The aim of the present chapter is to discuss more fully the consequences of Type A behaviour.

Traditionally, and consistent with the models discussed in Chapter 2, global Type A behaviour has been examined as a possible risk factor of CHD (Booth-Kewley & Friedman, 1987; Dimsdale, 1988; Fletcher, 1990). However, more recent work has extended beyond medical applications of the construct to include other research areas of importance to psychology (Rhodewalt & Strube, 1985; Stout & Bloom, 1982; Strube, 1989; Woods & Burns, 1984). The extension of the research findings into behavioural, work related, and other health domains has attempted to address the call for an extension of the broader implications of the construct (Cooper et al., 1981; Hansson et al., 1983; Matteson & Ivancevich, 1980; Rhodewalt, 1984; Rime, Ucros, Bestgen & Jeanjean, 1990; Wrzesniewski, Wonicki & Turlejski, 1988). Thus, in describing the domain of the findings on Type A behaviour, cognizance needs to be given to health, behavioural and work related outcomes to appreciate the predictive utility of the construct (Jamal, 1990; Suls & Marco, 1990; Wrzesniewski et al., 1988).

The present chapter is composed of four sections. First, the link between Type A behaviour

and CHD is examined. Second, the domain of Type A research involving work, family and health related variables is discussed. Third, the inconsistency in Type A behaviour findings in relation to health, interpersonal, and work related outcomes is discussed. Finally, in reply to the inconsistent reporting in the Type A literature, relevant literature is presented in suggesting that Type A behaviour is best conceptualised as a multidimensional construct. This forms an important rationale for the development of a model in Chapter 4. Specifically, a global conceptualisation is unable to discern the independent contribution of the components to the outcome examined (Carver, 1989).

Coronary Heart Disease as an Outcome of Type A Behaviour

In most industrialised countries, including South Africa, cardiovascular-related diseases are the major cause of death (Abbott & Peters, 1988; Wynam, 1978). The economic impact attributed to heart and vascular diseases in South Africa is logarithmic (Strumpfer, 1986). Nor eless, in spite of the advances in medicine and cardiology, clinical CHD is not fully understood (Fletcher, 1990). Typically, the best combination of the classic risk factors is unable to predict the incidence of new cases of CHD (Fletcher, 1990; Jenkins, 1978). In searching for possible causes of CHD, the role of emotion and behavioural factors as predictors of CHD has been addressed in recent years (Abbott & Peters, 1988). As discussed in Chapter 1, considerable importance has been attached to Type A behaviour as a risk factor of CHD (Cooper et al., 1981). However, in more recent years, the importance of Type A behaviour to medical and psychological research has broadened to include work related and behavioural outcomes.

Western Collaborative Group Study. Type A behaviour, assessed prospectively by the Structured Interview (SI), was first implicated as a possible risk factor for CHD in the Western Collaborative Group Study (WCGS, Rosenman et al., 1964; Rosenman, Brand, Schultz & Friedman, 1976). A total of 3154 men, between the ages of 39 and 59, were recruited from among the employees of 10 Californian business firms (Rosenman et al., 1964). At the baseline examination, major risk variables for CHD were assessed concurrently; including smoking habits, serum lipids and lipoprotein fractions, diastolic blood pressure, systolic blood pressure, total serum cholesterol and fasting serum triglycerides (Rosenman et al., 1964). These measures were recorded annually until completion of the study, eight and-a-half-years later (Rosenman et al., 1976). Type A behaviour was assessed again 12-20 months after intake in a substantial subset of participants (Rosenman et al., 1976).

The WCGS study was double blind: Interviewers making Type A assessments had no knowledge of the health status of participants. Furthermore, they had no prior knowledge of the men's Type A behaviour rating (Rosenman et al., 1975). Subsequent morbidity and mortality follow-up through 1969, identified 257 men who had developed CHD (Rosenman et al., 1975). This translated into a crude annual incident rate of 9,6 out of every 1000 subjects at risk. Of the 257 participants, 135 (53%) men were given a diagnosis of symptomatic myocardial infarction (MI), of which 26 died suddenly or within 24 hours of the onset of symptoms (Rosenman et al., 1975). A diagnosis of silent myocardial infarction was made in 71 respondents when the electrocardiograph taken at an annual examination showed evidence of a MI that had gone unrecognised (Rosenman et al., 1975). Moreover, classic angina pectoris occurred in 51 respondents (Rosenman et al., 1975). Final results of the 8,5 year follow-up revealed that Type A's were more than twice as likely as their Type B

counterparts to develop CHD (Brand, 1978; Rosenman et al., 1964; Rosenman et al., 1975). These findings were recorded even after multivariate adjustment for the traditional risk factors including smoking habits, systolic and diastolic blood pressure, serum total cholesterol, fasting serum triglycerides and serum B/a-lipoprotein (Brand, 1978).

The results of the WCGS thus offered the first strong epidemiological evidence that global Type A behaviour is a significant CHD risk factor (Ragland & Brand, 1988b). Furthermore, at autopsy, and in a series of studies using coronary angiography as the criterion in the WCGS, the SI was found to be significantly related to CAD (Frank, Heller, Kornfeld, Sporn & Weiss, 1978; Williams et al., 1980).

Framingham Heart Study. Based on the encouraging findings of the WCGS, a number of epidemiological studies followed. Of particular note, major support for the role of Type A behaviour as a coronary risk factor was recorded by the Framingham Heart Study (Haynes, Feinleib, Levine, Scotch & Kannel, 1978; Haynes, Feinleib & Kannel, 1980). The population examined in the Framingham Heart Study consisted of women and men, in both white collar and blue collar jobs (Haynes et al., 1978; Haynes & Feinleib, 1982). All participants in the study had undergone a medical examination to ensure that no previous cardiovascular problems would compromise the results (Haynes et al., 1978). The study was an eight-year follow up period that considered all cases of angina pectoris, uncomplicated angina, myocardial infarction[11] and coronary insufficiency (Haynes et al., 1978). Multivariate analyses of the eight-year incidence data showed that Type A behaviour, as measured by the FTAS,

[11] Myocardial infarction is commonly referred to as damage to the myocardium (the middle of the three layers that form the wall of the heart). Simply put, myocardial infarction is a synonym for damage to the cell muscles of the heart, and usually happens in the left ventricle. The only way in which healing can take place is through the process of scar tissue formation (Gordon & Gibbons, 1991; Oxford Concise Medical Dictionary).

was an independent predictor of CHD and myocardial infarction in men between the ages of 45-64 years and of CHD and angina pectoris in women of the same age range (Haynes et al., 1978). Subsidiary multivariate analyses conducted two years later, showed that the significant effects of Type A behaviour were restricted to men in white collar positions, and were comparatively strong in housewives and working women (Haynes et al., 1980).

Since these first major studies, a plethora of retrospective and prospective epidemiological research has confirmed the link between global Type A behaviour and clinical CHD (Carver, Coleman & Glass, 1976; Jenkins, 1976; Jenkins, Zyganski & Rosenman, 1976; Keegan, Sinha, Merriman & Shipley, 1979; Shekelle, Schoenberger & Stamler, 1976; Zyganski & Jenkins, 1970) and severity of underlying atherosclerosis[12] (Frank, Heller, Kornfeld, Sporn & Weiss, 1978; Weidner & Matthews, 1978). By the late 1970's, the empirical support linking Type A behaviour to CHD was sufficiently compelling to arouse approbation from the National Heart, Lung and Blood Institute of the USA, who responded by inaugurating two major conferences (Cooper et al., 1981).

The first conference, in June (1977), reviewed Type A behaviour in association with CHD, assessment procedures available at the time, physiological mechanisms underlying the behaviour pattern, behavioural etiology and cultural influences and intervention strategies (Dembroski et al., 1978). The second conference, in December (1978), assembled a distinguished panel of experts who, after evaluating the evidence, concluded that Type A behaviour is a significant risk factor of CHD (Cooper et al., 1981). Of primary significance

[12] Atherosclerosis is commonly known as the disease of the arteries in which fatty plaques are found to develop on the inner walls of the blood vessels, with the eventual obstruction of blood flow (Oxford Concise Medical Dictionary).

was the formal recognition by the medical field of a behavioural pattern as a risk factor for CHD (Friedman, 1989). In concluding their findings, the Review Panel noted three future research directions for the field of Type A behaviour (Cooper et al., 1981).

First, the panel identified the need for the development of Type A measuring instruments that operationalised the conceptual components of Type A behaviour (Cooper et al., 1981). A second area outlined for future consideration was the need to examine and refine the understanding of the physiological mechanisms that contributed to physical health prediction[13] (Cooper et al., 1981). This recommendation is supported by studies that have found Type A's to respond with enhanced, sympathetically mediated physiological reactivity to stressors in the environment (Krantz & Manuck, 1984; Smith, Allred, Morrison & Carlson, 1989).

When aroused, Type A's have been found to demonstrate significantly greater elevations in blood pressure (Abbott, Sutherland & Watt, 1987; Glass & Contrada, 1984; Goldband, 1980; Houston, 1983; Jorgensen & Houston, 1981; Manuck, Craft & Gold, 1978; Matthews, 1982; Scherwitz, Berton & Leventhal, 1978), catecholamine[14] responses (Contrada et al., 1982; Friedman, Byers, Diamant & Rosenman, 1975; Glass et al., 1980; Manuck et al., 1978; Manuck & Garland, 1979; Siegel, 1984; Simpson, Olewine, Jenkins, Ramsey, Zyganski,

[13]The initial step to contracting coronary artery disease is presumed to begin with an injury to the endothelium of the coronary arteries (Williams, 1984). The type of injury that can occur can result from injury through mechanical forces (blood pressure level increase) and biochemical agents (e.g., catecholamines, corticosteroids) which are associated with sympathetic nervous system responses to environmental stressors (Smith et al., 1989). Following this, excessive sympathetic arousal contributes to the clinical manifestations of CHD (Smith et al., 1989) when the state of coronary artery disease has progressed sufficiently (Williams, 1978). Thus, the study of physiological reactivity is important since Type A behaviour may give rise to increased sympathetic arousal which, in turn, is the contributing mechanism to CHD and physical symptoms complaints (Smith & Anderson, 1986).

[14]Catecholamines are a group of physiologically important indicators that act as transmitters in the functioning of the sympathetic and central nervous system (Everly, 1989). These hormones are secreted by the two adrenal medullae that are found at the superior poles of the kidneys. Specifically, the adrenal medullary cells are divided into A-cells, which secrete epinephrine and N-cells that secrete norepinephrine (Everly, 1989).

Thomas & Hames, 1974; Williams et al., 1982) and testosterone secretion (Williams, Lane, Kuhn, Melosh, White & Schonberg, 1982), compared to Type B's. In addition, there is consistent evidence that when confronted by laboratory stressors, challenge or competitive situations, Type A's demonstrate increased cardiovascular and neuroendocrine reactivity (Dembroski, MacDougall, Shields, Petito & Lushene, 1978; Friedman, Byers, Diamond & Rosenman, 1975; Glass, 1977; Glass et al., 1980; MacDougall, Dembroski & Frank, 1981; Matthews et al., 1986) and a lower threshold of sympathetic arousal (Ward, Chesney, Swan & Rosenman, 1986).

Finally, the panel identified the need to extend the domain of Type A studies to the population at large with reference to race, sex, socioeconomic status, age and culture to enhance the generalisability of Type A findings (Cooper et al., 1981).

In summarising the findings reported above, the importance of Type A behaviour to CHD and physiological reactivity has been recognised by the medical and psychological literature. The importance of the construct has extended beyond CHD to include a broader set of applications. Of note, Type A behaviour has been examined as a significant predictor of mental, physical health and work related outcomes. The broadening of the scope of Type A behaviour can be attributed to the contribution of psychological research in extending the domain of investigation beyond the examination of medical outcomes (Price, 1982a; Suls & Marco, 1990 Wrzesniewski, Wonicki & Turlejski, 1988) The section described on the following page recites the various health, work attitudinal and behavioural outcomes that have been examined in association with Type A behaviour.

Behavioural, Health, Social and Work-Related Consequences of Type A Behaviour.

Studies have confirmed that Type A behaviour is a stress engendering interpersonal style (Smith & Rhodewalt, 1986), characterised by high levels of marital stress and poor interpersonal communication (Becker & Byrne, 1984; Haynes et al., 1978; Houston & Kelly, 1987; Keegan, Sinha, Merriman & Shipley, 1979; Kelly & Houston, 1985; Sanders, Smith & Alexander, 1991; Sullaway & Morell, 1990; Suls & Sanders, 1989a). For example, Burke and Weir (1980) found Type A's to be less satisfied with their marriages, compared to Type B's. Burke, Weir and Du Wers (1979) reported that the wives of Type A's reported less marital satisfaction, experienced less emotional and psychological support from their spouses, and reported fewer friendships, compared to Type B spouses. Moreover, Houston and Kelly (1985) found, in a sample of 95 housewives, that they recounted more stressful marital relationships than those wives who exhibited Type B behaviour. A comparable trend is recorded for dating relationships (Becker & Byrne, 1984). When social support networks were examined, Suls, Becker and Mullen (1981) found Type A's to report the same number of friends as Type B's, but Type A's were found to be more self-involved (Suls et al., 1981).

Compared to Type B's, Type A's have also been found to smoke more often (Litz, Payne & Coletti, 1987; Waldron, Zyganski, Shekelle, Jenkins & Tennebaum, 197[illegible] consume more alcohol (Litz et al., 1987; Waldron et al., 1977), are more prone to accidents (Sutherland & Cooper, 1990) and report more physical symptom complaints (Barton, Brautigan, Fogle, Freitas & Hicks, 1982; Hicks & Campbell, 1983; Houston & Kelly, 1987; Jamal, 1985; Lundberg & Paludi, 1985; Matteson & Ivancevich, 1982, Rime, Ucros, Bestgen & Jeanjean, 1989; Stout & Bloom, 1982; Suls & Marco, 1990; Suls & Sanders, 1988), compared to their

T B counterparts. For example, Barton et al. (1982) found, in a student cohort, that Type A's reported more allergies than Type B's. Hicks and Campbell (1982) found Type A's to report more headaches than their Type B counterparts. Woods and Burns (1984) found Type A's to report more physical symptom complaints than Type B's. Rime et al. (1989) examined 1949 male and female adults and found a positive relationship between Type A behaviour and rheumatoid arthritis, asthma, thyroid problems and peptic ulcers.

Further evidence on the predictive utility of Type A behaviour is recorded by studies which have found Type A's to feel more depressed (Abraham, Seligman & Teasdale, 1981; Howard, Cunningham & Rechnitzer, 1976; Sutherland & Cooper, 1991), report lower life satisfaction (Burke & Weir, 1980), feel less satisfied with their jobs (Greenglass, 1987; Howard & Cunningham & Rechnitzer, 1977; Ironson, Brannick, Smith, Gibson & Paul, 1989; Matteson, Ivancevich & Preston, 1982; Matteson, Ivancevich & Smith, 1984; Sutherland & Cooper, 1991) and report a greater propensity to leave the firm (Jamal, 1990), compared to Type B's.

Conversely, Type A's have also been found to report greater job involvement (Burke & Weir, 1980), organisational commitment (Burke & Weir, 1980), attain higher academic success (Ovcharchyn, Johnson & Petzel, 1981; Perry, Kane, Bernesser & Spicker, 1990; Suls, Becker & Mullen, 1981; Waldon et al., 1980), greater scientific excellence (Matthews & Saal, 1978; Matthews, Helmreich, Beane & Lucker, 1980), earn higher occupational status (Mettlin, 1976; Waldron, 1978; Waldron, Zyganski, Shekelle, Jenkins & Tannenbaum, 1977) and produce higher quality and quantity of work performance (Boyd, 1984; Matthews, 1982; Matthews, Helmreich, Beane, & Lucker, 1980; Matteson, Ivancevich & Smith, 1984; Taylor, Locke, Lee

Helmreich, Beane, & Lucker, 1980; Matteson, Ivancevich & Smith, 1984; Taylor, Locke, Lee & Gist, 1984), compared to Type B's.

The overall picture derived from the above findings is that there are positive and negative consequences arising through the behavioural expression of Type A behaviour. The delineation of positive and negative consequences presents a paradox since it suggests that Type A behaviour contributes to greater work success, but at the expense of greater physical and psychological disorders and relationship problems (Van Egeren, 1990).

The Emergence of Inconsistent Findings

Although the presentation of findings described above supports the predictive validity of Type A behaviour in relation to CHD, behavioural, interpersonal, health and work related outcomes, a number of contradictory findings have been reported. The inconsistency in findings has led to conceptual confusion regarding the nature of Type A behaviour as a construct worthy of examination (Conduit, 1992; Dimsdale, 1988; Ragland & Brand, 1988a). On the one hand, some researchers remain optimistic (Ivancevich & Matteson, 1988) about the construct validity of a global measure, while at the other extreme, some researchers (e.g., Conduit, 1992; Ray, 1991) contend that the construct should be abandoned altogether.

The present thesis suggests that it is important to examine the definition of Type A behaviour more closely and operationalise the central components before it is possible to challenge contemporary views on Type A behaviour. But, before addressing this point, the inconsistency in findings is discussed.

Inconsistency in CHD Findings

Since the positive findings of the Western Collaborative Group Study, a host of inconsistent findings between global Type A behaviour and CHD have been reported (Dimsdale, 1988; Dimsdale, Gilbert, Huller & Hackett, 1981; Eaker, Abbott & Kannel, 1989; French Belgian Collaborative Group, 1982: Haynes & Feinleib, 1982; Ragland, 1989; Ragland & Brand, 1988a; Scherwitz et al., 1985; Young, Barboriak, Hoffman & Anderson, 1984). Furthermore, significant prospective studies of persons at high risk for CHD, including the Multiple Risk Factor Intervention Trial (MRFIT; Shekelle et al., 1985), the Multicenter Post Infarction Programme (Case, Heller, Case & Moss, 1985), the Duke University Medical Centre (Williams et al., 1980) and the Aspirin Myocardial Infarction Study (Shekelle, Gale & Norusis, 1985) have failed to corroborate Type A behaviour as an independent CHD risk factor (Byrne, Reinhart & Heaven, 1989). In addition, Eaker and Castelli (1988) present follow-up data on the Framingham Heart Study which denote inconsistency in comparison to previous significant findings.

Booth-Kewley and Friedman (1987) conducted a systematic meta-analysis[15] of 87 published studies to determine the importance of Type A behaviour as a cause of CHD. Results of the meta-analysis recorded that the relation between global Type A behaviour and CHD was modest, at best. A subsequent meta-analyses by Matthews (1988) showed no relation between Type A behaviour and CHD incidence.

[15] Meta-analysis is a popularised statistical technique which performs a quantitative review of research (Fletcher, 1990). It is included as a technique for estimating the combined size of effects together with an analysis of the variables used in previous studies (Fletcher, 1990). As such, the Booth-Kewley and Friedman (1987) meta-analysis appeared to be the first of its kind in the Type A field which makes it a landmark study because of the inconsistency in findings in the field.

The Multiple Risk Factor Intervention Trial. The Multiple Risk Factor Intervention Trial (MRFIT) study is of primary importance, since it was the first prospective study to expose a non-significant relationship between Type A behaviour and CHD (Shekelle et al., 1985). The MRFIT was a randomised primary prevention trial to test the effect of a combined intervention program on mortality from CHD (MRFIT Group, 1982). The program consisted of 12866 men, chosen from a sample pool of 200 000, who had volunteered for a series of three screening examinations in 22 clinics located in 18 cities of the USA (Shekelle et al., 1985).

All participants in the study had to consent to long term follow-up, if assigned to the special care group. Recognising the methodological difficulties apparent in measuring Type A behaviour, MRFIT researchers adopted a number of precautionary steps to minimise complications. The steps included 1) certifying that there should be 75 percent agreement on 100 audits before characterising interviewees as Type A, 2) all central training and approval of the candidates interviewing skills would be dispensed by Dr. Rosenman, 3) transcription of behavioural characteristics would follow tape recorded interviews 4) surveillance over frequency of disagreements between the auditors and the interviewers would be monitored, 5) where there was a major disagreement in assessment between the interviewer and the auditor, Dr. Rosenman was to adjudicate the SI assessment and 6) Dr. Rosenman was to make global assessments of a probability sample to be used for the study (Shekelle et al., 1985).

A subset of MRFIT participants ($\underline{N}$ = 3110) was chosen for follow-up study and observed through the SI for behavioural characteristics that would predict CHD (Shekelle et al., 1985). An eight year follow-up period revealed that 193 individuals from the initial item pool of

3110 interviewed had developed clinical signs of CHD (Shekelle et al., 1985). This group was matched with the 384 MRFIT men who had remained free of coronary occlusion. Final results revealed no statistical relationship between CHD and SI defined global Type A behaviour (Shekelle et al., 1985). The findings revealed that the risk factor status of Type A behaviour is contradictory and in need of refinement (Shekelle et al., 1985).

Case et al. (1985) state that the contradictory findings question the predictive validity of Type A behaviour in relation to CHD. Traditionally, the bulk of empirical findings has rested on a global conceptualisation of Type A behaviour (Dimsdale, 1988). However, more recent research has observed a need to refine the construct validity of Type A behaviour (Byrne, Rosenman, Schiller & Chesney, 1985; Edwards & Baglioni., 1991; Edwards et al., 1990a; Shekelle et al., 1985). Angell (1985) contends that after three decades of research and speculation, the conceptual and empirical link between psychological factors and CHD is tenuous. Clearly, if the Type A construct is to survive as a prevailing cause of CHD and physical health, it is important to clarify the definition and operationalisation of the construct (Edwards et al., 1990).

A major criterion to be satisfied when establishing any risk factor for CHD is the consistency of association with the disease endpoint (Ragland, 1989). The inconsistency in Type A research questions the predictive validity of global Type A behaviour (Dimsdale, 1988; Ragland & Brand, 1988; Ray, 1991; Rhodewalt & Fairfield, 1990). Haynes and Matthews (1988) contend that the publication of negative findings has created a "turning point" in the acceptance of global Type A behaviour as a predictor of health related outcomes.

On closer examination of the link between Type A behaviour and physiological reactivity, contradictory findings are also prevalent. That is, a number of more recent findings have found no physiological differences between Type A and Type B behaviour (Corse et al., 1982; Lundberg, 1983; Myrtek & Greenlee, 1984; Zurawski & Houston, 1983).

Inconsistencies in non-CHD consequences of Type A behaviour. The inconsistency in pathophysiological differences between Type A's and B's, suggests a reconceptualisation of global Type A behaviour (Houston, 1987, Keltikangas-Jarvinen & Raikkonen, 1989). In responding to this suggestion, Smith and Rhodewalt (1986) note that not all of the components of Type A behaviour may be equally related to physiological arousal. For example, impatience (Jennings & Choi, 1981; Ohman, Nordy & Sveback, 1989), anger (Appel et al., 1983), aggressive-hostility (Dembroski, MacDougall, Shields, Petitto, & Lushene, 1978; Diamond et al., 1984; Engebretson, Matthews & Scheier, 1989; Houston, 1986; Steptoe, Melville & Ross, 1984) and competitiveness (Dembroski et al., 1978, Glass et al., 1980) have been related to greater blood pressure and heart rate reactivity increases, compared to Type B's. The possibility that the independent components of Type A behaviour are more predictive of physiological reactivity opens up new avenues of conceptualising Type A behaviour (Wright, 1988; Wright et al., 1986). It remains, however for future Type A researchers to explain this proposition more fully.

In contrast to previous significant relationships, Type A behaviour has been non-significantly related to marital adjustment (Baker, Haynes & Feinleib, 1983). Also, non-significant relationships have been reported between global Type A behaviour and physical symptoms complaints (Burke & Weir, 1980; Eagleston et al., 1986; Kelly & Houston, 1985; Lee et al.,

1990; Langeldukke, Gailston & Tennant, 1987; Mayes et al., 1984; Somes, Garrity & Marx, 1981) as well as depression (Caplan & Jones, 1975; Chesney et al., 1981; Ganster et al., 1991; Strube et al., 1985) and life satisfaction (Ganster et al., 1991).

A similar inconsistent trend is reported for work-related outcomes. Lee, Earley and Hanson (1988) reported a non-significant relationship between Type A behaviour and performance excellence in a sample of 191 managers. Jamal (1985) reported Type A behaviour to be nonsignificantly related to quantitative performance and inversely associated with quality of performance in a sample of white-collar workers. Furthermore, Matteson, Ivancevich and Smith (1984) found that there was no significant relationship between Type A behaviour and three sales performance measures in a sample of 355 life insurance agents (i.e., policy amount, total policies sold and premium income). Lee and Gillen (1989) confirmed these inconsistent findings by reporting a non-significant relationship between Type A behaviour and both quantitative and qualitative measures of sales performance in a sample of 83 sales representatives.

The relationship between Type A behaviour and job satisfaction is reported to be equally unclear. For example, some studies have reported negative relationships (Dearborn & Hastings, 1987) and others have reported non-significant relationships between Type A behaviour and job satisfaction (Burke & Weir, 1980; Frost & Wilson, 1983; Greenglass, 1987; Howard, Cunningham & Rechnitzer, 1977; Jamal, 1990; Matteson, Ivancevich & Smith, 1984), once again questioning the predictive utility of a global conceptualisation of Type A behaviour. Similarly, in relation to other work attitudinal measure, non-significant findings have been reported between global Type A behaviour and job involvement (Jamal, 1990),

organisational commitment (Jamal, 1990) and propensity to leave the organisation (Burke, 1988).

In reviewing the inconsistency of findings discussed, it is clear that the construct of Type A behaviour is in need of refinement.

Possible Explanations for Inconsistent Findings

Williams (1984) notes that comparable with the delineation of toxic components of total serum cholesterol (LDL fraction) and non-toxic components (HDL fraction), Type A behaviour may exhibit corresponding facets (Dembroski & Costa, 1987; Williams, 1984). It may be that the anger (Siegel, 1984), aggressive-hostility (Engebretson & Matthews, 1992; Siegman, Dembroski & Ringel, 1987) and competitiveness (Van Egeren, 1979a, 1979b) represent the 'LDL' of Type A behaviour (Dembroski & Williams, 1989; Rosenman, 1989; Wright, 1988), while hard-driving and target-setting behaviour may compare with the 'HDL' of Type A behaviour (Cooper & Taylor, 1988; Friedman, Hall & Harris, 1985; Manuck, Morrison, Bellack & Polefrone, 1985; Smith & Houston, 1986). Williams (1984) remarks that there are some parallels with this focus and what the biochemists have done: to purify and refine which components of the larger construct are important predictors of health. The presence of both 'toxic' and 'nontoxic' components of Type A behaviour could explain why some studies have found no relationship between Type A behaviour and CHD, physiological reactivity, behavioural and work related outcomes (Dembroski & Williams, 1989). If these studies are focusing on the hard-driving and job involved characteristic, rather than the likely 'toxic' component of anger, hostility and competitiveness, a relation to CHD and physical

health could be missed (Williams, 1984).

Without testing the conceptual components separately, it is impossible to verify which components are associated with the outcome measure (Carver, 1989). The important issue in attempting to move beyond a global Type A behaviour is to assess empirically different attributes contained in both the operational and conceptual definitions of Type A behaviour (Evans, 1991; Wright, 1988). On the whole, conceptual definitions of Type A behaviour have been vague and unclear (Ganster et al., 1991; Matthews, 1982; Ragland, 1989). Friedman (1988) contends that the behavioural characteristics comprising Type A behaviour are ambiguously defined. For example, Jenkins (1978) argues that goal setting behaviour is central to the content domain of Type A behaviour. Yet, the SI provides no scope for the measurement of goal setting (Friedman & Rosenman, 1974; Gastorf, 1980; Price, 1982a). Furthermore, despite the central significance of hostility to the definition of Type A behaviour (Jenkins, 1978), only one item in the JAS measures the reported level of hostility exhibited by the respondent (Jenkins et al., 1971; Zurawski & Houston, 1983). Similarly, the SI fails to operationalise the conceptual components of Type A behaviour (Janisse, Edguer & Dyck, 1986; Jenkins, 1988; Zyganski & Rosenman, 1983). Consequently, the lack of comprehensiveness has been the contributory cause to confusion in the definition of Type A behaviour (Dembroski, 1984; Dimsdale, 1988; Friedman, 1984; Gastorf, Suls & Sanders, 1980; Matthews, Glass, Rosenman & Bortner, 1977; Rosenman, 1986).

Evans (1991) notes that conceptual ambiguity will prevail unless researchers address the differences that exist at present between the conceptualisation and operationalisation of the construct (see Chapter 1). Concurrent with this view, Wright (1988) maintains that there is

a future need for measurement studies that will increase the construct validity of Type A and Type B behaviour beyond current definitions.

The efficacy of a multifaceted conceptualisation of Type A behaviour has been emphasised by experts in the field (Dembroski & Costa, 1987; Wright, 1988). A literature search revealed that there is no recorded Type A measuring instrument that accurately measures the conceptual components of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990; Wright, 1988). This corresponds to Matthews (1982) proposal for a construct approach to Type A behaviour.

Price (1982a) notes that 31 behavioural labels have been attributed to the conceptual definition of Type A behaviour. But, as described by the models in Chapter 2, it is more accurately noted that the only components to be supported conceptually are anger, aggressive-hostility, impatience, competitive and achievement striving (Edwards et al., 1990; Edwards & Baglioni, 1991; Glass, 1977; Zyganski & Jenkins, 1970; Wright, 1988). Nonetheless, controversy exists in defining the primary components of Type A behaviour (Matthews, 1982). The conceptual confusion is attributed to a vague and non-comprehensive definition of Type A behaviour (Dimsdale, 1988; Wright, 1990). More specifically, researchers are unclear about which of the psychological dimensions are central to Type A health prediction.

The 'toxic' components include anger (Siegel, 1984; Wright, 1988), hostility (Check & Dyck, 1986; Suinn, 1982), impatience-irritability (Ohman et al., 1989; Wright, 1988) and competitiveness (Dembroski et al, 1979; Matthews, Glass, Rosenman & Bortner, 1977; Wardell et al., 1974). Thus, emphasis is placed on separating the components, and examining

their differential effects in order to learn more about their predictive validity (Wright, 1988). The question remains whether a component analysis is more informative and predictive than a global conceptualisation (Rodin & Salovey, 1989).

Conclusion

The purpose of the present chapter was to discuss the consequences of Type A behaviour. Early Type A research reported a positive and significant association between Type A behaviour and CHD. This led to the formal acceptance by the medical community of Type A behaviour as a risk factor of CHD (Cooper et al., 1983). Subsequently, the domain of Type A behaviour research has been extended to include other health consequences, work outcomes, social trends and behavioural predictions. However, no sooner had the Review Panel supported the predictive status of Type A behaviour, than a multitude of inconsistent findings emerged (Dimsdale, 1988; Eaker & Castelli, 1989). From these conflicting findings, Matthews and Haynes (1986) strongly suggest that the utility of Type A behaviour, as a predictor of CHD, be re-evaluated. The inconclusive findings of the relationship between Type A behaviour and CHD has questioned the future of a global construct (Dembroski & Williams, 1989). For example, O'Rourke, Houston, Harris and Snyder (1988) question whether global Type A behaviour has outlived its usefulness.

In reply to this view, present day researchers are inclined to focus on the characteristics that they consider to be most accurate when predicting CHD or health indices and work outcomes. Some researchers have even questioned the need to re-establish the significance of Type A behaviour to medical and organisational research (e.g., Conduit, 1992; Ray, 1991).

The literature suggests that Type A researchers have restricted their focus in adopting a global conceptualisation of Type A behaviour. In reply to the inadequacy of a global measure, more recent studies have considered the importance of the components of Type A behaviour. This is predicated on the need to delineate positive and negative characteristics as independent dimensions; which points to separate outcomes (Lee, 1992). Even with the recent shift in focus to the dimensions of Type A behaviour, careful examination of the literature fails to show consistency between a conceptual and empirical focus to Type A behaviour: The key dimensions initially defined by Friedman and Rosenman are underrepresented in present Type A measuring instruments (see Chapter 1). Consequently, there is a need to operationalise the conceptual components of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990). But, before this can be achieved, it is important to define the conceptual components of Type A behaviour. This forms the basis of the following chapter in developing a multidimensional model of Type A behaviour.

CHAPTER 4

GLOBAL TYPE A BEHAVIOUR REVISITED: COMPONENT ASSESSMENT[16]

In Chapter 3, a review of the studies that have reported on the predictive utility of Type A behaviour was presented. The scope of Type A research was shown to have broadened beyond the traditional focus on CHD, to include psychological and physical health, work related, and behavioural outcomes. A literature review pointed to a general inconsistency in findings between Type A behaviour and health, behavioural, and work related outcomes. In response to the contradictory findings reported, recent literature (e.g., Bluen, Barling & Burns, 1990; Spence, Helmreich & Pred, 1987) supports a multifaceted conceptualisation of Type A behaviour. The identification of positive and negative outcomes has been identified as the contributory cause for the inconsistency in global Type A findings (Lee, 1992).

In noting the equivocal results in the Type A literature, a model of the conceptual components of Type A behaviour is proposed in the present chapter. Although the literature has pointed to the need for such a model (e.g., Matthews, 1982), this has not been addressed. Furthermore, there is no self-report Type A measuring instrument that comprehensively assesses these five dimensions (Edwards & Baglioni, 1991; Edwards et al., 1990a). This shortcoming is largely a consequence of the conceptual confusion surrounding the definition of Type A behaviour (see Chapter 1). Consequently, the aim of the present chapter is to attempt to define the components of Type A behaviour to assist toward the development of a multidimensional Type A measuring instrument in Chapter 6.

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[16]Aspects of the model developed in the present chapter were presented at the Sixth Annual Psychological Congress, Port Elizabeth, 3-5 October 1990. The paper discussed the conceptual ambiguity in defining the Type A construct and stressed the need to differentiate five dimensions, namely achievement striving (AS), impatience-irritability (II), anger, hostility and competitiveness as central to the definition of Type A behaviour (Burns & Bluen, 1990).

In developing the model, two steps were implemented. First, from the appraisal of the models discussed in Chapter 2, five components (ie., AS, II, anger, hostility and competitiveness) were considered for inclusion in the model developed. Second, in an attempt to achieve conceptual integrity (Anastasi, 1988), the AS, II, anger, hostility and competitiveness components were defined in accordance with the psychological literature.

A Bi-dimensional Conceptualisation of Type A Behaviour

Recent research (Barling & Boswell, 1991; Barling & Charbonneau, 1992, Barling, Bluen & Moss, 1990; Bluen, Barling & Burns; 1990; Helmreich, Spence & Pred, 1988; Lee, 1992; Pred, Spence & Helmreich, 1986; Spence, Helmreich & Pred, 1987; Spence, Pred & Helmreich, 1989) has responded to the inconsistency in Type A research findings by adopting a bidimensional conceptualisation of global Type A behaviour. On the basis of psychometric analyses of college students responses to the JAS, a bidimensional model, labelled Impatience-Irritability (II) and Achievement Striving (AS) was developed by Pred et al. (1986) and Spence et al. (1987). Analysis of the factor structures revealed the II dimension to consist of impatience, irritability, anger and hostility, while AS reflected the extent to which persons work hard, set targets and reported levels of personal ambition (Pred et al., 1986; Helmreich et al, 1988). Six studies that have focused on this model are discussed below. All of the results have found II and AS to be differentially related to health and performance outcomes.

Spence et al. (1987) found significant positive correlations between AS and Grade Performance Average (GPA), in a sample of 256 male and 225 female students. Conversely, the association between the II dimension and GPA was non-significant. Of special relevance

to the study, the opposite pattern was recorded for health measures. Specifically, II was significantly related to health problems, whereas the correlation between AS and health was nonsignificant. In a follow-up study, Spence et al. (1989) reaffirmed the AS-performance linkage over time. Assessing semester percentages four sessions later, the AS dimension predicted GPA, whereas the II dimension remained uncorrelated with the follow-up GPA's of the respondents (Spence et al., 1989).

Barling and Charbonneau (1992) replicated the bidimensional conceptualisation of Type A behaviour in a sample of 113 university students. The students performed a five minute proof reading task involving the detection of 103 punctuation, spelling and typographical errors, which yielded a behavioural measure of attention and concentration (Barling & Charbonneau, 1992). The number of errors identified (as opposed to number of words read) by the respondents were gauged as the performance criterion. As predicted, with a partialling out of the effects of II, AS was positively associated with proof-reading performance and GPA, yet not with health. Conversely, controlling for AS and age, II was positively associated with sleep disturbances and headaches, but was unrelated to respiratory infections and digestive problems. Results from the study clearly demonstrated the differential importance of the II and AS dimensions in association with physical symptoms complaints and performance outcomes (Barling & Charbonneau, 1992).

A third study that has contributed to the importance of the II/AS conceptualisation is the research conducted by Helmreich et al. (1988), in a sample of 118 male academic social psychologists. Upon reanalysis of Matthews et al.'s (1977) data, Helmreich et al. (1988) found AS to be significantly related to academic performance (i.e. number of publications and

citations). On the other hand, independent assessment of the II component found it to be uncorrelated with the achievement criteria (Helmreich et al., 1988).

Barling et al. (1990) examined the differential importance of the II and AS dimensions in a group of medical practitioners and specialists, selected from the National Medical Register in South Africa, and their wives. Medical practitioners were chosen as the preferred sample since their profession was known to be characterised by high incidence of stress (Barling et al., 1990). Barling et al. (1990) found that husbands' II was significantly associated with their own and their spouse's marital dissatisfaction. Furthermore, wives' self-reports of marital dissatisfaction were significantly related to their perceptions of their husbands' II and AS, an avenue not explored by previous studies. The importance of a multidimensional conceptualisation of Type A behaviour was stressed since the correlations reported between the husbands' global Type A behaviour and either his wife's or his own marital dissatisfaction was non-significant (Barling et al., 1990). Thus, by separating the components (AS and II), more accurate results were achieved than the findings attributed to a global index.

Barling and Boswell (1991) supported the adoption of a bidimensional model of Type A behaviour in a sample of 161 Canadian armed forces recruits. Their findings confirmed their predictions that AS and II would be differentially related to health and performance. Specifically, AS was positively related to performance but not with health, whereas II was found to be directly related to physical health but not performance.

Bluen et al. (1990) extended the II and AS conceptualisation of Type A behaviour to the industrial setting by testing a sample of 114 insurance salespersons. After statistically

controlling for age, sex, and II. AS was significantly related to the number of insurance policies sold and the reported level of job satisfaction by the salespeople, but was unrelated to depression. Conversely, after controlling for age, sex and AS, II was positively associated with depression, but was unrelated to the number of policies sold. Also, a statistically significant negative association between II and job satisfaction was found (Bluen et al., 1990).

In an attempt to predict subsequent performance, a follow-up study was conducted for the period 1 January 1989-31 December 1989 (Bluen & Burns, 1990). During this period, additional performance figures comprising the number of policies sold, total sales revenue and commission earned were collected (Bluen & Burns, 1990). These three measures were standardised to formulate a summary measure since the high intercorrelations suggested performance index redundancy. The inclusion of additional sales figures was consistent with previous indexes recorded in the life insurance setting (Barling & Beattie, 1983; Matteson et al., 1984). After controlling statistically for II, AS predicted subsequent sales performance. Conversely, after controlling for tenure and AS, II did not contribute significantly to the variance in sales performance (Bluen & Burns, 1990). Once again, these findings contributed to the growing body of literature supporting the dichotomous derivatives of Type A behaviour.

The results of the above studies have assisted toward a more refined conceptualisation of the global Type A construct. Principally, the differential correlates infer that it may be possible to simultaneously reduce those components of Type A behaviour that have negative outcomes, while enhancing others that have positive consequences (Helmreich et al., 1988). Consequently, the 'baby' does not get thrown out with the 'bathwater' (Powell 1987; Wright, 1988; Yarnold & Bryant, 1988). There are, however, a number of limitations to be noted

from the studies investigating II and AS.

Critique of the Bi-dimensional Model

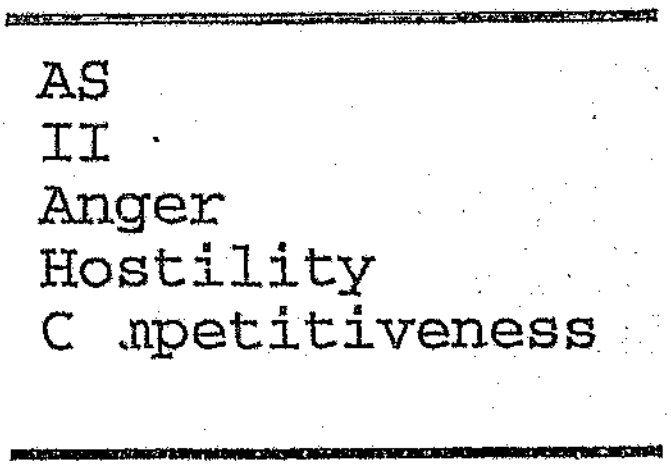
Spence et al. (1987) described Type A behaviour in terms of two dimensions (AS and II). The bi-dimensional model is not comprehensive because it only accounts for two of the five components of Type A behaviour discussed in Chapter 2. Specifically, items that measure anger, hostility and competitiveness are largely excluded from the bidimensional model, which limits the focus of examination to AS and II. Paradoxically, researchers acknowledge the central significance of anger, hostility and competitiveness to health prediction, but they continue to employ popularised Type A measuring instruments that fail to operationalise these components (Evans, 1990; Yarnold & Bryant, 1988). Spence et al. (1987) reported on the importance of these three dimensions, but attributed the omission of anger, hostility and competitiveness items to inadequate representation in the JAS. In fact, Spence et al. (1987) even went so far as to include an independent measure of competitiveness in their study because the factor analysis they employed in an earlier study (Pred et al., 1986), had failed to reveal an independent competitiveness component. Consistent with this view, the JAS fails to operationalise anger, aggressive-hostility and competitive components (Begley & Boyd, 1985; Matthews, 1982). Consequently, the JAS does not accurately measure all of the conceptual components of Type A behaviour (Begley & Boyd, 1985; Boyd & Begley, 1987; Matthews, 1982).

Bluen et al. (1990) were the first to demonstrate the full implications of a bi-dimensional conceptualisation of Type A behaviour within the industrial setting. However, Bluen et al.

(1990), in adopting a similar methodology to Spence et al. (1987), also failed to measure anger, hostility and competitiveness as components of Type A behaviour. Consequently, research on Type A behaviour as a multifaceted construct is in need of a Type A measuring instrument that operationalises AS, II, anger, hostility and competitiveness (Edwards & Baglioni, 1991; Edwards et al., 1990a).

Recent research suggests that anger, hostility and aggression (the AHA syndrome; Spielberger, Jacobs, Russell & Crane, 1983; Spielberger, Krasner & Solomon, 1987) are better predictors of physical health than a global measure of Type A behaviour (Check & Dyck, 1986; Diamond, 1982; Gentry, 1985; Siegel, 1984; Spielberger et al., 1985). However, the literature points to conceptual ambiguity and confusion in current theoretical interpretations of the AHA syndrome, and in the methods used to operationalise the conceptual components (Spielberger et al., 1985; Yuen & Kuiper, 1991). Consequently, there is a need to distinguish and operationalise the components of AHA that are conceptually consistent with the definition of Type A behaviour (Siegel, 1984; Spence et al., 1987). Specifically, recent research has delineated anger and aggressive-hostility to be the dimensions of AHA that are consistent with the definition of Type A behaviour (Engebretson & Matthews, 1992; Siegman, Dembroski & Ringel, 1987; Williams, 1984). Nonetheless, as mentioned earlier, present self report Type A measuring instruments fail to operationalise these components (Edwards & Baglioni, 1991). The aim of the present chapter is to develop a model of the conceptual components of Type A behaviour. As discussed in Chapter 2, Glass (1977), Price (1982a) and Strube (1985) attempted to provide psychological explanations for the acquisition of Type A behaviour. A key point derived from the models discussed is the identification of achievement orientation, time urgency, anger, hostility and competitiveness, as central characteristics of Type A

behaviour. More recent explanations of these components have found them to be multifaceted (Engebretson & Matthews, 1992; Yuen & Kuiper, 1991). Thus, to secure a more accurate description of the conceptual components of Type A behaviour, it is important to define the psychological meaning of the terms and represent which of the components are consistent with the definition of Type A behaviour.



1 Figure 4.1. A multidimensional model of the components of Type A behaviour

As shown in Figure 4.1, five components are shown to be consistent with the definition of Type A behaviour (see Chapter 2) However, Price (1982a) states that these components have not been defined comprehensively (Price, 1982a). Yet, to attain precise results, an exact understanding of what is meant by AS, II, anger, hostility and competitiveness is needed. Therefore, the section described below will attempt to define these five dimensions more fully in an attempt to achieve conceptual integrity.

Achievement Striving. From the original definition of Type A behaviour, excessive achievement striving is included as a conceptual component (Friedman & Rosenman, 1974). The importance of achievement striving (Carver & Humphries, 1982; Matthews, 1982; Perry,

Kane, Bernesser & Spicker, 1982) was reaffirmed by Friedman and Ulmer (1984, p. 34) in stating that Type A behaviour was "...above all a continuous struggle, an unremitting attempt to accomplish or achieve more and more things."

Helmreich et al. (1988) define achievement striving as the extent to which people take their work seriously and put effort into accomplishing things. In other words, persons' who exhibit enhanced levels of AS focus their hard-driving behaviour on achieving (Price, 1982a). Price (1988) contends that high levels of achievement striving, within Type A's, are probably activated by the need to avoid anxiety and guilt in response to perceptions of failure in attempting to reach perfection standards. Thus, in Price's (1988) view, achievement striving is adopted by Type A's to avoid negative self-appraisal and criticism directed by others (see Chapter 2).

Research reveals that the person's emphasis on task and personal goals, through AS, will tend to intensify effort, enhance performance and reinforce participation (Kohn, 1986; Lee, 1988; Nicholls, 1984a). In support of this view, recent research corroborates the view that Type A behaviour is more rewarding in achievement contexts (Bryant & Yarnold, 1990). As such, Type A's have been found to attain higher academic success (Ovcharchyn et al., 1981; Perry, Kane, Bernesser & Spicker, 1990; Waldon et al., 1980), greater scientific excellence (Matthews & Saal, 1978; Matthews, Helmreich, Beane & Lucker, 1980), earn higher occupational status (Mettlin, 1976; Waldron, 1978; Waldron et al., 1977) and produce higher quality and quantity of work performance (Boyd, 1984; Matthews, 1982; Matthews et al., 1980; Taylor et al., 1984), compared to Type B's. Furthermore, empirical evidence supports the notion that Type A behaviour provides people with a heightened sense of mastery and

personal competence (Grimm & Yarnold, 1985; Sager, 1991).

Extending this view, Type A's have been found to respond to achievement situations with greater effort and persistence to master the situation (Burnham et al., 1975; Carver et al., 1976; Perry et al., 1990; Weidner & Matthews, 1978) and assign higher performance goals for themselves (Grimm & Yarnold, 1984; Snow, 1978; Ward & Eisler, 1987) compared to their Type B counterparts. In addition, Type A's focus more intensely on events that are defined as centrally important and suppress their attention when confronted by peripheral stimuli from the environment (Matthews & Brunson, 1979). Of central significance to the definition of achievement motivation, an interaction exists between the subjective probability of success, and the level of AS exerted by the person (Winefield & Jardine, 1982). Thus, where the motive for success attainment is higher than the motive to avoid failure, Winefield and Jardine (1982) contend that the person will persist longer if the perceived success ratio is high. Following this, Perry et al. (1990) note that those individuals who have a positive psychological orientation toward achievement drive are expected to attain more than those reflecting low levels of achievement drive. In support of this view, AS has been shown to be positively related to performance (Barling & Boswell, 1991; Lee, 1992; Pred et al., 1986; Spence et al., 1987, 1990) and job satisfaction (Bluen et al., 1990).

From the above description of AS and the potential link with work-related outcomes (Barling & Boswell, 1991; Bluen et al., 1990; Spence et al., 1987), the present chapter highlights AS as a central component for inclusion in the model (see Figure 4.1).

Impatience-Irritability. From the original definition of Type A behaviour, impatience-irritability is defined as a key characteristic of Type A behaviour (Bingham & Hailey, 1989; Friedman & Rosenman, 1974; Matthews, 1982; Rosenman, 1978; Yarnold & Grimm, 1982; Wright, 1988). Price (1982a), through her self-esteem model of Type A behaviour (see Chapter 2), defines impatience/irritability as a manifest disapproval or intolerance at being slowed down, delayed, or experiencing incompetence. Price (1982a) attributes impatience/irritability to a lack of acceptance in the way things are, whereby the person loses composure easily when faced with delay, discomfort or opposition (Price, 1982a). Rapid, abrupt, and irritable behaviour are some of the behavioural reactions that are described in association with the need to accomplish more things within the constraints of perceived time pressure (Price, 1982a). As a result, Type A's appear to be chronically fast paced in order to fulfil their ambitions, desires, and commitments (Price, 1982a).

In support of the perceptions of time urgency underlying II, Hughes et al. (1983) reported Type A's to be less inclined to sit still during waiting periods because of the agitation of having to wait for a medical examination. Yarnold and Grimm (1982) and Yarnold and Mueser (1984) found Type A's to complete questionnaires more punctually than their Type B counterparts. Moreover, Bortner and Rosenman (1967) found Type A's to estimate the passage of 5-minutes sooner than Type B's. Glass (1977a) found Type A's to signal the passage of a one-minute interval sooner than Type B's. On discussing this finding, Glass (1977a) attributed the need to overcome time demands as an excessive drive to master events within the person's environment.

In a second study, Glass (1977b) compared Type A's and B's on a task which involved

differential reinforcement of low rates of response (DRL). As part of the reinforcement schedule, subjects were forced to wait during a fixed time interval before responding to a specified cue; whereby a premature response set would reset the t · contingency. Type A's were found to be more time urgent than Type B's and their time urgency appeared to conflict with the slow-r.. onse demands of the DRL (Glass, 1977b). The higher levels of time urgency reported for Type A's led to frustration, impatie.. and diminished performance (Glass, 1977b).

The importance of the above findings is that impatience/irritability is associated with time urgent behaviour that Type A's display (Bingham & Hailey, 1989; Friedman & Rosenman, 1974). That is, overestimating the passage of time can be interpreted as a central feature of the impatience/irritability of Type A behaviour (Landy, Rastegary, Thayer & Colvin, 1991). Supportive of this view, Bingham and Hailey (1989) found Type A's to perform more poorly in response to slow response demands of a task, which was attributed to high levels of impatience/irritability as a result of perceived time urgency.

Also, it is important to recall the importance of II from the studies discussed in association with the bidimensional model of Type A behaviour. Furthermore, II has been found to be related to cardiovascular reactivity (Ohman, Nordby & Sveback, 1989), physical symptoms complaints (Barling & Charbonneau, 1992; Spence et al., 1987), anxiety (Volkmer & Feather, 1991) and depression (Bluen et al., 1990). In sum, an appraisal of the empirical findings discussed above support the inclusion of II within the multidimensional model presented in Figure 4.1 (Glass, 1977b; Price, 1982a).

Competitiveness. Competitiveness is central to the definition of Type A behaviour (Friedman & Rosenman, 1974; Lobel, 1988; Rosenberger & Strube, 1986; Van Egeren, 1979a, 1979b; Van Egeren et al., 1982). This is clearly reflected in Friedman and Rosenman's (1974, p. 95) observation that Type A's are characterised by "the tendency to compete with or challenge other people."

Some individuals eagerly adapt to competitive situations, others withdraw, and others strive for noncompetitive personal goals (Johnson, Maruyam, Johnson & Nelson, 1981; Kohn, 1986; Schmitt, 1981, 1984, 1986). Price (1982b; Price, 1988) argues that Type A's adapt to competitive situations through the need to prove oneself and the fear that good may not prevail (see Chapter 2).

Helmreich and Spence (1978) and Helmreich et al. (1980) describe competitive behaviour as the strive to win when faced with interpersonal situations. This definition suggests that within competitive activities, the reward is "to win" (Riskind & Wilson, 1982; Stockdale, Galejs & Wolins, 1983). Consequently, the reward is perceived to be extrinsic to the activity itself (Deci, Connell & Ryan, 1989). As such, the winning over others is a precursor to attaining a goal (Deutsch, 1973; Griffen-Pierson, 1988; Johnson & Johnson, 1975; Johnson et al., 1981; Kohn, 1986; Taylor, 1989), which is the key characteristic that differentiates competitiveness from achievement striving (Kohn, 1986). In Kohn's (1986) estimation, it is necessary to differentiate between trying to do well (structural competition) and trying to beat others (interpersonal competition; Kohn, 1986). Griffin-Pierson (1988) adopts a similar perspective in suggesting a differentiation between interpersonal competitiveness and goal competitiveness. In more specific terms, goal competitiveness is defined as the desire to excel, and attain a set

goal (vertical focus), whereas interpersonal competitiveness is the desire to win over others (horizontal focus; Griffin-Pierson, 1988).

The value of competitiveness to success determination is not clearly understood in the psychological literature (Griffin-Pierson, 1988). Michaels (1977) advocates that the propensity to dominate a win-lose situation increases effort and enhances performance. Conversely, Cosier and Dalton (1988) maintain that over arousal or defeatism may develop in competitive situations, which reduces the potential of enhanced performance. In treating competitiveness as a multifaceted construct, it is possible to explain the contradictory findings of the relationship between competitiveness and performance (Kohn, 1986). Indeed, the notion of goal competitiveness is not knew (Griffin-Pierson, 1988): A number of studies have [illegible]d competitiveness to be synonymous with goal objectivity (Deutsch, 1949; Doob, 1952; Stockdale, Galejs, & Wolins, 1983). However, over time, goal competitiveness and interpersonal competitiveness have been incorrectly operationalised (Griffin-Pierson, 1988).

In Kohn's (1986) estimation, interpersonal competitiveness creates anxiety, evokes hostility, leads to distrust and detracts from empathy. These factors, in turn, culminate in poor success attribution (Kohn, 1986; Shaver, 1987). Therefore, it is important to reconceptualise the construct validity of competitiveness (Kohn, 1986).

Helmreich, Beane, Lucker and Spence (1978) found, in a sample of 103 academic scientists, that the most citations recorded were for those who exhibited low levels of competitiveness and high levels of personal competence and achievement striving. Helmreich et al. (1988) found competitiveness to be positively correlated with publications and negatively correlated

with citations. Helmreich et al. (1988) explained their results by suggesting that competitive striving can facilitate a higher rate of outputs, but that competitive behaviour is unrelated to quality of outputs.

Matthews et al. (1977) reported on a component analysis performed by Dr. Ray Bortner on a sample of patients who had completed the SI at intake in the WCGS (Rosenman et al., 1964). Results showed competitiveness to be the significant contributing component of Type A behaviour to CHD (Matthews et al., 1977). The isolation of competitive drive added confirmation that it should be independently examined as a conceptual component of Type A behaviour (Matthews et al., 1977). Furthermore, competitiveness has been found to be related to physiological reactivity (Jenning, 1984; Glass et al., 1980; Van Egeren, 1979a, 1979b), thus suggesting a positive relation with physical illness (Dienstbier, 1989).

In summarising the above section, the importance of competitiveness to the definition of Type A behaviour, has been supported in the literature (Glass, 1977; Price, 1982b). However, on closer examination of the psychological theory, it is evident that there is conceptual confusion regarding the meaning of the term (Griffin-Pierson, 1988; Kohn, 1986). Mounting evidence suggests that competitiveness, as a psychological construct, is in need of conceptual clarity (Kohn, 1986). This has further implications on refinement in the way in which competitiveness is measured. The model proposed in Figure 4.1 considers interpersonal competitiveness to be the conceptual component of Type A behaviour, to be included in the present study.

AHA Syndrome

Although a multitude of studies have attempted to demonstrate the health consequences of anger, hostility and aggression (AHA syndrome), ambiguity in the meaning of the terms has compromised consistency in reported findings (Biaggio & Maiuro, 1985; Siegel, 1984; Spielberger et al., 1983; Spielberger, Krasner & London, 1987). In general, Type A researchers have used the terms interchangeably, despite their conceptual distinctions (Spielberger et al., 1983; Yuen & Kuiper, 1991). The focus of the present chapter is to delineate the AHA components that are consistent with the definition of Type A behaviour.

In attempting to level a distinction between the components of AHA, Spielberger and colleagues (e.g., Spielberger et al., 1983) have proposed working definitions of the independent components. Examining their differentiation, anger is more accurately defined as an emotional reaction that consists of feelings that can range between annoyance to fury and rage. Accompanying the emotional feeling, autonomic and facial-skeletal arousal are proposed (Fisher, 1991). This is clearly distinguished from aggression, which implies destructive or punitive behaviour towards other objects or persons, and hostility, which is characterised as an attitudinal parameter of anger that motivates aggressive behaviour (Spielberger et al., 1983; Yuen & Kuiper, 1991).

A criticism of many Type A studies that have attempted to operationalise anger and hostility is that they have failed to define the terms comprehensively (Biaggio & Mauiro, 1985). The work of Siegel (1984) and Spielberger et al. (1983) are informative in suggesting that the anger and aggressive-hostility components of Type A behaviour are the conceptual

components that need tc be operationalised. The identification of aggressive-hostility as a conceptual component of Type A behaviour has been supported by recent studies in the literature (Engebretson & Matthews, 1992; Siegman et al., 1987). Contrary to this view, some studies have misleadingly operationalised other hostility components (e.g., cynical hostility; McCranie, Watkins, Brandsma & Sisson, 1986), that are not consistent with the original definition of Type A behaviour (Engebretson & Matthews, 1992; Siegman et al., 1987). The purpose of the section described below is to provide conceptual and empirical support for the inclusion of anger (Siegel, 1984) and aggressive-hostility (Engebretson & Matthews, 1992; Siegman et al., 1987; Taylor & Cooper, 1988) as conceptual components within the multidimensional model proposed in Figure 4.1.

Anger. Anger is an arousal state consisting of feelings that vary in intensity from mild irritation, or annoyance, to intense fury and rage (Averill, 1982; Riley & Treiber, 1989; Spielberger et al., 1985; Yuen & Kuiper, 1991). Most people report mild to moderate anger on a continuum ranging from several times a week to several times a day (Averill, 1982, 1983; Biaggio, Supplee & Curtis, 1981). Traditionally, anger has been ignored as an independent construct worthy of investigation, but has been subsumed under a general category label of aggression (Biaggio, 1980; Cochrane, 1973; Wolff, 1973). This has led to conceptual ambiguity (Johnson, 1984; Yuen & Kuiper, 1991). Nonetheless, to define the dimension of anger that is consistent with Type A behaviour, necessitates a conceptual understanding of anger and the processes underlying its arousal (Siegel, 1984; Mills, Schneider & Dimsdale, 1989). This is discussed more fully below.

Goldstein, Edelberg, Meier and Davis (1988) maintain that anger is best regarded as an

emotional feeling generated in response to a situation or person one comes into contact with. As such, anger is situation specific and time limited (Fischer, 1991). In order to study the anger component of Type A behaviour, the situational circumstances that antecede and provoke anger need to be outlined (Spielberger et al., 1983; Torestad, 1990). Specifically, angry response can be characterised as the important component of anger within the definition of Type A behaviour (Siegel, 1984). Angry response refers to the propensity of an individual to experience situations as anger provoking and to respond to the situations in angry ways (Spielberger et al., 1985). Fischer (1991) notes that to operationalise anger effectively, it is important to define possible variations as a consequence of different situations. Price (1982a) suggests that Type A's are easily angered through situational antecedents, which points to the importance of angry response as the conceptual component of Type A behaviour.

The feeling of anger is characterised by peripheral autonomic reactions (e.g., cardiovascular, gastrointestinal, muscular tension; Averill, 1982; Feshbach, 1989; Fisher, 1991; Novaco, 1975). This usually results in a flushed face, high body temperature, agitated motor movements or a stiffened, tense posture, blood pressure increase, and quickened heartbeat (Everly, 1989; Feshbach, 1989). Fischer (1991) acknowledges that the involuntary visceral responses relate anger to a state of mind, resulting in bodily effects. The central nervous system monitors the excitatory reaction, which corresponds to the emotional feeling of anger (Ben-Zur & Breznitz, 1991; Spielberger et al., 1983).

Research has linked anger to cardiovascular outcomes (Engebretson et al., 1989; Johnson & Broman, 1987; Smith, Follick & Korr, 1984), depression (Diamond, 1982), hypertension (Diamond, 1982) and health problems (Appel, Holroyd & Gorkin, 1983; Burish & Bradley,

1983; Everly, 1989; Johnson & Broman, 1987). The physiological reaction to high incidents of anger is identified as the contributory mechanism to physical illness (see Chapter 2), which forms a conceptual link between anger and physical illness (Appel et al., 1983).

In support of its' 'toxic' label (Wright, 1988), anger is an important component to be included within the model presented in Figure 4.1. From the discussion above, angry reaction is chosen to be consistent with the definition of anger within Type A behaviour (Spielberger et al., 1983).

Hostility. The definition of hostility is ambiguous (Diamond, 1982). [illegible] Barefoot, Dodge, Peterson and Dahlstrom (1989), hostility is conceptualised as consisting of cognitive, emotional and behavioural facets that make the definition of the construct unclear. A literature review suggests that hostility comprises two components, namely cynical hostility (Barefoot, Dahlstrom & Williams, 1983; McCranie et al., 1986) and aggressive-hostility (Engebretson & Matthews, 1992; Siegman et al., 1987). A multifaceted conceptualisation of hostility assists in a refined understanding of the construct (Ganster et al., 1991), that helps to delineate the hostility component of Type A behaviour (Yuen & Kuiper, 1991).

The type of hostility described in the original definition of Type A behaviour was 'free floating and elicited by interruptions from persons and things in the environment that impede the Type A's progress' (Matthews & Haynes, 1986, p. 939). This definition is contrary to the Cook-Medley definition of hostility that measures basic mistrust in others (Barefoot et al., 1983). Therefore, it is important to note that studies implicating cynical hostility as the hostility component of Type A behaviour, are inaccurate (McCranie et al., 1986; Weidner,

Friend, Picarroto & Mendell, 1989). Rather, aggressive-hostility has been characterised as the conceptual component of Type A behaviour (Dembroski, MacDougall, Costa & Grandits, 1989; Engebretson & Matthews, 1992; Siegman et al., 1987).

Empirical support for the inclusion of aggressive-hostility as a conceptual component of Type A behaviour has been demonstrated through laboratory experiments (e.g., Carver & Glass, 1978; Glass, 1977; Van Egeren, 1979a, 1979b). For example, Strube, Turner, Cerro, Stevens and Hinchey (1984) tested the importance of aggressive-hostility to the definition of Type A behaviour by designing an experiment to compare aggression levels of Type A's and Type B's. Implementing the Buss teacher-learner paradigm, they found that a prior task frustration (the use of fines) led to elevated levels of aggressive-hostility in Type A's, but not for Type B's. Thus, in the absence of an immediate delivery of shock, Type A's did not behave more aggressively. Strube et al. (1984) concluded from their findings that aggressive-hostility is an important conceptual component of Type A behaviour.

Spielberger et al. (1983) expanded on this view to treat anger-out as synonymous with aggressive-hostility. Thus, anger directed outward is conceptualised as a behavioural reaction to anger that is characterised by physical acts such as destroying objects, slamming doors, assaulting others, or expression through insults, extreme use of profanity and criticism. Consistent with this view, the literature reflects that SI hostility has been positively ($p < .05$) related to verbal expression of hostility (anger-out; Engebretson & Matthews, 1992; Musante, MacDougall, Dembroski & Costa, 1989), but was uncorrelated with suspicion, mistrust, guilt and anger expressed inward toward the self (anger-in; Engebretson & Matthews, 1992; Siegman et al., 1987; Williams, 1984). Consistent with this view, Julius, Schneider and Egan

(1985) contend that anger-out (aggressive-hostility) is a central component for inclusion in the definition of Type A behaviour.

In describing the 'toxic' nature of aggressive-hostility, studies have found the outward expression of anger to be associated with greater blood pressure and heart rate reactivity (Dembroski, MacDougall, Shields, Petitto, & Lushene, 1978; Diamond et al., 1984; Engebretson & Matthews, 1992; Engebretson et al., 1989; Ganster et al., 1991; Siegman et al., 1987), CHD (Dembroski et al., 1989; Frank et al., 1978; Koskenvuo et al., 1988; Matthews et al., 1977; Spielberger et al., 1989; Williams, 1989), hypertension (Harburg, Blakelock & Roeper, 1979; Harburg, Erfurt, Chape, Schull & Schork, 1983; Harburg & Hauenstein, 1980), depression (Weekes & Waterhouse, 1991) and physical symptoms complaints (Francis, 1981), which makes aggressive-hostility an important construct to conceptualise and operationalise within the model presented in Figure 4.1.

Conclusion

A literature review on the definition of Type A behaviour has shown the construct to be misunderstood (Glass, 1990; Matthews, 1982). To date, ambiguity prevails regarding the definition of the conceptual components of Type A behaviour. Furthermore, Type A investigators have continued to adopt a global conceptualisation of the construct, in spite of convincing support for positive and negative outcomes of the components, when assessed independently (Dembroski & Costa, 1987; Spence et al., 1987). The present chapter attempted to address the conceptual ambiguity by describing recent studies that have pointed to the importance of reconceptualising Type A behaviour as a multifaceted construct (Barling &

Boswell, 1991; Barling & Charbonneau, 1992; Bluen et al., 1990; Helmreich et al., 1988; Lee, 1992). Spence et al. (1987) have demonstrated that a promising strategy (bidimensional model) for future research is to disentangle the components of Type A behaviour. In reviewing this strategy, the host of studies demonstrated that there are positive (AS), and negative (II) components of Type A behaviour, that need to be conceptualised and operationalised, independently.

As pointed out in the present chapter, the bidimensional model is not without limitations. Specifically, studies adopting a bidimensional conceptualisation (e.g., Bluen et al., 1990; Spence et al., 1987) have been criticised for failing to operationalise anger, hostility and competitiveness as part of the definition of Type A behaviour. Furthermore, although a large body of literature has examined anger, hostility and aggression in relation to health prediction, the definition of these constructs has been vague and unclear (Spielberger et al., 1985; Yuen & Kuiper, 1991). The ambiguity in the definition of terms has resulted in poor conceptual overlap and lack of consistency in predictive relationships (Biaggio & Mauiro, 1985). Thus, a central aim of the present chapter was to delineate which of the AHA and competitiveness components were conceptually consistent with the definition of Type A behaviour.

In achieving this aim, it was necessary to extend beyond the peripheral definitions of AS, II, anger, hostility and competitiveness in the Type A literature and to examine independent psychological research on the meaning of the components and empirical findings. A key feature was to utilise the descriptors advanced by prominent theorists (e.g., Kohn, 1986; Spence et al., 1987; Spielberger et al., 1983) in attempting to refine the understanding of anger, hostility and competitiveness as central to the definition of Type A behaviour (Glass,

1977; Price, 1982a; Strube, 1987).

In concluding the theoretical chapters in the present study, Edwards and Baglioni (1991) note that it remains for the future of the field to design a measuring instrument that evaluates the dimensions (Chapter 6), and upon finding relevant outcomes in association with the components (Chapter 7), develop models to explain the mechanisms involved (Chapter 8). In so doing, better synergy in the conceptualisation of Type A behaviour is possible for the future (Chapter 9).

CHAPTER 5

AIM AND THEORETICAL RATIONALE OF THE THESIS

Global Type A behaviour has been the subject of intense scientific inquiry for the past 30 years (Wright, 1988). However, advances in the predictive utility of a global conceptualisation of the construct has been limited (Ray, 1991). In support of this view, an unprecedented level of inconsistency in Type A findings has been reported in the literature (Dimsdale, 1988; Rime et al., 1989). The disappointing lack of progress has led to critical thought on the future of the field (Evans, 1990).

Refinements in the definition and operationalisation of the components of Type A behaviour are important to address the inconsistency in global findings (Edwards & Baglioni, 1991; Matthews, 1982; Wright, 1988). Of premier significance to this claim are recent theoretical advances on the multidimensionality of Type A behaviour (Dembroski et al., 1985; Edwards & Baglioni, 1991; Edwards et al., 1990; Matthews & Haynes, 1986; Wright, 1988). The adoption of a multifaceted conceptualisation resulted from the observation that a global construct is restrictive in the information it can provide (Carver, 1989). More specifically, the independent contribution of the components to the overall interpretation of the findings cannot be assessed (Carver, 1989; Edwards & Baglioni, 1991; Matthews, 1985). For example, cues of both an hostile and irritable person and of an achievement orientated person are used interchangeably to classify global Type A behaviour (Matthews, 1982, 1985). Thus, the lack of specificity in a global interpretation (Carver, 1989) is exemplified as the major cause of the inconsistent findings reported between global Type A behaviour and the prevalence and incidence of CHD, depression, marital relationships, physical symptom complaints and work

related constructs.

In more recent years, there has been a shift toward examining the components of Type A behaviour, independently (Barling & Charbonneau, 1992; Bluen et al., 1990; Helmreich et al., 1988; Spence et al., 1987). This shift in research strategy has produced encouraging results (Carnelli et al., 1988; Dembroski & Costa, 1987; Lichtenstein, Pedersen, Plomin, deFaire & McClearn, 1989; Ohman et al., 1989; Siegman et al., 1987). The importance of examining the components, independently, derives from empirical evidence which suggests that not all of the Type A components predict health outcomes, but a subset; more commonly referred to as the 'toxic' components (Dembroski & Costa, 1987; Dembroski & Williams, 1989; Matthews & Haynes, 1986; Wright, 1988). A more refined understanding of the 'toxic' components may improve present knowledge of how Type A behaviour leads to disease states, since present Type A measures contain a considerable amount of 'noise', that permeates the coronary 'signal' (Dembroski & Williams, 1989; Friedman, 1989). Confirming this view, the search for the 'toxic' components of Type A behaviour has produced a converging set of findings implicating impatience, anger, aggressive-hostility, and competitiveness as the significant contributing dimensions to health prediction (Dembroski et al., 1978; MacDougall et al., 1985; Matthews et al., 1977; Wright, 1988).

The differential relationships of the II and AS components of Type A behaviour with health and work outcomes, respectively, has been empirically demonstrated in a number of recent research studies (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Barling et al., 1990, Bluen et al., 1990; Bluen et al., 1991; Helmreich et al., 1988; Pred et al., 1986; Spence et al., 1987; Spence et al., 1990). However, these studies are criticised for their restricted

focus on a bidimensional model of Type A behaviour and failing to operationalise the anger, hostility and competitive components, independently, as part of a multidimensional model.

The omission of these conceptual components is attributed to the failure by self-report Type A measuring instruments to operationalise the anger, aggressive-hostility and competitive components of Type A behaviour (Edwards & Baglioni, 1991; Matthews, 1982; Spence et al., 1987). Of special note is the JAS, which has been criticised for omitting anger and hostility items (Matthews, 1982; Yarnold & Bryant, 1988). Furthermore, the association between the SI and the JAS has been reported to be modest (Matthews, 1982). This suggests that the two most publicised measuring instruments of Type A behaviour are not consistent in the operationalisation of the components of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990a; Matthews, 1982; O'Rourke, Houston, Harris & Snyder, 1988). Indeed, there appears to be inconsistency in both the conceptual and operational definitions of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990; Wright, 1988).

Despite the resurgence of recent research on the components of Type A behaviour, one area remains neglected, namely, the development of a self-report Type A measuring instrument that assesses AS, II, anger, hostility and competitiveness, independently (Edwards & Baglioni, 1991; Edwards et al., 1990). The failure to measure the conceptual components of Type A behaviour is a serious omission since AS, II, anger, hostility and competitiveness were originally characterised as critical dimensions for inclusion (Glass, 1977a; Price, 1982a; Strube, 1987). The aim of this thesis, then, is to develop a model of the components of Type A behaviour that is consistent with the conceptual definition, and to test it empirically. Because a model has not been proposed that independently examines the components of Type

A behaviour, there is no comprehensive and psychometrically valid Type A measuring instrument (Edwards & Baglioni, 1991; Edwards et al., 1990). Therefore, before the Type A model can be tested, a suitable scale of the components of Type A behaviour needs to be compiled (Edwards & Baglioni, 1991; Wright, 1988).

The first empirical study of the thesis, then, will be aimed at developing a Multidimensional Type A Behaviour Scale (MTABS). In constructing the MTABS, items from previous scales that appear to operationalise the independent components described in the model developed in Chapter 4 will be used. The second empirical study in the thesis will be aimed at developing and empirically testing a model of the differential relations of the Type A components. In the model, the components of Type A behaviour will be assessed by the MTABS. Specifically, the aim of the main study is to demonstrate that by assessing the components independently, the differential relations between the components and health and work related outcomes can be achieved. Such an empirically validated model could be useful in explaining the inconsistency in findings within Type A literature and provide a valuable foundation for future research.

CHAPTER 6

DEVELOPMENT OF THE MULTIDIMENSIONAL TYPE A BEHAVIOUR SCALE[17]

As a result of the accumulation of inconsistent results between Type A behaviour and various health, behavioural, social and work related outcomes (Dearborn & Hastings, 1987; Ganster et al., 1990; Jamal, 1985; Lee et al., 1989; Rime et al., 1989; Wright, 1988), the focus of recent research studies has shifted from investigating Type A as a global construct to an examination of the independent components (Bluen et al., 1990; Dembroski & Costa, 1987; Edwards & Baglioni, 1991; Friedman, Hall & Harris, 1985; Helmreich et al., 1988; Spence et al., 1987, 1989; Wright, 1988).

In relation to health outcomes, attention has shifted to the 'toxic' components of Type A behaviour; namely, II, anger, hostility and competitiveness (Barling & Charbonneau, 1992; Barling et al., 1990; Booth-Kewley & Friedman, 1987; Dembroski & Costa, 1987; Dembroski & Williams, 1989; Matthews & Haynes, 1986; Rosenman, 1985; Spence et al., 1987; Spielberger et al., 1985; Williams, 1989). Conversely, AS best predicts scholastic, university and work performance (Barling & Charbonneau, 1992; Bluen et al., 1990; Helmreich et al., 1988; Lee, 1992; Pred et al., 1986; Rosenman, 1990; Spence et al., 1987; 1990; Spence et al., 1987).

The above studies have contributed to the recommendation that a multifaceted

[17] Portions of Chapter 6 appear by the author in Personality and Individual Differences, 13, 977-986. Assessing a Multidimensional Type A Behaviour Scale (1992).

conceptualisation of Type A behaviour is a more promising research strategy than viewing Type A behaviour as a global construct (Rosenman, 1990; Williams, 1989, Wright, 1988). Conceptually, definitions of Type A behaviour have included AS, II, anger, hostility and competitiveness (Dembroski et al., 1989; Glass, 1977a; Koskenvuo et al., 1988; Matthews, 1982; Price, 1982a; Strube, 1987; Wright, 1988). However, a review of the literature has shown no Type A behaviour measuring instrument that comprehensively evaluates AS, II, anger, hostility, and competitiveness, independently (Edwards & Baglioni, 1991; Edwards et al., 1990a; Matthews, 1982; Wright, 1988).

The FTAS measures two Type A components (time urgency and competitiveness), but omits the other three conceptual components (achievement striving, anger and hostility) of Type A behaviour (Kannel & Eaker, 1986; Powell, 1987; Smith et al., 1986). Similarly, the Jenkins Activity Survey consists of items that measure the five dimensions, but fails to operationalise anger and hostility (Edwards et al., 1990) and competitiveness (Spence et al., 1987) comprehensively. Therefore, there is a need for a brief, yet comprehensive multidimensional self-report Type A behaviour measure that is economical, convenient, and consistent with the definition of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990a; Gray et al., 1989; Matthews, 1982). This is best illustrated in the literature through Edwards et al.'s (1990, p. 452) proposal that:-

"The best strategy needed at present is to precisely define the Type A dimensions of interest, develop items that convincingly represent the domain specified by these dimensions, combine these items to form unidimensional[18] measures, and test these measures for internal consistency, external consistency, and construct validity."

[18] Unidimensionality refers to the presence of a single construct underlying the behavioural domain (Gerbing & Anderson, 1988; Hattie, 1985). Thus, as part of the measurement technology in reconceptualising Type A behaviour as a multifaceted construct, it is important that the components be found to be independent constructs (Gerbing & Anderson, 1988).

The aim of the present chapter is to develop and validate the Multidimensional Type A Behaviour Scale (MTABS). To this end, it is hypothesised that Type A behaviour is a multifaceted construct, with five underlying components, namely AS, II, anger, hostility and competitiveness. The aim of the present chapter is to consider the approach recommended by Edwards and Baglioni (1991). The MTABS will then be operationalised as a measure of the components of Type A behaviour in the empirical investigation of the multidimensional model in Chapter 7.

Construct validity of the MTABS. Traditionally, three approaches to validity have been advanced; namely criterion, content and construct validity (Cronbach, 1988; Kerlinger, 1981). Construct validity reflects the extent to which a test measures a theoretical construct or trait (Anastasi, 1988). Criterion validity assesses the effectiveness of a test in estimating what it is designed to predict (Anastasi, 1988). Finally, content validity involves an analysis of the test content to determine whether it covers a representative sample of the behavioural domain under investigation (Anastasi, 1985, 1988; Campbell & Fiske, 1959). Guion (1980, p. 4) mischieviously noted that The Uniform Guidelines on psychometric testing treated the three components of validity as "something of a Holy Trinity representing three separate roads to psychometric salvation. If you can't demonstrate one kind of validity, you've got two more chances."

Despite the utility of three different forms of validity, recent reviewers (e.g., Anastasi, 1985, 1988; Hogan & Schroeder, 1988; Landy, 1986; Messick, 1980) contend that construct validity is a more comprehensive concept that incorporates content and criterion validity (Anastasi, 1988). As such, construct validity refers to the precision with which a test measures a given

construct (Anastasi, 1985; Messick, 1980 By definition, this incorporates content and criterion validity as part of the precision of the theoretical concept (Anastasi, 1985; Guion, 1976; Hogan & Nicholson, 1988; Messick, 1980; Sussman & Robertson, 1986).

Within this framework, construct validation is used in the present study since it unites psychometric notions with theoretical notions (Anastasi, 1988; Tenopyr, 1977). As a result, it is possible for the researcher to determine what exactly a scale measures and fails to measure (Campbell & Fiske, 1959; Hogan & Schroeder, 1988). Furthermore, to explore construct validity, it is important to examine how the MTABS correlates with other significant and popular measures of Type A behaviour, namely the JAS and FTAS (Edwards et al., 1990) and how it correlates with outcomes conceptually related to the independent components of the scale (Comrey, 1988; Gray, Jackson & Howard, 1989).

The correlation with conceptually related variables in the process of scale validation is a recommended practice (e.g., Bynner, 1988; Comrey, 1988). The FTAS and JAS were chosen as measures of comparison since they are regarded as the most popular global Type A behaviour measures (Matthews, 1982; Matthews & Haynes, 1986; Edwards et al., 1990). In attempting to assess the construct validity of the MTABS, modest correlations are hypothesised between AS, II, anger, hostility, competitiveness and both the FTAS and JAS.

Two reasons for this hypothesis are levelled. First, as discussed in Chapter 2, Price (1982a, 1982b) notes that the components are interrelated, yet independent constructs, which supports modest correlations between the components. Second, the II and AS components are derived from the JAS, which supports significant correlations between the JAS and II and AS.

Furthermore, although the JAS, when factor analysed does not contain anger, hostility and competitiveness components, it contains some items relating to these components, which would suggest modest correlations (Boyd & Begley, 1987).

The FTAS contains items relating to impatience, hard-driving behaviour, anger, hostility and competitiveness (Edwards & Baglioni, 1989). Smith et al. (1986) factor analysed the FTAS and reported two components, namely speed and impatience and competitiveness. Following from these results, the present study predicts that the components will be modestly related to the FTAS.

To further test the construct validity of the MTABS, five validating criteria were chosen, namely depression, physical symptoms complaints, job satisfaction, job involvement and organisational commitment. Theoretical analyses have suggested that Type A behaviour may be viewed as more than a CHD predictor, to include physical and psychological health and work-related outcomes (see Chapter 3). Furthermore, Martin et al. (1989) support the view that Type A behaviour may have a detrimental effect on individuals' quality of life.

As indicated in Chapter 3, past work has demonstrated a significant relationship between Type A behaviour and depression (Brunson & Matthews, 1981; Dimsdale et al., 1978), physical symptoms complaints (Barton & Hicks, 1985; Hicks, Cheers & Juarez, 1985), job satisfaction (Kushnir & Melamed, 1991), organisational commitment (Burke & Weir, 1980) and job involvement (Burke & Weir, 1980). More recent studies have reported contradictory findings between Type A behaviour and depression (Caplan & Jones, 1975), physical symptoms complaints (Kelly & Houston, 1985), job satisfaction (Sager, 1991), organisational

commitment (Jamal, 1990) and job involvement (Jamal, 1990). A possible explanation for these inconsistent findings is conceptualising and operationalising Type A behaviour as a global construct (Carver, 1989).

Recent reviews have suggested that there are toxic and protective factors attributed to the definition of Type A behaviour (Dembroski & Williams, 1989; Wright, 1988). Therefore, the present study aims to test whether the independent components of the MTABS can be differentially related to depression, physical illness symptom complaints, job satisfaction, job involvement and organisational commitment.

Research has demonstrated positive relationships between II (Spence et al., 1987), anger (Appel et al., 1983), hostility (Everly, 1989), competitiveness (Spence et al., 1987) and physical symptoms complaints. Also, II (Bluen et al., 1990), anger (Biaggio & Godwin, 1987), hostility (Weekes & Waterhouse, 1987) and competitiveness (Kohn, 1986) have been related to depression. In addition, it is reasonable to assume that the job-related component of Type A behaviour (AS), rather than the toxic components (II, anger, hostility and competitiveness) are associated with work-related outcomes (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Barling et al., 1990; Bluen et al., 1990; Helmreich et al., 1988; Lee, 1992; Spence et al., 1987; Spence et al., 1989; Wright, 1988). Extending this view, AS has been related to job satisfaction (Bluen et al., 1990) which, in turn, is related to job involvement and organisational commitment (Mathieu & Zajac, 1990). Supporting this predicted relationship, Steers (1977) reported achievement orientated behaviour to be significantly related to organisational commitment.

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In the present study, intrinsic job satisfaction will be examined in relation to the independent operationalisation of the components of the multidimensional model. Arvey, Bouchard, Segal and Abraham (1989) note that satisfaction with extrinsic job features is more dependent on environmental factors. Also, Day and Bedeian (1991) contend that Type A behaviour fits especially well with the theory of work adjustment in predicting intrinsic job satisfaction. Specifically, aspects of behaviour such as celerity (pace), and activeness have been reported to be significantly related to intrinsic job satisfaction (Day & Bedeian, 1991). Thus, intrinsic job satisfaction seemed more compatible with the purpose of the present study in attempting to demonstrate construct validity.

Therefore, the present study predicts that AS (but not II, anger, hostility and competitiveness) will be positively related to work attitudes. In addition, given the toxicity label attributed to II (Jennings, 1984), anger (Siegel, 1984), hostility (Williams, 1984) and competitiveness (Van Egeren, 1979a), the present study predicts that these four components, but not AS (described as a non-toxic factor; Dembroski & Williams, 1989), will be related to health constructs, namely depression and physical symptoms complaints.

The differential relationships between the independent components and health and work related constructs would suggest that a multifaceted operationalisation of Type behaviour is more informative than a global index (Carver, 1989). Consequently, by demonstrating that the components are related to health and work attitudes, construct validity of the MTABS is supported.

HYPOTHESES

Hypothesis 1: The AS, II, anger, hostility, and competitiveness components will be significantly, but modestly related to the JAS and FTAS.

Hypothesis 2: AS will be positively related to intrinsic job satisfaction, job involvement and organisational commitment, but not to depression and physical symptoms complaints. Conversely, II, anger, hostility and competitiveness will be positively related to depression and physical symptoms complaints, but not to job satisfaction, job involvement and organisational commitment.

METHOD

Sample and Setting

The organisation within which the study took place was a bank that employed approximately 5500 people throughout South Africa. White-collar employees from the Witwatersrand region of the organisation were selected to participate in the research. The selection of white-collar employees best fitted the description of Type A behaviour (Jenkins, 1988; Sager, 1991). Of the 520 questionnaires distributed, 371 questionnaires were returned, representing a response rate of 71%. Of these questionnaires, 8 were eliminated as a result of incomplete data, reducing the sample to 363, a response rate of 69% (M age = 35,2 years, SD = 11,32 years; M education = 11,5 years, SD = 1,8 years; M organisational tenure = 6,3 years, SD = 5,4 years; M earnings = R 25513 p.a., SD = R 15699 p.a.). The response rate compares

favourably with response rates of other self-report surveys (e.g., Brooke, Russell & Price, 1988). The sample consisted of 113 men (31%) and 250 women (69%), where 184 (51%) were tellers and cashiers, 18 (5%) were secretaries, 73 (20%) were investment advisors, and 42 (12%) were management employees.[19]

Procedure

A proposal outlining the purpose of the study was submitted to the organisation's human resources manager. On approval, two sets of questionnaires were prepared; one forming the main study and the other to be completed by the test-retest subsample of the main sample. Following past research (e.g., Cook et al., 1980), the duration of testing in the test-retest sample was set for three months.

Questionnaires, together with two covering letters were sent to all white collar employees at the bank in the Witwatersrand region (see Appendix A). The first covering letter outlined the purpose of the study and the voluntary nature of participation, and ensured anonymity and confidentiality. The second covering letter, drafted by the human resources manager, confirmed that the study was approved by the bank and requested employee participation in responding to the questionnaire (see Appendix A). Completed questionnaires were collected by the respective branches and sent by internal mail to the Head Office of the bank. In the event of any questions about the research, a contact number was provided so that respondents

[19] 45 (12%) of the respondents did not furnish information on their present job category.

had access to the researcher. Also, during the study, the regions were contacted on a weekly basis to discuss whether any complications had arisen during the administration of the batch of questionnaires.

Statistical Analysis

Factor analysis. A number of researchers assert that the most powerful method of construct validation is factor analysis (Anastasi, 1988; Briggs & Cheek, 1986; Kerlinger, 1981). Simply put, factor analysis is a measure of the constitutive meaning of constructs, or their construct validity (Bynner, 1988; Kerlinger, 1981). Anastasi (1988) defines construct validity as synonymous with common-factor variance. Common-factor variance, in turn, is a central underlying characteristic of factor analysis (Anastasi, 1988; Comrey, 1988). Thus, factor analysis can be described as an important statistical method within construct validation (Anastasi, 1988; Bynner, 1988).

Factor analysis, invented by the British psychologist Charles Spearman (Jackson, 1991), is best described as a collection of procedures for analysing the relationship among variables (Briggs & Cheek, 1986; Kerlinger, 1981; Loehlin, 1987; Mulaik, 1987). In defining the relationship, factor analysis is a statistical technique for determining patterns that underly the variables which enables data reduction or structure detection to be achieved (Anastasi, 1988; Kim & Mueller, 1978a; Loehlin, 1987). In achieving this end, factor analysis assists in the construction of new indices for variables to achieve scientific parsimony for future analyses

(Loehlin, 1987).

Since the present study is concerned with operationalising Type A behaviour as a multifaceted construct, factor analysis suits the present study since it is able to maximise the amount of unique information available (Cooper, 1983). As such, it is possible to construct a set of new composite "factors" from the original global construct (Briggs & Cheek, 1986).

The measure of the degree of generalisation between each variable and each factor is calculated and referred to as a factor loading (Briggs & Cheek, 1986; Cureton & D'Agostino, 1983). The factor loading reflects the correlation between items in the scale and factors, which, in turn, represents the scale's validity (Jackson, 1991). Consequently, the greater the factor, the more one can generalise from the factor to the variable (Jackson, 1991). The factor loading is central to the factor solution (Jackson, 1991).

There are five steps to be considered in a factor analysis (Cattell, 1988; Kim & Mueller, 1978a). The first step involves collecting the relevant data that are to be analysed (Kim & Mueller, 1978b). Items are chosen on the grounds that they are consistent with the conceptual definition of the construct (Comrey, 1973). The items from the questionnaire are then intercorrelated to form the covariance matrix, which completes the second step of the factor analysis (Kim & Mueller, 1978a). The third step involves choosing the correct number of factors which adequately explain the covariances of the variables (Dillon & Goldstein, 1984; Kim & Mueller, 1978b; Loehlin, 1987).

The final solution is dependent on the factor analytic method chosen for determining the number of factors to extract (Cattell, 1988). Specifically, the researcher must choose between confirmatory factor analysis (Gorsuch, 1990; Hubbard & Allen, 1987; Marsh, 1990; Mulaik, 1990) and exploratory factor analysis[20] (Bentler & Kano, 1990; Kaiser, 1970; Velicer & Jackson, 1990a). The choice between these two methods depends on whether explicit hypotheses can be stated in advance (Loehlin, 1987). In situations where specific hypotheses can be levelled, confirmatory factor analysis is preferred (Comrey, 1988; Loehlin, 1987).

In Chapter 4, a five factor, multidimensional conceptual model of Type A behaviour was developed. The model was proposed to consist of five independent dimensions (i.e., AS, II, anger, hostility and competitiveness), developed from a theoretical examination of the literature (Glass, 1977; Price, 1982a; Strube, 1985). The literature stresses that confirmatory factor analysis should be adopted when the items can be logically grouped in accordance with the relevant theory (Gerbing & Anderson, 1988; Hunter & Gerbing, 1982). Given the plethora of theoretical research on Type A behaviour (Matthews, 1982), there is sufficient information to label items constituting Type A components on conceptual grounds (Edwards et al., 1990). Furthermore, in Gerbing and Anderson's (1988) estimation, confirmatory factor analysis affords a stricter interpretation of unidimensionality than reported for exploratory factor analysis, which makes it a preferential choice for the present study.

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[20] A primary conceptual difference levelled between exploratory and confirmatory factor analyses is that exploratory factor analysis does not provide an explicit test of unidimensionality (Gerbing & Anderson, 1988). As such, exploratory factor analysis is particularly useful as a reduction technique in the absence of sufficient theory about the relations of the indicators underlying the relevant constructs. Thus, exploratory factor analysis is informative as a preliminary technique in scale construction, but a subsequent confirmatory factor analysis is needed to evaluate and refine the resulting scale (Gerbing & Anderson, 1988).

In computing factor analysis, the final factor solution depends on the suitability of the number of factors extracted (Comrey, 1988; Hakstian, Rogers & Cattell, 1982). Consistent with this step, there are a number of factor extraction rules that need to be considered. The identification of Kaiser's measure of sampling adequacy (Kaiser, 1970), communality estimate (Cureton & D'Agostino, 1983), factor loadings (Kim & Mueller, 1978a), Kaiser-Gutman rule of factor extraction (Kaiser, 1970), scree test (Cattell, 1966) and the chi-square test of residuals (Loehlin, 1987) are important factor extraction rules that are supported by the literature. These techniques are described below:

Kaiser's measure of sampling adequacy. Kaiser's Measure of Sampling Adequacy (MSA; Kaiser, 1970, 1974) is a summary of the relationship between the partial correlations and the ordinary correlations derived from the matrix. More directly, the MSA is a psychometric measure of the extent to which a particular measure is congruent with a given set of variables (Loehlin, 1987).

Kaiser (1970) states that the magnitude of the MSA improves as the number of variables entered into the factor analysis, sample size, and magnitude of correlation r increases for the variables. Kim and Mueller (1978a) aver that an MSA result of 0,8 is sound, while MSA's which fall below 0,5 require elimination from the variable set. In the present study, any item with an MSA below 0,50 will be deleted from the variable set (Kaiser & Rice, 1974).

Communality estimate. The essence of factor analysis is the study of the communality of an

item versus its uniqueness (Gorsuch, 1983). Communality (h^2) is written as the square of the factor loadings for a variable (Gorsuch, 1983). Specifically, communaiity is defined as the proportion of variance that each item has in common with the other items (Jackson, 1991). An interesting extension of this rule is that the larger the number of variables being analysed, the less important it is to contain accurate estimates of the communalities (Loehlin, 1987). The extreme limits that the communalities can take are: 0 if the variable has no correlation with any other variable in the matrix and 1 if the variance is perfectly accounted for by the set of factors that underly the matrix (Cureton & D'Agostino, 1983). A communality estimate greater than 0,20 is usually specified for retaining an item in the data set (Cureton & D'Agostino, 1983). Consequently, all items in the present study with an h^2 value below 0,20 will be eliminated from the data set.

Once the items have conformed to the minimum requirements of MSA and communality estimates, the number of factors to be extracted can be determined. Three factor extraction methods are described below.

Factor loadings. The magnitude of the factor loadings is a robust indicator of the number of factors to extract from the factor analysis (Guadagnoli & Velicer, 1988). The 0,3 minimum factor-loading has been described as a suitable cut-off for considering items for factor extraction (e.g., Cramer, 1991; Kim & Mueller, 1978a). The 0,3 factor limit, in turn, has been employed by a number of research studies (e.g., Barling, 1978; Furnham, 1990), which makes this cut-off suitable for factor extraction in the present study.

Critical eigenvalues. An eigenvalue is described as the variance accounted for by a factor (Cooper, 1983; Gorsuch, 1973). Consistent with the definition, the sum of eigenvalues is equal to the number of variables (Cooper, 1983). Two values are usually reported; namely the proportional, and cumulative variance of the factors. First, the proportion of total variance accounted for by a given factor is calculated by dividing the eigenvalue by the number of factors (Cooper, 1983). The sum of proportions is an index of proportion of the total variance in the data (Cooper, 1983). Alternatively, to calculate the proportion of common variance attributed to the factors extracted, the eigenvalue is divided by the sum of the communalities (Cooper, 1983). The interpretation of eigenvalues is a useful criterion to be used for the number of factors to extract (Dillon & Goldstein, 1984; Loehlin, 1987). Two important methods have been noted, namely the Kaiser-Gutman rule of factor extraction and the scree test.

Kaiser-Gutman rule of factor extraction. The most popularised method of factor extraction in the literature is the Kaiser-Gutman rule, commonly referred to as the "little jiffy criterion" (Cattell, 1988; Kaiser, 1970, 1974; Loehlin, 1987). The basis of the criterion is that the number of factors retained are those factors with an eigenvalue greater than unity (Kaiser, 1970, 1974). Kaiser's "little jiffy criterion" is popular because of the relative ease of interpretation of the final factor solution (Cattell, 1988; Loehlin, 1987).

Scree test. The scree test is a graphic plot of the number of factors versus the respective eigenvalues (Cattell, 1966). The graphic plot serves to approximate the number of factors to

retain (Cattell, 1988; Loehlin, 1987). Points on the graph are plotted in such a way as to resemble the slope of a mountain, with the scree or redundant factors at the bottom (Cattell, 1966; Cattell & Vogelman, 1977). The decision based on the number of factors to extract is the point in the curve where the decreasing eigenvalues change from a rapid, decelerating decline to a gradual and almost horizontal slope (Gorsuch, 1983; Kim & Mueller, 1978a; Loehlin, 1987). This is usually found at the elbow of the curve, which is interpreted from the scree plot (Loehlin, 1987).

In plotting the scree test, more than one break point may occur, the gradient of the slope from low to high eigenvalues may be too low to interpret a break point in the line, and there may be more than one line which can be drawn through the low values (Cattell & Vogelmann, 1977; Zwick & Velicer, 1986). Should any one of these three problems arise, the information gathered from the scree test should be ignored (Zwick & Velicer, 1986) and other factor extraction criteria should be employed (Loehlin, 1987).

Chi-square test of residuals. A final technique to consider for factor extraction is the chi-square test of residuals. This test is an examination of the best possible fit of each factor via the maximum likelihood criterion (Loehlin, 1987). The focus of the technique is to prepare a chi-square test to determine whether it is suitable for an additional factor to be included in the factor solution (Loehlin, 1987). In other words, the chi-square test is a goodness-of-fit test of the model (Bynner, 1988). The extraction of factors is halted at the point when a model is reached that is not rejected by the chi-square test at the ($p < ,01$) significance level

(Loehlin, 1987).

Factor Rotation

The fourth stage performed in a factor analysis involves rotating the factors (Kim & Mueller, 1978a; Velicer & Jackson, 1990). Factor rotation is strongly recommended to achieve greater interpretability of the results (Cooper, 1983; Gorsuch, 1985; Velicer & Jackson, 1990). However, rotation does not improve the degree of fit between the data and the resulting factor structure (Velicer & Jackson, 1990). Rather a rotated factor solution leads to a more reproducible, reliable and replicable factor structure than an unrotated solution (Cooper, 1983; Kim & Mueller, 1978a; Weiss, 1971). When employing a rotated solution, there are two possible methods to consider:

First, the researcher may elect to leave the factor axes at right angles to each other (i.e., an orthogonal solution; Cooper, 1983). Alternatively, the researcher may choose to allow the angles to shift from 90 degrees (i.e., an oblique solution, Cooper, 1983; Kim & Mueller, 1978a). The advantage of orthogonal rotation is that it allows for maximisation of the variance to occur during rotation (Kim & Mueller, 1978a) so that factors are as uncorrelated as possible from each other (Cooper, 1983). As a result, the factors are conceptually independent (Loehlin, 1987). This suits the purposes of the present study since it is hypothesised that the components will be independent of each other. A choice technique is varimax rotation (Endler & Parker, 1990; Zygan ki & Jenkins, 1970), which is to be used in the present study.

Factor Interpretation

The final step to be employed in a factor analysis is the interpretation of the factors (Gorsuch, 1983). The purpose of the factor interpretation is to name the factor characterised by the variables that load on it (Gorsuch, 1983). Specifically, the content of those manifest variables having the largest coefficients need to be examined and labelled (Cattell, 1988). In naming the factor, a minimum of three variables per factor is a suitable criterion for factor extraction (Harris, 1967). Therefore, in the present study, to enhance psychological meaningfulness, "singlet" and "doublet" factors were ignored from the final factor solution (Harris, 1967).

In concluding the factor analysis section, a central assumption concerns the number of respondents needed to acquire a factor pattern that is stable and approximates the population pattern (Comrey, 1988). The present study consisted of 363 respondents. This adequately addresses the view that a minimum sample size of 200 respondents should be considered to minimise sampling error (Comrey, 1988; Gorsuch, 1983, 1990; Guadagnoli & Velicer, 1983) and to capitalise on chance variation (Loehlin, 1987).[21]

Reliability of the MTABS

The reliability of a measure refers to the accuracy, consistency, precision and stability of the

[21] An alternative consideration is to adopt the view by Zyganski and Jenkins (1970) that there should be a minimum of ten respondents per variable to enhance interpretability of the factor solution. Adopting this approach, the present study consisted of 12 variables which suggested a minimum sample size of 120 respondents. Given the sample size of 363 respondents, this recommendation was supported in the present study.

items measured (Anastasi, 1988; Kerlinger, 1981). Two coefficients will be used in the present study in an attempt to measure the internal consistency of the MTABS. First, the Cronbach alpha[22] will be determined. Cronbach alpha is the estimate of the proportion of true score variance attributed to the items and is calculated by comparing the sum of item variances with the variance of the sum scale. More appropriately, it is written:

$$\text{Alpha (standardised)} = K\bar{r} / 1 + (K-1)\bar{r}$$

(Gerbing & Anderson, 1988, p. 187)

From the equation, $\bar{r}$ is the average correlation existing between the items (off-diagonal correlation); and K represents the number of items in the scale (Gerbing & Anderson, 1988). Nunnally (1967) recommends an alpha greater than 0,60 as an adequate cut-off point when employing the Cronbach alpha. Second, test-retest reliability of the MTABS will be assessed over a period of three months (Anastasi, 1988). The employment of test-retest reliability is to calculate the stability of the components over time (Anastasi, 1988).

Measuring Instruments

Anastasi (1988) maintains that a comprehensive understanding of a construct can only be achieved by operationalising, precisely, the terms used to facilitate measurement and

[22]Gerbing and Anderson (1988) note that Cronbach alpha is the most widely used coefficient of equivalence in the literature but has been misinterpreted to be an index of unidimensionality, rather than reliability (McDonald, 1981). However, as the article clearly points out, the two are clearly distinct and reliability of the scale should be assessed after unidimensionality has been achieved (Gerbing & Anderson, 1988).

replication. Addressing this issue, the section below will attempt to explain the conceptual and psychometric grounds for choosing the measures described. In devising the MTABS, items were taken from existing scales that were designed to operationalise AS, II, anger, hostility and competitiveness. To test the validity of the MTABS, scales measuring depression, physical symptoms complaints and three organisational variables (i.e., job involvement, organisational commitment and intrinsic job satisfaction) were distributed randomly within the sample. Also, two popular Type A measuring instruments (JAS and FTAS) were administered to enhance validity assessment.

Achievement Striving and Impatience-Irritability. Spence et al. (1987) factor analysed JAS responses from a sample of university students. Two relatively independent scales (see Appendix A) were developed on the basis of a [illegible]l axis solution factor technique, namely Achievement Striving (AS) and Impatience-Irritability (II). AS was found to reflect achievement related behaviours and attitudes (e.g., hard striving, target setting behaviour and propensity to take work seriously), whereas II described eating fast, putting words in the mouth of others, impatience and irritability when slowed down (Pred et al., 1986). Both factors contain seven of the original JAS items, each of which offers five alternative responses in the form of a Likert grid. Items of both these scales are included in Appendix A. The scoring system differs from that used by Jenkins et al. (1971) in that the items are assigned unit weights (Spence et al., 1987). One item of the II scale is reverse scored (item number 4), while five items of the AS scale are reverse scored, namely items 2, 4, 5, 6, and 7.

Consistently, studies have reported satisfactory reliability for the II and AS scales in the literature. In the Helmreich et al. (1988) study, Cronbach alpha's of ,78 for the AS scale and ,62 for the II were reported for a sample of 118 psychologists. Spence et al. (1987), in a sample of 362 male and 351 women university students, reported a Cronbach alpha of ,79 for the AS scale in both sexes and Cronbach alpha's of ,67 and ,63 for men and women respectively, on the II scale. Also, Barling and Boswell (1991) reported Cronbach alphas of ,70 and ,67 for the II and AS scales respectively in a sample of 163 members of the Canadian Armed Forces. Lee (1992) reported Cronbach alpha's of 0,71 for AS and 0,66 for II in a sample of 142 full-time third-year undergraduate college students and 39 part-time MBA students. Volkmer and Feather (1991) reported Cronbach alpha's of 0,66 for a sample of 99 high school students and 0,64 for a sample of 338 introductory psychology students. A five item II scale, similar to the one used by Helmreich et al. (1988), reported Cronbach alpha's of 0,49 for the 99 high school students and 0,60 for the introductory psychology students. In South Africa, Bluen et al. (1990) found a Cronbach alpha of ,77 (AS) and ,81 (II) for a sample of 114 insurance salespersons. Norden (1992) reported Cronbach alpha's of ,68 and ,77 for the AS and II scales respectively in a sample of 153 insurance salespeople. Also, Northam (1992) reported Cronbach alpha's of ,64 and ,70 for the AS and II scales respectively in a sample of 235 first year university students.

The construct validity of II and AS has been supported using exploratory (Helmreich et al., 1988) and confirmatory factor analyses (Bluen et al., 1990). Bluen et al. (1990) used Lisrel VI to compute a series of maximum likelihood confirmatory factor analyses. A plausible fit

to the hypothesis that a two factor model would characterise II and AS was supported (χ^2 /df index = 2,16, goodness-of-fit index =,67, root-mean-square residual = ,11). Lee (1992) adopted a confirmatory model and found a two factor model, consistent with Bluen et al. (1990) and Spence et al. (1987) to be the best fit. For the results reported, the χ^2 / df index was reported to be 2,09, the adjusted goodness of fit was reported as 0,85, and coefficient delta was reported as 0,73.

In support of the construct validity, II has been found to be significantly and positively ($p <$,05) correlated with physical symptoms complaints (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Ired et al., 1986; Spence et al., 1987), depression (Bluen et al., 1990), test anxiety (Volkmer & Feather, 1991), marital dissatisfaction (Barling et al., 1990) and the three personal beliefs underlying Price's (1982a) self-esteem model (Lee, 1992), and negatively ($p <$,05) correlated with job satisfaction (Bluen et al., 1990). Landy, Rastegary, Thayer and Colvin (1991) reported in a sample of 190 undergraduate students, positive and significant ($p <$,05) relations with Behaviourally Anchored Rating Scale (BARS) dimensions of time urgency, namely speech patterns, nervous energy, eating behaviour and deadline control (defined as the extent to which the person creates of appears to be controlled by deadlines). Conversely, AS has been found to be positively ($p <$,05) related to performance (Barling & Charbonneau, 1992; Helmreich et al., 1988; Lee, 1992; Pred et al., 1986; Spence et al., 1987), fear of not getting one's share in life (Lee, 1992), internal locus of control (Volkmer & Feather, 1991) and job satisfaction (Bluen et al., 1990).

In South Africa, Northam (1992) examined the predictive utility of the II and AS scales in relation to health and work outcomes. Results showed AS to be positively ($p < ,05$) related to performance, and II to be positively ($p < ,05$) related to physical symptoms complaints. Finally, Norden (1991) reported for a sample of insurance salespeople, a positive relation between AS and performance and II and physical symptoms complaints that provided additional evidence on the construct validity of the AS and II scales. Thus, the successful application of the II and AS scales in previous research, and the success of both scales on South African samples (Bluen et al., 1990; Northam, 1992), renders them pragmatic for selection in the present study.

Angry Reaction Scale. According to Spielberger et al. (1983), the assessment of anger has received much less attention than the assessment of hostility. The studies that have attempted to measure anger have confounded anger, aggression and hostility to be synonymous and interchangeable constructs (Dembroski et al., 1985; Kernis, Granneman & Barclay, 1989). Therefore, in response to the conceptual confusion and lack of empirical support for a measure of anger, Spielberger et al. (1983) developed the Angry Reaction Scale (see Appendix A). The Angry Reaction Scale is a derivative of the State-Trait Anger Scale (STAS). The Angry Reaction Scale consists of four items that describe anger responses in situations that involve frustration and/or negative evaluations (Spielberger et al., 1983) as opposed to the Angry Temperament measure of anger that operationalises a general propensity for anger (Spielberger et al., 1983). The item content of the Angry Reaction Scale is particularly suited to the conceptual definition of Type A behaviour (Friedman & Rosenman,

1974; Helman, 1987; Spielberger et al., 1983). As described by the scale's developers, the Angry Reaction Scale specifies anger-provoking circumstances, which imply an emotional reaction, rather than focussing solely on a trait description (Spielberger et al., 1985). In response, a 4 point Likert scale ranging from 'almost never' (1) 'sometimes' (2) 'often' (3) and 'almost always' (4) is provided. A high score reflects high reporting of anger (Spielberger et al., 1985). There are no reverse scored items.

Spielberger et al. (1983) found the median item-remainder correlation for the Angry Reaction Scale to be ,50 and reported Cronbach alphas of ,70 for male and female college students (N = 280), ,71 for male navy recruits (N = 198) and ,75 for female navy recruits (N = ,72) for the Angry Reaction Scale (Spielberger et al., 1985). Additional research with college students reported an alpha of ,81 for males (N = ,81) and ,87 for females (N = 995; Spielberger et al., 1987). In separate samples of 1424 females and 1592 males. Cronbach alpha's of ,66 and ,64 were reported respectively for the Angry Reaction Scale. A smaller sample of working adults showed a Cronbach alpha of ,93 for females (N = 839) and ,83 for males (N = 4130) in administering the Angry Reaction Scale. Kerns, Grannmean and Barclay (1989) reported a Cronbach alpha of ,77 for the 15-item Trait Anger Scale in a sample of 50 undergraduates. In South Africa, Northam (1992) reported for a sample of 235 students a Cronbach alpha of ,65 for the Angry Reaction Scale. From these reports, it can be seen that the Angry Reaction Scale is both internally and temporally consistent.

In presenting validatory information on the Trait Anger Scale (from which the Angry Reaction

Scale derives), the literature has reported significant correlations ($p < ,05$) with the Anger Self-Report Scale (Kernis, Granneman & Barclay, 1989), Buss-Durkee Hostility Inventory (Kernis, Granneman & Barclay, 1989), the Novaco Anger Inventory (Kernis et al., 1989), the Cook-Medley Hostility Scale (Spielberger et al., 1983) and the Overt Hostility Scale (Spielberger et al., 1983). Yuen and Kuiper (1991) reported positive ($p < ,05$) relationships between the Trait-anger scale and Survey of Workstyles, Framingham Type A scale and Jenkins Activity Survey. Furthermore, Yuen and Kuiper (1991) found a positive ($p < ,05$) relationship between Trait-anger and the three personal beliefs underlying Price's (1982a) model (self-worth is contingent on personal accomplishments; no universal moral principles exist; scarcity of resources; see Chapter 2). Riley and Treiber (1989) reported the Trait-anger scale to be significantly ($p < ,05$) related to twelve sub-scales of anger and hostility measures in the literature in a sample of 120 North American adults. Schill and Thomsen (1987) found in a sample of 69 psychology students the Trait-anger scale to be negatively ($p < ,05$) related to Barrons' (1953) ego strength scale.

In reviewing the Angry Reaction Scale, it has been found to demonstrate adequate construct validity when assessed independently from the Trait-Anger Scale. Spielberger et al. (1983) reported the Angry Reaction Scale to be significantly ($p < ,05$) related to trait anxiety, state anxiety, state curiosity, neuroticism and psychoticism in a sample of 545 female and 334 male university students. Smith, Follick and Korr (1984) reported for a sample of 50 subjects (hospitalised for cardiac catheterization), positive ($p < ,05$) relationships between the Angry Reaction Scale and the frequency of angina and interference with activities by angina. In

South Africa. Northam (1992) reported suitable validity for the Angry Reaction Scale in demonstrating positive ($p < ,05$) relationships with physical symptoms complaints and depression. A literature review revealed no other studies that reported on the validity of the Angry Reaction Scale in South African samples.

Due to adequate reliability and validity reports of the scale in the literature and the conceptual linkage to the original definition of Type A behaviour, the Angry Reaction Scale is chosen as a suitable measure of anger in the present study.

Anger-out Scale. The Anger Expression Scale (AX, Spielberger et al., 1985) is a 20-item scale that measures anger-in, anger-out and anger control. The present study used the Anger-out Scale of the AX (see Appendix A), since anger-out is a manifestation of aggressive-hostility (Engebretson & Matthews, 1992), which is consistent with the definition of Type A behaviour (Dembroski et al., 1989; Friedman & Rosenman, 1974; Jenkins, 1978; Shekelle et al., 1983; Spielberger et al., 1988). The Anger-out Scale consists of eight items that assess the person's expression of anger in behavioural acts such as assaulting other persons or slamming doors, or expressed in the form of criticism, verbal threats, insults and antagonism (Spielberger et al., 1988). A four point Likert scale ranging from 'almost never' (1) to 'almost always' (4) is used. A high score denotes prominent aggressive-hostility (Spielberger et al., 1983).

Johnson (1984) reports Cronbach alpha coefficients ranging from ,73 to ,84 and an item

remainder coefficient of ,44 in a sample of 1114 high school students for the Anger-out Scale. Knight et al. (1988) reported a Cronbach alpha of ,70 in a sample of 1120 respondents for the Anger-out Scale. Greenglass and Julkunen (1989) found in a sample of 262 students a Cronbach alpha of 0,75 for the Anger-out Scale. In South Africa, Kahn (1986) found the Anger-out scale to be positively ($p < ,05$) related to the JAS in a sample of middle managers from a large insurance company. Moreover, Malan (1989) reported a Cronbach alpha of 0,73 for a sample of 163 employees from the mining and manufacturing sector for the Anger-out Scale.

The Anger-out Scale has been found to demonstrate adequate construct validity. Greenglass and Julkunen (1989) reported the Anger-out Scale to be positively correlated ($p < ,05$) with the Cook-Medley HO scale. Mills, Schneider and Dimsdale (1989), in a sample of 40 normotensive adults, found the Anger-out Scale to be positively ($p < ,05$) related to the SI Anger-out component. Engebretson et al. (1989) found the Anger-out Scale to be positively correlated ($p < ,05$) with accelerated heart rate and elevated systolic blood pressure in a sample of 78 university students. Pape (1986) administered the Anger-out Scale to a sample of 367 undergraduates and found a positive ($p < ,05$) correlation between the Anger-out Scale and an anger imagery task. Delamater and McNamara (1987) reported for a sample of 282 college women that the Anger-out Scale was unrelated to assertion and negatively ($p < ,05$) related to the Marlowe-Crowne Social Desirability Scale. Williams and Jenkins (1986) found scores on the Anger-out Scale to be significantly ($p < ,05$) higher in Type A's, compared to Type B's, in a sample of 249 university students. Furthermore, Williams and Jenkins (1986)

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reported the Anger-out Scale to be positively ($p < ,05$) related to assertiveness. In South Africa (Malan, 1989) reported the Anger-out Scale to be positively ($p < ,05$) related to psychological distress in a sample of 163 employees from the mining and manufacturing sector.

Thus, in reviewing the psychometric adequacy of the Anger-out Scale and the conceptual linkage to the original definition of Type A behaviour, the Anger-out Scale is chosen as a suitable measure of hostility in the present study.

Competitiveness Scale. The Competitiveness Scale is a derivative of Cassidy and Lynn's (1989) Achievement Motivation measure In opposition to traditions in the literature to treat competitiveness and achievement striving as synonymous constructs (Spence & Helmreich, 1983), the present study needed a measure of competitiveness that examined attempts to beat others as opposed to setting one's own standard of excellence and expectations. An examination of the items of the Competitive Scale (see Appendix A) reflects that the Competitive Scale assesses the respondent's propensity to want to beat his/her peer in an interpersonal situation (Cassidy & Lynn, 1989). The Competitiveness Scale consists of seven items which are scored on a 3 point Likert response format with scores of 'no' (0), '?' (1) and 'yes' (2). One item is reverse scored, namely "if I get a good result, it doesn't matter if others do better." (Cassidy & Lynn, 1989).

The Competitiveness Scale has been shown to demonstrate acceptable validity and reliability.

Cassidy and Lynn (1989) reported Cronbach alpha's of 0,71 and a split half reliability of ,65 for a sample of 427 university students on the Competitiveness Scale. In a second sample of 230 students, a Cronbach alpha of ,74 and a split-half reliability of ,71 was reported for the Competitiveness Scale. The third sample examined, consisted of 450 respondents from the general population where a Cronbach alpha of ,67 and a split-half reliability of ,62 was reported for the Competitiveness Scale (Cassidy & Lynn, 1989). In South Africa, Northam (1992) reported a Cronbach alpha of ,66 for the Competitiveness scale in a sample of 235 university students.

In reporting on the construct validity of the scale, Cassidy and Lynn (1989) found the Competitiveness Scale to be positively ($p < ,05$) related to acquisitiveness and status aspirations, but not to work ethics, or beliefs regarding excellence. Also, Cassidy and Lynn (1989) reported positive ($P < ,05$) relations between the Competitiveness Scale and Spence and Helmreich's (1983) Work and Family Orientation Scale (WOFO). In South Africa, only one study could be found that examined the construct validity of the Competitiveness Scale, where Northam (1992) reported a positive ($p < ,05$) association between the Competitiveness Scale and depression and physical symptoms complaints, respectively. Conversely, no significant correlation was reported between the Competitiveness Scale and performance grades, which is consistent with recent conceptualising on the nature of interpersonal competitiveness (Kohn, 1986).

In reviewing the above, the Competitiveness Scale exhibits acceptable psychometric adequacy

and is therefore considered an important measure of competitiveness within the present study.

Jenkins Activity Survey. The 21-item Jenkins Activity Survey (JAS) is used to assess global Type A behaviour (Jenkins et al., 1971). The JAS (see Appendix A) is an objectively scored, self-report measure of global Type A behaviour (Jenkins, 1978; Rosenman, 1978). Each item of the JAS is weighted (Jenkins, Zyganski & Rosenman, 1979). The sum of the weighted items results in the raw score (Jenkins et al., 1979).

The JAS has been referred to as a promising instrument that has been widely employed in research (Anastasi, 1988). Jenkins et al. (1979) reported an internal consistency of ,84 for the JAS. Pittner and Houston (1980) reported a split-half reliability of ,82 for the JAS. Gray, Jackson and Howard (1989) reported a Cronbach alpha of ,55 for the JAS in a sample of 163 managers. Yarnold et al. (1984) reported a Cronbach alpha of ,62 and ,45 for a sample of male and female students respectively and a retest reliability of ,86 and ,74 over three months for the same respective groups. Bishop, Hailey and O'Rourke (1989) reported for a sample of 678 students a test-retest reliability over two months of ,75 and ,74 for men and women respectively on the JAS. Furthermore, three sets of data derived from the WCGS and each representing over 2300 participants have demonstrated that the test-retest reliabilities of the JAS range from ,56 to ,74 over three months (Rosenman et al., 1964; Rosenman et al., 1966; Rosenman et al., 1975)

The JAS has been found to demonstrate adequate construct validity. In describing the

construct validity of the JAS, a number of studies have reported positive ($p < ,05$) correlations with the Structured Interview (Chesney et al. 1981; Jennings, 1984; Matthews, 1982; Rosenman, 1978; Scherwitz, Berton & Leventhal, 1978), FTAS (Edwards et al., 1990; Smith & O'Keefe, 1985) and State-Trait Anger Scale (Smith & O'Keefe, 1985). Furthermore, Jennings (1984) found the JAS to be positively ($p < ,05$) related to the Speed and Impatience, Competitiveness and Hostility subscales of the SI. Gray et al. (1989) found the JAS to be positively ($p < ,05$) correlated with competitiveness, time urgency, work involvement, anger and impatience components of the Survey of Workstyles measure of Type A behaviour. In addition, the JAS has been found to be positively ($p < ,05$) related to depression (Dimsdale, Hackett, Block & Hutter, 1978), chronic emotional stress (Suls & Wan, 1989), psychological distress (Dimsdale et al., 1978), neuroticism (Irvine et al., 1982), psychopathology (Chesney et al., 1981), self-reported illness (Suls & Marco, 1990), respiratory problems (Offutt & Lacroix, 1988), marital distress (Sullaway & Morell, 1990), hassles (Smith & O;Keefe, 1985), physiological reactivity (DeBacker et al., 1979; Jenkins et al., 1969) and CHD (Jenkins et al., 1976; MacDougall et al., 1979).

In South Africa, Bluen et al. (1990) reported a Cronbach alpha of ,74 for the JAS on a sample of 114 insurance agents. Due to the popularity of the 21-item version of the JAS (Bishop et al., 1989; Boyd & Begley, 1987; Goldstein et al., 1985; Matthews, 1982; Matthews & Haynes, 1986) and the psychometric adequacy of the JAS, it is chosen as a suitable global Type A measure in the present study.

Framingham Type A Scale. The Framingham Type A Scale (FTAS; Haynes et al., 1978, 1980) is a 10-item, self-report questionnaire which elicits information primarily about the self as hard-driving, competitive, impatient and dominant. The FTAS (see Appendix A) was derived from an initial item pool consisting of 300 items covering a broad spectrum of five areas of psychosocial stress and strain in the Framingham cohort (Haynes et al., 1978). A selection team then chose items they considered suitable to measuring Type A behaviour. These items were factor analysed, and those items that were poorly related to the total scale were eliminated (Haynes & Feinleib, 1982; Haynes et al., 1978). All questions are scored on a range from 0 to 1 (1 signifying the complete presence of the trait), and require dichotomous (yes or no) and Likert type 'not at all' (1), 'somewhat' (2), 'fairly well' (3), 'very well' (4) responses (Haynes et al., 1978). The overall score is determined by averaging the responses to the 10 items (Matthews & Haynes, 1986). Therefore, each question is given equal weight in the FTAS.

Gray et al. (1989) report an alpha reliability coefficient of ,71, while Haynes et al. (1978) reported an internal consistency of ,70 for the FTAS. In addition, the FTAS has been used in South Africa where Adamson (1989) found a Cronbach alpha of ,67 for the scale in a sample of managers. No other studies could be found that had used the FTAS in South Africa.

The FTAS has been found to be positively ($p < ,05$) correlated with the SI in both females and males MacDougall et al., 1979), the JAS (Byrne et al., 1985; Chesney et al., 1981; Haynes et al., 1980; MacDougall et al., 1979); Speed/Impatience subscale of the JAS and the

Bortner Scale[23] (Edwards & Baglioni, 1990).

In addition to the above psychometric adequacy, the FTAS has been shown to be positively ($p < .05$) related to angina like chest pain complaints (Costa & McCrae, 1985; Smith, Follick & Korr, 1984), symptom reports (Smith, O'Keefe & Allred, 1989), chronic emotional distress (Suls & Wan, 1989), suppressed hostility (Haynes et al., 1980), anxiety (Haynes et al., 1980; Smith & O'Keefe, 1985), ambition (Chesney et al., 1981), emotional lability (Chesney et al., 1981), tension (Chesney et al., 1981), daily stress (Chesney et al., 1981), marital distress (Sullaway & Morell, 1990), communication difficulties (Sullaway & Morell, 1990), depression (Smith & O'Keefe, 1985), external locus of control (Smith & O'Keefe, 1985), physical illness (Suls & Marco, 1990) and CHD (Haynes, Feinleib & Kannel, 1978), which all point to the psychometric adequacy of the FTAS as a measure of global Type A behaviour for the purpose of the present study. Given the popularity of the Framingham scale as a global Type A measuring instrument (Edwards et al., 1990), it is chosen as a suitable global Type A measure in the present study.

Depression Scale. The General Health Questionnaire (GHQ, Goldberg, 1972) was designed to be a self administered screening test that measures psychological distress (Monroe, Imoff, Wise & Harris, 1983). The depression subscale of the GHQ was employed in the present study as a measure of depression (Goldberg & Hillier, 1979), which is consistent with a

[23]The Bortner Adjective Rating Scale is a self-report measure consisting of 14 bipolar adjective pairs each separated on a 24 point continuum (Bortner, 1969). It has been widely used as a Type A measuring instrument (Edwards, Baglioni & Cooper, 1990b) and has demonstrated suitable reliability and validity (Edwards, Baglioni & Cooper, 1990b; Price & Clark, 1978; Siegel & Leitch, 1981).

previous research study (Bluen et al., 1990). The Depression Scale consists of 7 items that inquire about whether the person has felt a certain way over a recent period of time (Goldberg, 1972) and is accompanied by a 4 point Likert response ranging from 'not at all' (1), 'no more than usual' (2), 'rather more than usual' (3) and 'much more than usual' (4). In the original method of scoring, the four point bimodal response scale was used. However, the present study utilised the four point Likert format, where weights of 1, 2, 3, 4 are assigned to each position in order to surmount problems associated with truncated ranges (Goldberg, 1972; Goldberg & Hillier, 1979). Thus, high scores indicate high levels of depression.

For the 12-item version of the GHQ, internal consistencies have been demonstrated to be high. Goldberg (1972) reported a high internal consistency of 0,83 for the 12-item GHQ. Kemp and Mercer (1983) reported Cronbach alpha's of 0,91 and 0,80. Kelloway and Barling (in press), reported a Cronbach alpha of ,77 for the 12-item version of the GHQ. Barling, Bluen and Fain (1987) reported an internal consistency of 0,76 for a South African sample of employees and Bluen (1986) reported Cronbach alpha's of 0,97 and 0,93 for South African samples. Similarly, Bluen and Jubiler-Lurie (1990) report a Cronbach alpha coefficient of 0,87 for a South African sample and Sergay (1990) a reliability coefficient of 0,87 for the 12-item GHQ. Jager (1991) reported a Cronbach alpha coefficient of 0,83 for the 12-item version of the GHQ. which consists of the items of the depression scale.

In support of the internal consistency of the Depression Scale used in the present study, Siegert, McCormick, Taylor and Walkey (1987) report a Kuber-Richardson reliability

coefficient of ,90 for the scale. Hughson, Cooper, McArdle & Smith (1988) report a Spearmon rho of 0,54 for the Depression Scale and a Cohen's kappa of ,74. In South Africa, Edelstein (1988) reported a Cronbach alpha of ,84 for the Depression Scale in a sample of 67 miners with know prior indication of psychiatric history. Moschides (1991) reported Cronbach alpha's of 0,68 and 0,79 for the Depression Scale. Northam (1992) reported a Cronbach alpha of ,85 for the Depression Scale in a sample of 235 university students. Bluen et al. (1990) reported suitable internal consistency for the Depression Scale in reporting a Cronbach alpha of ,87 for the Depression Scale in a sample of 114 insurance salespersons.

Reliability of the Depression Scale has been supported by Moschides (1991) in reporting a test-retest reliability coefficient of 0,74 for the scale. Validity of the Depression Scale has been established. The Depression Scale has been found to demonstrate suitable construct validity (Wall, Clegg & Jackson, 1978). Wing, Cooper and Sarrtorius (1974) found the Depression Scale to be positively ($p < 0,5$) associated with the Present State Examination scale, which was designed to measure psychological symptoms of depression. Furthermore, the correlation between the Depression scale and overall clinical agreement by psychiatrists is considered suitable ($r = ,76$; Goldberg, 1972). Edelstein (1988) reported positive ($p < ,05$) relations between the Depression Scale and negative IR stress, psychological distress, somatic symptoms, anxiety and social dysfunction. Also, Moschides (1991) reported negative ($p < ,05$) relationships between the Depression Scale and affective behaviour of Doctors, information seeking and life satisfaction, while positive ($p < ,05$) correlations were found in association with job satisfaction. Furthermore, Northam (1992) reported the Depression Scale to be

positively ($p < ,05$) related to physical symptoms complaints and job satisfaction.

In reviewing the above studies that have operationalised the Depression Scale, it can be seen that it demonstrates psychometric adequacy (Goldberg & Hillier, 1979) and has been used successfully on South African samples (Bluen et al., 1990; Northam, 1992). Therefore, it is an appropriate measure of depression in the present study.

Organisational Commitment Questionnaire. The Porter, Steers and Mowday (1974) Organisational Commitment Questionnaire was used to measure the extent of organisational commitment of the respondents. For parsimony, the nine-item version using only positively worded items was administered in the present study. The nine-item version has demonstrated acceptable results (Angle & Perry, 1981). The Organisational Commitment Questionnaire is designed to assess the perceptions of loyalty to the organisation, willingness to exert effort in order to achieve organisational goals and an acceptance of the organisation's values (Porter et al., 1974). There are seven response alternatives which range from "strongly disagree" (1) to "strongly agree" (7).

The Organisational Commitment Questionnaire has been shown to be a valid and reliable measuring instrument (Dubin, Champoux & Porter, 1975; Mowday, Steers & Porter, 1979; Porter, Steers, Mowday & Boulian, 1974; Steers, 1977; Steers & Spencer, 1977; Stone & Porter, 1975). Mowday et al. (1979) report the internal consistency of the Organisational Commitment Questionnaire to be consistently high in reporting Cronbach alpha's ranging

between ,82 and ,93. Additional evidence of internal consistency has been provided by Jermier and Berkes (1979) who reported a comparable Cronbach alpha coefficient of ,91 for the Organisational Commitment Questionnaire. In South Africa, Fullagar (1986) demonstrated suitable internal consistency for the Organisational Commitment Questionnaire in a sample of shop stewards by reporting a Cronbach alpha of 0,80. Fullagar, Barling and Christie (1991), in a sample of mine workers, reported a Cronbach alpha of 0,81 for the Organisational Commitment Questionnaire.

Also, test-retest reliabilities for psychiatric technicians of 53, ,63, and ,75 over 2, 3 and 4 month periods have been reported for the scale (Porter et al., 1983). Furthermore, for a sample of retail management trainees, Mowday et al. (1979) reported test-retest coefficients of 0,72 and 0,62 over two and three month periods, respectively. In South Africa, Van Zwam (1986) reported a test-retest reliability of ,56 for the Organisational Commitment Questionnaire over a six month period.

Evidence of acceptable levels of convergent, discriminant and predictive validity for the Organisational Commitment Questionnaire have been reported by Mowday et al. (1979). Furthermore, the validity of the Organisational Commitment Questionnaire is indicated by its high correlations ($p < ,05$) with job involvement (Brooke et al., 1988), distributive justice (Brooke et al., 1988) and job satisfaction (Jermier & Berkes, 1979; Mowday et al., 1974). Fullagar et al. (1991) reported positive ($p < ,05$) relations between the Organisational Commitment Questionnaire and job satisfaction, company tenure and union commitment.

In reviewing the studies reported above that have operationalised the Organisational Commitment Questionnaire, it is chosen as a suitable measure of organisational commitment in the present study.

The Physical Symptoms Scale. The physical health of the respondent will be measured by the 22 item Physical Symptoms Scale, developed by Spence et al (1987). The Physical Symptoms Scale can be divided into five components of health, namely sleeping habits (6 items), headaches (5 items), digestive problems (5 items), respiratory infections (3 items) and a general health component (3 items). However, the general health component was eliminated from the study because it compromised validity (Nunnally, 1967). This is consistent with the Spence et al. (1987) findings regarding the psychometric adequacy of the general health scale. The final version of the Physical Symptom Scale consisted of 19 items presented in a Likert type format. Below each of the items respondents are required to indicate the extent to which they report headaches, sleep disorders, respiratory and digestive problems, ranging from 'almost always' (1) to 'almost never' (5). Eleven of the items are reverse scored to account for response bias. Scoring is such that high scores on the scale reflect symptom complaints. The global version of the physical symptom scale was used in the present study, which has been employed by Barling and Charbonneau (1992) and Spence et al. (1987) before.

The reliability and validity of the Physical Symptom Scale has been found to be satisfactory. Barling and Charbonneau (1992) reported for a sample of 113 undergraduate students, a Cronbach alpha of ,80 for the Physical Symptom Scale. Also, Spence et al. (1987) reported

a Cronbach alpha of ,81 for the Physical Symptom Scale in a sample of 362 men and 351 women. Northam (1992) employed the Physical Symptom Scale in South Africa using a sample of students and reported a Cronbach alpha of ,85. Norden (1992) reported a Cronbach alpha of ,87 for the Physical Symptom Scale in a sample of 153 insurance salespeople. No other studies could be found that used the global Physical Symptom Scale in South Africa.

In addition to the above, the Physical Symptoms Scale has been found to demonstrate psychometric adequacy. Barling and Charbonneau (1992) reported sleep habits, headaches, respiratory infection and digestion to be positively related to a global Type A index ($p < ,05$). In addition, positive ($p < ,05$) relations between sleep habits and headaches and II were reported. Barling and Boswell (1991) reported positive ($p < ,05$) relations between the Physical Symptoms Scale and cognitive difficulties and negative ($p < ,05$) relationships with self rating and supervisor rating in a sample of 163 members of the Canadian Armed Forces. Spence et al. (1987) reported positive ($p < ,05$) relations between the Physical Symptoms Scale and mastery and work dimensions of the Work and Family Orientation Questionnaire and negative ($p < ,05$) relations with II for 256 male and 225 female students. In addition, Spence et al. (1987) and Barling and Charbonneau (1992) provided satisfactory results in operationalising the Physical Symptoms Scale to render it suitable to the present study. In South Africa, Northam (1992) demonstrated satisfactory construct validity in reporting positive ($p < ,05$) relations between the Physical Symptoms Scale and II, anger, hostility, competitiveness, depression and negative ($p < ,05$) relations with academic performance. Thus, from the research discussed on the Physical Symptoms Scale, it is considered to be

psychometrically adequate as a measure of physical symptoms complaints, which supports its inclusion within the present study.

Job Involvement. Job involvement was measured using the Job Involvement Scale developed by Jans (1982). The Job Involvement Scale contains four items which describe the individual's psychological identification with the specific job or position he/she occupies. There are five response alternatives ranging from 'strongly disagree' (1) to 'strongly agree' (5). One of the items is reverse scored.

Jans (1982) has reported satisfactory validity and reliability for the Job Involvement Scale. To demonstrate internal consistency, he considered two groups of army officers. The first sample yielded a standardised alpha coefficient of ,80. The second study of 618 army officers revealed a standardised alpha coefficient of ,78. The coefficient alpha of ,78 was replicated in a follow-up study conducted three years later. The construct and discriminant validity of the Job Involvement Scale are reported by Jans (1982) to be satisfactory (Note 1).

In South Africa, Nunns (1987) investigated the internal consistency reliability of the Job Involvement Scale in a sample of 304 supervisors and reported an alpha of ,68. The relatively low alpha coefficient was attributed to the short length of the Job Involvement Scale (Anastasi, 1988), which facilitated the use of the Spearman Brown prophesy formula. An estimated alpha coefficient of ,81 was produced which supported the internal consistency of the Job Involvement Scale. Barling (1984) reports the Job Involvement Scale to demonstrate

suitable internal consistency.

In reporting construct validity, Nunns (1987) found a negative ($p < ,05$) relationship between the Job Involvement Scale and interpersonal conflict. No other studies could be found that have reported on the construct validity of the Job Involvement Scale.

The Job Involvement Scale has been shown to demonstrate adequate internal consistency and construct validity (Barling, 1984) and is considered to be a suitable measure of job involvement for the purpose of the present study (Jans, 1982).

Overall Job Satisfaction scale. The Internal Job Satisfaction Scale was administered in the present study as a measure of intrinsic job satisfaction (Warr, Cook & Wall, 1979). The Internal Job Satisfaction is a derivative of the Overall Job Satisfaction Scale which consists of 15 items that are designed to examine extrinsic and intrinsic features of the job (Clegg & Wall, 1981). The seven intrinsic job satisfaction (2, 4, 6, 8, 10, 12, 14) concern job elements such as autonomy, recognition, responsibility, promotional opportunities, use of abilities, which appears to be conceptually related to the nature of AS (Emmons, 1989). On the other hand, the eight extrinsic items include satisfaction with supervisors, wages, management, fellow workers and physical working conditions (Warr et al., 1981). Arvey et al. (1989) address this issue in suggesting that extrinsic job satisfaction is more dependent on environmental factors. Thus, for the purpose of the present study, Intrinsic Job Satisfaction was chosen as the preferred measure in testing the construct validity of the MTABS. In

administering the Intrinsic Job Satisfaction Scale, respondents are required to rate their level of dissatisfaction or satisfaction on a seven-point Likert scale ranging from 'I'm extremely dissatisfied' (1), to 'I'm extremely satisfied' (7). All items are scored so that a higher score indicated higher intrinsic job satisfaction (Cook et al., 1980).

The Intrinsic Job Satisfaction scale has been shown to demonstrate satisfactory reliability and validity. Warr et al. (1979) report Cronbach alpha on two different samples of 0,79 and 0,85 for the Intrinsic Satisfaction Scale. Furthermore, a test-retest reliability of ,63 (N = 60), across a six month period has been shown for the Internal Job Satisfaction Scale (Warr et al., 1979). Clegg and Wall (1981) report an alpha reliability coefficient of ,92 of the Internal Job Satisfaction Scale. In demonstrating construct validity, the Intrinsic Job Satisfaction Scale has been found to correlate positively ($p < ,05$) with measures of internal job motivation, work involvement, self-rated anxiety, life satisfaction and general well-being (Warr et al., 1979). Furthermore, one way analyses has revealed a highly significant ($p < ,05$) correlation between the job-level of the respondent and the reported levels of intrinsic job satisfaction (Warr et al., 1981).

A literature search indicated no further studies that have reported on the Intrinsic Job Satisfaction Scale, research has reported satisfactory results for the Overall Job Satisfaction Scale. Given that the intrinsic and extrinsic job satisfaction components correlate very high ($r = ,76$; Warr et al., 1979), it was considered important to present some information on the psychometric adequacy of the Overall Job Satisfaction Scale.

In South Africa, the Overall Job Satisfaction Scale has been shown to demonstrate acceptable reliability. Bluen and Barling (1987) and Barling, Bluen and Fain (1987) both report an equivalent reliability coefficient of 0,81 for the Overall Job Satisfaction scale using South African samples. Bluen and Jubiler-Lurie (1990) and Howse (1987) reported reliability coefficients of 0,88 and 0,90, respectively on South African samples. Jager (1991) reported a Cronbach alpha of 0,91 for the scale in a sample of black managers. Norden (1992) reported a Cronbach alpha of ,86 for the Overall Job Satisfaction Scale in a South African sample. Similarly, Bluen (1986) reported a high internal consistency of 0,91 for the Overall Job Satisfaction Scale.

In reviewing test-retest reliability in South African sample, Bluen (1986) reported a reliability coefficient of 0,63 for the Overall Job Satisfaction Scale over a period of six months. Bluen and Jubiler-Lurie (1990) reported a three month test-retest reliability of 0,90 and Jager (1991) a test-retest reliability of 0,65 over a two month period.

In South Africa, Bluen (1986) reported positive ($p < ,05$) correlations between the Overall Job Satisfaction Scale and propensity to leave, psychological health and negative IR stress. Howse (1987) recorded the Overall Job Satisfaction Scale to be positively ($p < ,05$) correlated with IR events, role ambiguity, life satisfaction, psychological distress and propensity to leave. Barling et al. (1987) reported positive ($p < ,05$) correlations between the Overall Job Satisfaction Scale and psychological distress, personality hardiness, organisational commitment and marital satisfaction. Bluen and Jubiler-Lurie (1990) reported significant correlations with

psychological distress, peer support and IR stress. Jager (1991) reported positive relations between Overall Job Satisfaction and quantitative role overload, role ambiguity and role conflict. Norden (1992) reported a positive ($p < ,05$) correlation between the Overall Job Satisfaction Scale and perceived control and physical symptoms complaints.

Given the fact that the Intrinsic Job Satisfaction has been shown to demonstrate psychometric adequacy and the Overall Job Satisfaction Scale (from which it is derived) has been found to be both reliable and valid (Bluen, 1986; Bluer et al., 1990; Bluen & Jubiler-Lurie, 1990; Howse, 1987; Jager, 1991; Sergay, 1990), the Intrinsic Job Satisfaction Scale is considered suitable as a measure of intrinsic job satisfaction in the present study.

RESULTS

Construct validity of the MTABS was assessed by factor analysing the data. The 32 items administered to the respondents were factor analysed, using confirmatory factor analysis and a varimax rotation. Nine items were eliminated due to MSA values and communality estimates below 0,50 and 0,20, respectively. This left 23 items that were suitable for factor interpretation. Final factor solutions for the 23 items are described in Table 6.1. As shown, the overall MSA for the dimensions is 0,79 and individual MSA's were all greater than 0,50, suggesting that the data were appropriate for the confirmatory factor analysis model.

Five factor extraction criteria were used, namely, 'Kaiser's Little Jiffy" technique (eigenvalues

greater than unity), the scree test (see Figure 6.1), the factor loadings criterion (> 0,30), Harris' (1967) exclusion of "singlet" and "doublet" factors and the chi-square factor criterion technique (Loehlin, 1987).

First, exploring the "Kaisers Little Jiffy technique" with eigenvalues greater than unity, six factors were recorded for the present study. Second, a scree test was plotted, which is presented in Figure 6.1. Analysis of the scree plot of eigenvalues indicated that the characteristic roots began to level off and form a horizontal line after seven factors (Cattell, 1966). The chi-square maximum likelihood criterion ($\underline{x}^2 = 2,45$, $\underline{p} < ,01$) recommended the extraction of five factors as the best factor solution. Finally, the factor loadings criterion (> 0,30) suggested six factors as the final factor solution. However, using Harris' (1967) definition of a 'robust' factor as one that has a minimum of two items, the sixth factor, which consisted of a "singlet" factor, was eliminated.

Thus, five factors were retained by the confirmatory factor analysis, accounting for 74% of the total variance (see Table 6.1). Communalities were acceptable (i.e., $\underline{h}^2 > 0,20$). As can be seen from Table 6.1, three instances of multiple loadings ("I lose my temper"; "How is your temper nowadays?" and "I get angry when slowed down by other's mistakes") were found in the factor structure. However, given the conceptual meaning of the items and that, in each case, the factor loading was greater on the predicted factor, interpretability of the factor solution was not compromised (see Table 6.1)..

Table 6.1
Varimax rotated factor loadings on five factors of the MTABS.

Type A component	Factor I	Factor II	Factor III	Factor IV	Factor V	h^2	MSA
Hostility							
1. I express my anger.	81	13	09	12	08	71	77
2. I tell someone how I feel if they annoy me.	60	-14	15	13	00	43	67
3. I lose my temper.	59	34	13	10	21	54	80
4. I argue with others.	49	25	00	10	10	33	81
5. I strike out at whatever infuriates me.	41	13	-06	04	12	21	79
Impatience-Irritability							
6. Would people who know you well agree that you tend to get irritated easily?	24	69	-01	04	06	54	80
7. How is your temper nowadays?	33	61	14	05	11	51	81
8. Would people who know you well, agree that you tend to do most things in a hurry?	11	60	27	08	-04	46	77
9. When you listen to someone talking and this person takes too long to come to the point do you feel like hurrying him or her along?	05	51	19	11	-01	31	80
10. Do you find yourself hurrying to places when there is plenty of time?	-05	42	28	06	-06	26	69
Achievement Striving							
11. Do you ever set deadlines or quotas for yourself at work or at home?	00	04	64	04	00	42	79
12. Nowadays, do you consider yourself to be hard-driving and competitive?	-02	11	57	-04	-16	36	73
13. Would people who know you well agree that you take your work too seriously?	-04	04	54	02	01	29	77
14. In amount of effort put forth, I give:	01	19	46	-02	09	26	75
15. Does your job stir you into action?	08	04	42	06	10	20	78
16. How would your spouse (or closest friend) rate your general level of activity?	04	09	41	10	16	20	79
Anger							
17. I feel infuriated when I do a good job and get a poor evaluation.	12	02	07	80	24	71	76
18. I feel annoyed when I am not given recognition for good work.	09	17	12	66	22	54	79
19. I get angry when slowed down by other's mistakes.	31	26	23	33	11	34	92
20. It makes me furious when I am criticised in front of others.	14	06	-04	63	04	42	80
Competitiveness							
21. To be a real success I feel I have to do better than everyone I come up against.	11	-03	01	08	73	55	74
22. It is important to me to perform better than others on a task.	16	06	16	16	57	40	81
23. I judge my performance on whether I do better than others rather than on getting a good result.	07	-06	-01	04	46	22	74
24. It annoys me when other people perform better than I do.	04	13	09	21	42	24	79
Eigenvalues	8,56	3,54	3,04	2,03	1,69		
% Common variance accounted for	34	48	61	68	74		
% Total variance accounted for	34	14	13	07	06		
Overall MSA							79

Note. To save space, decimal points have been ommitted for all factor loadings, communalities and MSA's.
Underlined values denote factor loadings greater than ,30.

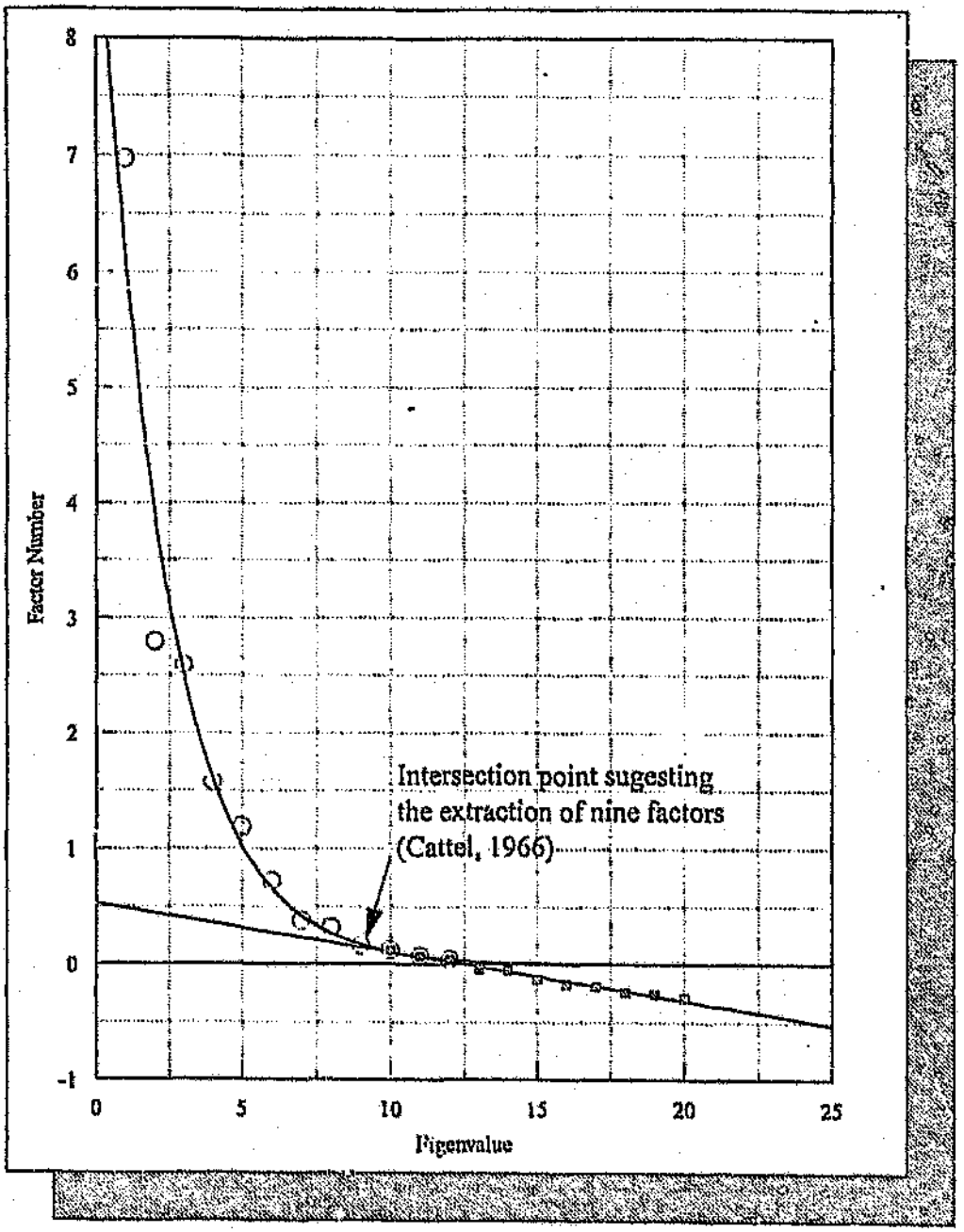


Figure 6.1 : The Scree test.

Factor I, accounted for 34% of the variance and consisted of five items (e.g., I argue with others) that measure antagonism, criticism and expression of anger. These items appeared particularly suited to the free-floating hostility originally defined by Friedman and Rosenman (1974) as central to the construct. Consequently, Factor I was labelled hostility.

The second factor consisted of five of the original seven items of the II scale. It accounted for 14% of the variance consisting mostly of items related to the person's level of time urgency (e.g., Do you find yourself hurrying to get to places even when there is plenty of time?) and levels of irritability. Therefore, Factor II was labelled Impatience-Irritability (II).

Factor III contained six items from the AS scale and accounted for 13% of the variance. The factor reflected items characteristic of personal drive and ambition (e.g., Would people who know you well agree that you take your work seriously?). Consistent with the definition of achievement striving and the scale from which it was derived, Factor III was labelled achievement striving (AS).

The fourth factor contained four anger-related items (e.g., I get angry when slowed down by others mistakes) and accounted for 7% of the variance. The content validity of this dimension was consistent with the definition of the anger dimension within Type A behaviour (Spielberger et al., 1985). Factor IV was labelled anger.

The fifth factor contained four of the seven items from Cassidy and Lynn's (1987)

competitiveness scale (e.g., "To be a real success I feel I have to do better than everyone I come up against") and explained 6% of the variance. Factor V was labelled competitiveness.

Reliability of the MTABS

Internal consistency of the MTABS was calculated using Cronbach's alpha (see Table 6.2). Adequate internal consistency coefficients were found for all five dimensions of the MTABS (M alpha = ,73, range alpha = ,67-,75).

Test-retest reliability was calculated over three months for a separate sample of 27 employees from the human resources department at the same bank at which the study was being conducted. Five of the employees from the initial sample had left the organisation during the three month interval, reducing the test-retest sample to 22 respondents (M age = 31,30 years, SD = 7,63; M organisational tenure = 6,74 years, SD = 6,74; M education = 12,44 years; SD = 1,65; males 40%). All test-retest correlations were significant (AS: r = ,80; II: r = ,83; anger: r = ,81; hostility: r = ,78; competitiveness: r = ,79; p < ,01), suggesting suitable test-retest reliability.

Construct Validity of the MTABS

To assess the relationship between the five components of Type A behaviour, intercorrelations were calculated (see Table 6.2). As shown in Table 6.2, the magnitude of the correlations

Table 6.2

Pearson correlations between the 5 components of Type A behaviour and conceptually related variables (N = 363)[a]

	M	SD	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Achievement Striving	23,17	3,54	69											
(2) Impatience-Irritability	13,01	3,30	19**	68										
(3) Anger	10,61	2,82	12*	29**	74									
(4) Hostility	9,44	2,60	00	25**	34**	75								
(5) Competitiveness	5,23	3,84	04	10	35**	25**	67							
(6) Framingham Type A Scale	4,81	1,92	28**	43**	25**	21**	27**	62						
(7) Jenkins Activity Survey	276,79	58,89	45**	49**	21**	17**	17**	39**	61					
(8) Depression	2,86	3,84	-15**	11*	14**	12*	10*	12*	-11*	90				
(9) Physical Symptoms Complaints	69,62	12,17	-09	16**	18**	23**	17**	25**	05	43**	83			
(10) Job Involvement	14,66	3,25	30**	-02	-11*	-14**	-06	07	06	05	-17**	63		
(11) Organisational Commitment	48,01	10,79	21**	-07	-09	-18**	02	-04	09	10	-18**	37**	90	
(12) Intrinsic Job Satisfaction	78,67	17,89	13*	-06	-26**	-23**	-15**	-10	06	-24**	19**	50**	58**	88

* $p < .05$
** $p < .01$

a Sample size ranges between 349 and 363.
Note. For ease of representation, the decimal points have been omitted in the correlation matrix.
Underlined figures in the diagonal represent Cronbach alpha's.

between the five MTABS components was modest (M r = ,19; range = ,00-,35), which supports the independence of the AS, II, anger, hostility and competitive components.

The construct validity of the MTABS was further evaluated by correlating II, AS, anger, hostility and competitiveness with two global Type A behaviour scales (JAS and FTAS) and with measures of depression, physical symptom complaints, intrinsic job satisfaction, job involvement and organisational commitment (see Table 6.2). From Table 6.2, it can be seen that II, AS, anger, hostility and competitiveness were all significantly related to the JAS (M r = .30, range =,17-,49; p < ,01) and the FTAS (M r = ,28, range = ,21-,43, p < ,01). Thus, the components of the MTABS are associated with the two most prevalent global Type A behaviour questionnaires (Edwards & Baglioni, 1991), which supports the first hypothesis.

As predicted, significant positive correlations were found between AS and job involvement, organisational commitment and intrinsic job satisfaction (p < ,05). Conversely, II, anger, hostility and competitiveness were positively related to depression and physical illness symptom complaints (p < ,05). Unexpectedly, significant and negative relationships were found between AS and depression; anger and both job involvement and intrinsic job satisfaction; hostility and job involvement, organisational commitment and intrinsic job satisfaction; and competitiveness and intrinsic job satisfaction (p < ,05). Overall, the significant findings offered general support for the construct validity of the MTABS, which supported the second hypothesis.

DISCUSSION

The present study investigated the dimensionality of Type A behaviour. Confirmatory factor analysis supported the multidimensional model of Type A behaviour, comprising five independent components labelled AS, II, anger, hostility and competitiveness. These results provide empirical support for the psychometric adequacy of the MTABS. The MTABS was found to be internally consistent and displayed satisfactory test-retest reliability. Furthermore, the five MTABS factors were modestly interrelated, reflecting the independence of the components. Construct validity of the MTABS was supported through the isolation of five independent factors in direct support of the multidimensional model developed in Chapter 4.

Second, the five factors derived from the factor analysis (AS, II, anger, hostility and competitiveness) were compared with previously validated global Type A measuring instruments, namely, the FTAS and the JAS to examine their construct validity. Significant, but modest relationships were found. Given the confounding effect of a global index (Carver, 1989), modest associations were consistent with predictions. Third, and consistent with initial hypothesis, AS was positively ($p < ,05$) related to job involvement, organisational commitment and intrinsic job satisfaction, whereas II, anger, hostility and competitiveness were positively (p .5) associated with depression and physical illness symptom complaints. Thus, component scoring yielded more informative findings than the global measures of Type A behaviour, namely the JAS and the Framingham Type A scale. Moreover, in certain cases, where non-significant relationships were predicted, significant ($p < ,05$) negative relationships

were found. Specifically, AS was found to be negatively ($p < ,05$) related to depression; anger was negatively related to job involvement and intrinsic job satisfaction; hostility was negatively ($p < ,05$) related to job involvement, organisational commitment and intrinsic job satisfaction; and competitiveness was negatively ($p < ,05$) related to intrinsic job satisfaction.

The differential relationships help to explain inconsistent relationships reported in the literature between global Type A behaviour and job satisfaction (Burke & Weir, 1980; Dearborn & Hastings, 1987; Greenglass, 1987; Howard et al., 1977; Lee et al., 1990; Matteson et al., 1984), job involvement (Burke & Weir, 1980; Jamal, 1985), organisational commitment (Burke & Weir, 1980; Jamal, 1985), physical illness symptom complaints (Barton et al., 1982; Burke & Weir, 1980; Hicks & Campbell, 1983; Jamal, 1985; Lee et al., 1990; Matteson et al., 1984; Rime et al., 1989; Stout & Bloom, 1982) and depression (Brief et al., 1983; Burke & Weir, 1980; Caplan & Jones, 1975; Strube et al., 1985). To elaborate, if the components are differentially related to health and work related outcomes and their contribution is treated as a composite index, then summation would suggest a cancelling effect, with null results (Carver, 1989). Conversely, examining AS, II, anger, hostility and competitiveness as independent dimensions appears to produce greater specificity and accuracy than a global operationalisation of the construct (Bluen et al., 1990; Barling et al., 1988, 1990; Barling & Boswell, 1991, Edwards & Baglioni, 1991; Helmreich et al. 1988; Pred et al., 1986; Spence et al., 1987, 1989).

The compilation of the MTABS addresses two central criticisms of Type A behaviour

research, namely, non-comprehensiveness and unidimensionality of Type A measures (Edwards & Baglioni, 1991). First, the literature strongly criticises global Type A scales for failing to operationalise all five components Friedman and Rosenman (1974) defined as central to the Type A construct (Edwards et al., 1990a). Specifically, anger and hostility items have been omitted from global Type A measuring instruments (Boyd & Begley, 1987; Edwards et al., 1990a; Gray et al., 1989; Harding et al., 1986; Fekken et al., 1985; Matthews, 1982; Matthews & Haynes, 1986). Furthermore, component analysis by Helmreich et al. (1988) and Spence et al. (1987) failed to report a competitiveness dimension for the JAS. The exclusion of anger, hostility and competitiveness, compromises the conceptual integrity of Type A behaviour, since the definition of Type A behaviour emphasises the inclusion of these dimensions (Edwards & Baglioni, 1991; Glass, 1977; Price, 1982a; Strube, 1987; Wright, 1988).

Spence et al. (1987, 1989; Helmreich et al., 1988; Pred et al., 1986) attempted to address the need to conceptualise and operationalise Type A behaviour as a multifaceted construct. Their research on II and AS, together with recent findings by Bluen et al. (1990), have clearly pointed to the importance of analysing the "toxic" and "nontoxic" components separately. However, Spence et al. (1987, p. 527), in reviewing the limitations of their study, mention that their bidimensional model failed to account for anger, hostility and competitiveness components of Type A behaviour.

Further studies have attempted to operationalise anger, hostility and aggression as toxic

predictors of health. However, these studies are also criticised for neglecting the role of II and competitiveness as predictors of health (Jennings, 1984) and the multidimensional nature of hostility has been overlooked (Engebretson & Matthews, 1992; Siegman et al., 1987; Yuen & Kuiper, 1991). Indeed, a number of ambiguities have been delineated when interpreting the hostility construct (Dembroski et al., 1989; Engebretson & Matthews, 1992; Siegman et al., 1987; Yuen & Kuiper, 1991).

Empirical support for conceptual and operational differences between the different forms of hostility maintain that there are two forms of hostility, namely, the experience of hostility (neurotic hostility) and the expression of hostility (aggressive-hostility; Dembroski et al., 1989; Engebretson & Matthews, 1992; Siegman et al., 1987). The literature points to the need to operationalise aggressive-hostility, which is regarded as "toxic", and to ignore neurotic hostility as a health predictor (Dembroski et al., 1989; Engebretson & Matthews, 1992). The present study addressed this need since the hostility factor that emerged from the factor analysis was conceptually consistent with the aggressive-hostility component of Type A behaviour (Engebretson & Matthews, 1992; Siegman et al., 1987).

By definition, AHA studies have focussed solely on anger, aggression and hostility in relation to CHD (Dembroski & Costa, 1987; Dembroski et al., 1985; Hecker et al., 1988; Matthews et al., 1977; Shekelle et al., 1983; Weidner et al., 1987; Williams et al., 1980). An examination of the present findings reveals II, anger, hostility and competitiveness to be differentially correlated with psychological and physical health, and work related constructs

as well. This verifies that previous research is too narrow in restricting the focus of II, anger, hostility and competitiveness to CHD, but should also include other health and work related outcomes.

The compilation of the MTABS addresses the issues of comprehensiveness and unidimensionality a) by operationalising all five conceptual components of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990a), and b) by examining each component as an independent subscale. Accordingly, Type A behaviour is conceptualised and operationalised as a comprehensive and multifaceted construct by the MTABS.

The delineation of five, independent components of Type A behaviour has important implications to the literature. First, theoretical models of Type A behaviour have failed to define the components of Type A behaviour comprehensively (Matthews, 1982). The present study showed that, consistent with the hypotheses, five components were found to support the construct validity of Type A behaviour. Furthermore, the development of the MTABS assists in the measurement of multifaceted Type A behaviour. But, it remains for future research to assess the predictive utility of a multidimensional model in relation to health and work-related outcomes (Ivancevich & Matteson, 1988; Price, 1982; Taylor & Cooper, 1988). That is, the differential relations of the components to health and work outcomes needs to be empirically tested.

In considering some of the limitations of the present study, several comments might be made.

The first consideration of the present study is that it was restricted to a banking sector sample, limiting generalisability to other populations. To test the generalisability of the MTABS, the scale needs to be cross-validated in a different sample setting (Cooil, Winer & Rados, 1987; Loehlin, 1987). A common criticism directed at factor analytic research is the lack of replication in independent samples (Bayer & Gerstein, 1988). For example, Jenkins (1987) contends that different working conditions can create different behavioural manifestations of the components through selection, learned associations over time, and sensitisation. Thus, the generalisation of the present findings within a homogeneous setting (e.g., salespeople), and confirmation of a five-factor solution are needed in the future.

A second limitation of the study is that it is restricted by the interpretability of the number of factors criterion (Jackson, 1991). Boyle (1992) argues that the Kaiser-Gutman rule has been shown to be unreliable in some cases. Also, the subjectivity of the scree test is a limitation of the interpretability of the final factor solution (Loehlin, 1987). A recommended technique to help overcome subjectivity in interpreting the scree test is to consider Velicer's (1976) MAP test (see Boyle, 1992).

A third limitation of the present study is that it fails to compare the MTABS with the SI. This is an important consideration in the measurement of Type A behaviour since the SI defines the Type A construct and all measures should (to maximise construct validity) be compared and evaluated against it (O'Looney, 1984). However, the SI (see Chapter 1) has reported several problems related to its' measurement and consistency and a literature review indicated

no previous attempts to operationalise the SI in South Africa, which cautioned its use in the present study.

A fourth limitation of the findings is the use of self-reports, which have been found to be susceptible to acquiesence (Davison & Srichantra, 1988, Spector, 1987) and social desirability (Emmons & McAdams, 1991) effects. For example, Diamond (1982) noted the difficulty in assessing anger accurately through self-report measures; citing denial and rigid control over emotional experience as factors that interfered with accurate recall. Also, Suls and Marco (1990) criticise the use of self-reports of illness or symptoms. As such, illness reports and objective indicators of physical health have been found to be modestly correlated (Linn & Linn, 1980). In its place, future suggestions are to consider objective indicators such as medical charts and physician ratings. Also, objective work related outcomes (Scmitt, 1989), rather than simply focussing on job satisfaction, organisational commitment and job involvement, are recommended for future studies.

As an extension of the research methodology, the identification of measurement error is a fifth limitation of the present study. Although the present study adopted the minimum cut-off of 0,60 as recommended in the literature (Nunnally, 1967), James and James (1989) note that confirmatory analyses should increase the reliability cut-off to at least 0,70 as a recommended strategy. Therefore, future studies should consider this recommended strategy and attempt to develop a measuring instrument that reflect alpha coefficients above the 0,70 range.

A final limitation of the MTABS is that procedural and distributional equivalence effects may have based the results of the present study (Cooper & Richardson, 1986). Two important limitations are considered. First, the response formats for the independent components were not equivalent (Cooper & Richardson, 1986). Second, the number of items underlying the five independent components of the MTABS did not render a fair comparison (Cooper & Richardson, 1986). Thus, a consideration for future research is to design a multidimensional scale that is similar to the MTABS, but addressess the importance of procedural and distributional equivalence effects.

Conclusion

Overall, despite some of the limitations discussed above, it is evident from the findings reported that the MTABS demonstrates adequate reliability and construct validity. The encouraging findings reported for the MTABS addresses the need for a multifaceted Type A measuring instrument that can operationalise the conceptual components of Type A behaviour. It remains important to test a multifaceted model of the components of Type A behaviour. The main study of the present thesis focuses on a multifaceted operationalisation of Type A behaviour. In order to assess the predictive utility of multifaceted Type A behaviour, a model of the independent relations of AS, II, anger, hostility and competitiveness to health and work related outcomes is presented in Chapter 7. The model presented, outlines the hypothesised relationship between AS, II, anger, hostility, competitiveness and health and work related outcomes. The multidimensional model is then empirically tested using multiple regression.

CHAPTER 7

EMPIRICAL RELATIONS OF THE COMPONENTS OF TYPE A BEHAVIOUR

The Type A literature has been criticised for confining the scope of investigation to a global index and failing to differentiate between the 'toxic' and 'non-toxic' dimensions of the construct (Dembroski & Costa, 1987; Wright, 1988). Specifically, a global conceptualisation leads to a confounding among the explanatory components (Carver, 1989). This has reformulated thinking in the Type A literature (Dimsdale, 1988; Wright, 1988). On the one hand, recent research has attempted to examine the differential relations of the II and AS components in association with health, and work related outcomes, respectively (Barling & Charbonneau, 1992; Bluen et al., 1990; Helmreich et al., 1988; Spence et al., 1987). Conversely, a second trend is to view anger, hostility and aggression (the AHA syndrome) as predictors of health related outcomes (Spielberger et al., 1983). Although informative and useful, the II/AS and AHA models are not comprehensive (Burns & Bluen, 1992). Specifically, Type A behaviour is defined as consisting of five independent components, namely, AS, II, anger, hostility and competitiveness (Edwards & Baglioni, 1991; Glass, 1977a; Wright, 1988). Therefore, the II/AS and AHA models fail to operationalise all of the conceptual components of Type A behaviour (Burns & Bluen, 1992). Consequently, there is no integrated body of empirical research investigating the health and work related consequences of the independent components of Type A behaviour.

Given the potential positive and negative consequences of the construct, Type A research is in need of a model that proposes differential relations of AS, II, anger, hostility and competitiveness in association with health and work related outcomes. The aim of the present

thesis is to address this gap in the literature.

Development of the Conceptual Model of some Outcomes of Type A Behaviour

Experts in the field have formulated, in response to the inconsistency in findings, the need to treat Type A behaviour as a multifaceted construct (Edwards & Baglioni, 1991; Wright, 1988). A literature review recognised that popularised Type A measuring instruments have failed to operationalise all of the conceptual components of Type A behaviour. Also, on a psychometric level, these measuring instruments have failed to demonstrate adequate reliability and validity (Edwards et al., 1990a). In addressing this shortfall, a multidimensional measuring instrument, called the MTABS, was developed in Chapter 6. This scale was shown to consist of five, independent components, labelled AS, II, anger, hostility and competitiveness. The MTABS was shown to demonstrate satisfactory reliability and validity.

There are two objectives of the present chapter. The first is to propose a model (see Figure 7.1) of some of the outcomes of a multifaceted conceptualisation of Type A behaviour. The second objective is to test the model empirically. The importance of the model, as an extension of the model developed in Chapter 4, is to show that the components, when assessed independently, are differentially related to health and work related outcomes. If the components can be shown to reveal differential relations with health and work related outcomes, the utility of a multifaceted conceptualisation is supported. Furthermore, the inconsistency in previous global findings is explained more fully. Thus, a model of Type A behaviour, which is theoretically consistent and empirically defensible, can provide an heuristic base for future research efforts (Seeman, 1989).

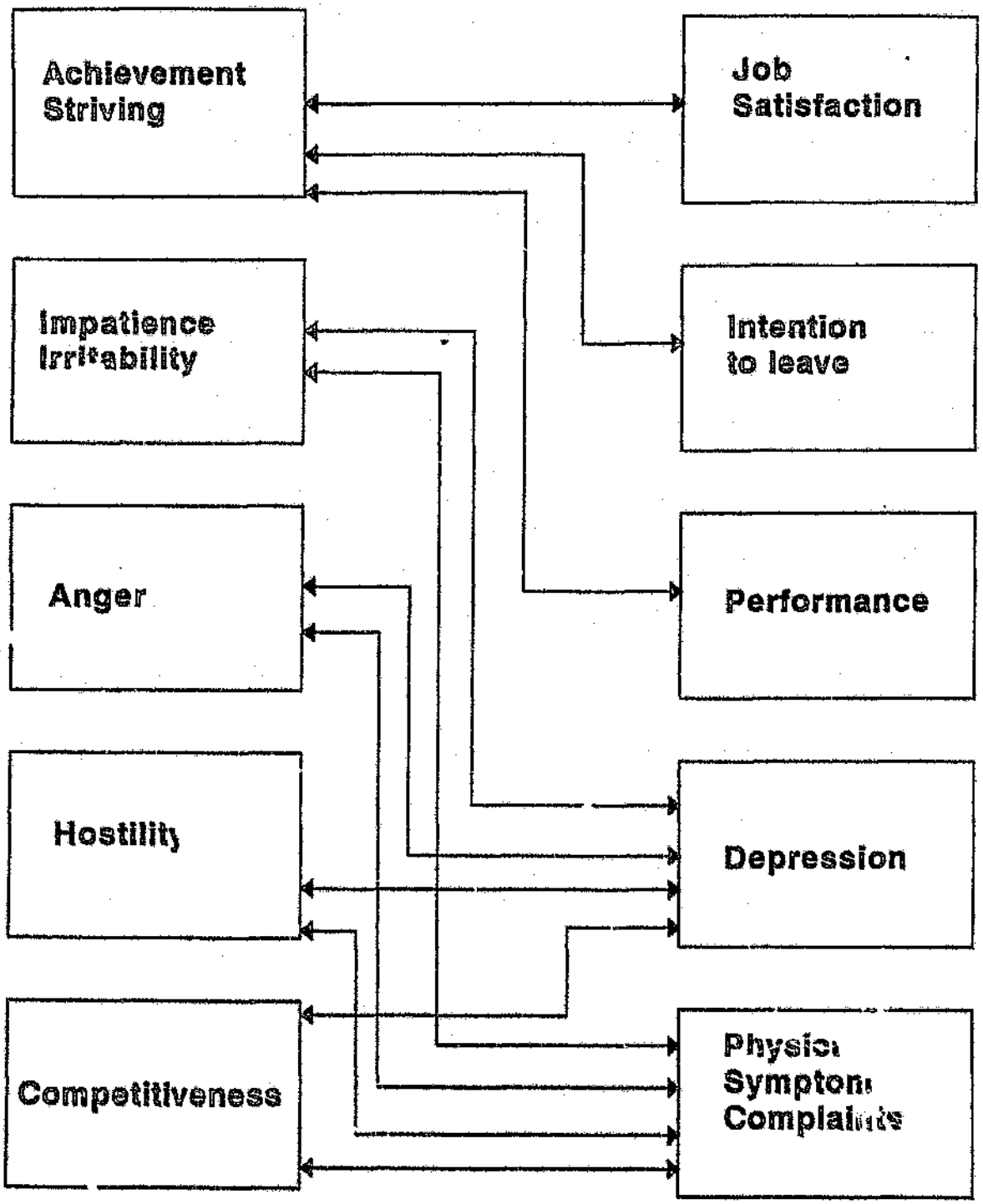


Figure 7.1: Hypothesised relationships between the components of multidimensional Type A behaviour and health and work-related outcomes

The five components, namely AS, II, anger, hostility and competitiveness were discussed in Chapter 4. Therefore, to circumvent repetition, a definition of these constructs is avoided in the present chapter.

Dependent Variables

Health Outcomes

Depression. Broadly defined, depression is a dysphoric mood characterised by feelings of sadness, guilt, impairment of social functioning and sense of pleasure, feelings of worthlessness, low energy level, and loneliness (Musikanth & Fourie, 1983; Siegel & Alloy, 1990; Weisse, 1992). Depression is the most common clinical disorder to be found in the literature which carries both high economic and emotional costs (Robinson, Berman & Neimeyer, 1990; Weisz, Weiss, Wasserman & Rintoul, 1987). Epidemiological research estimates that up to 20% of the population experience a major depressive episode at some point in their lives (Boyd & Weissman, 1981; Weisse, 1992). Of those afflicted, a large number are likely to remain chronically depressed (Kuiper & Martin, 1989; Weissman & Klerman, 1977), while those who reveal signs of improvement are susceptible to recurrence of depressive feelings (Belsher & Costello, 1988).

Research has found depressed individuals to perceive themselves negatively (Beck, 1970; Belsher & Costello, 1988; Lewinsohn, Mischel, Chaplin & Barton, 1980), accept responsibility for failure (Kuiper, 1978; Seligman, Abramson, Semmel & von Baeyer, 1979) and remember less positive, and more negative information about themselves, compared to

non-depressed individuals (Derry & Kuiper, 1981; Nelson & Craighead, 1977; Roth & Ingram, 1985; Teasdale, Taylor & Fogarty, 1980).

A number of research studies have found that peoples' interpretation of their life experiences play an important role in both the emergence and the consequences of depressive affect (Abramson, Seligman & Teasdale, 1978; Beck, 1976; Kuiper & Martin, 1989; Snell, Hawkins & Belk, 1987). Of significance to this interpretation are the causal attributions that depressed and non-depressed individuals make about their behaviour (Abramson et al., 1978). For example, depressed persons are believed to feel a chronic lack of control (Abramson et al., 1978; Weary, Elbin & Hill, 1987; Weisz et al., 1987) and low self-esteem (Hyland, 1987; Kuiper & Martin, 1989; Wright, 1988). As described in Chapter 2, heightened sensitivity to loss of control (Glass, 1977a) and low feelings of self-esteem (Price, 1982a; Strube, 1985, 1987), are underlying cognitive elements of Type A behaviour. Specifically, Price's (1982a) model stresses the existence of a dysfunctional belief system that regulates and guides self-evaluative processes (Watkins et al., 1989). Congruent with Price's (1982a) assumptions, Kuiper and Martin (1989) developed a self-worth model of depression which argues that those individuals who endorse a large number of dysfunctional attitudes are cognitively vulnerable to depression. Thus, drawing from the two models, it can be argued that dysfunctional attitudes within Type A's (see Price, 1982a; Strube, 1985), establish unrealistic contingencies for evaluating self-worth (Martin et al. 1989), which provides a conceptual link to depression. Furthermore, Type A behaviour has been found to be significantly related to an accumulation of distressing life events (Byrne & Rosenman, 1986; Chesney et al., 1981; Jarvikoski & Harkapaa, 1988).

A consistent finding in the stress literature concerns the relationship between negative life events and depression (Gilbert, 1991; Kuiper & Martin, 1989). Thus, a conceptual relationship between Type A behaviour and depression is supported (Burke & Weir, 1980).

The relationship between Type A behaviour and depression has been empirically supported (Brief et al., 1983; Brunson & Matthews, 1981; Byrne & Rosenman, 1986; Carmody et al., 1984; Dimsdale et al., 1978; Francis, 1981; Howard et al., 1976; Matteson & Ivancevich, 1982; Nowack, 1986; Suls & Sanders, 1989). On closer examination of the literature, nonsignificant findings (Caplan & Jones, 1975; Chesney et al., 1981; Ganster et al., 1991; Sparacino, 1979; Strube et al., 1985; Weidner & Andrews, 1983), and negative relationships (Burke & Weir, 1980) between Type A behaviour and depression have been found. One possible reason for the inconsistency in Type A-depression findings is the adoption of a global, rather than a multifaceted conceptualisation of Type A behaviour (Burns & Bluen, 1992). It is possible that there are positive, and negative components, that need to be examined independently (Dembroski & Costa, 1987).

Bluen et al. (1990) attempted to refine inconsistent Type A/depression findings by operationalising a bidimensional model and found a positive association between II and depression, while AS was unrelated to depression. In support of the relationship between speed and impatience and depression, Bass (1984a), Chesney et al. (1981) and MacDougall, Dembroski and Musante (1979) have reported similar findings. Furthermore, observations of a link between anger and depression (Horowitz, French, Lapid & Weckler, 1982; Maiuro et al., 1988; Winokur, 1981), and hostility and depression (Finman & Berkowitz, 1989; Weekes & Waterhouse, 1991), have been reported. Kohn (1986) proposes that competitiveness detracts

from mental health. Following his argument, competing at a given activity is postulated to reflect insecurity with the self (Kohn, 1986) and low self-esteem (Kohn, 1986; Price, 1982a). The relationship between low self-esteem levels and depression (Kuiper & Martin, 1989), provides a conceptual relationship between competitiveness and depression.

On the basis of the above findings, it is hypothesised that II, anger, hostility and competitiveness will be positively associated with depression (see Figure 7.1). Drawing on the results of the Bluen et al. (1990) study, it is further hypothesised that AS will be non-significantly related to depression (see Figure 7.1)

Physical Symptoms Complaints. The importance of examining Type A behaviour as an independent risk factor for CHD and related disorders (e.g., atherosclerosis), has been reported in the literature (Case, 1988; Dimsdale, 1988; Heaton, 1988; Ragland & Brand, 1988a). While the association to CHD is well documented, a number of investigators have examined other physical health measures in relation to Type A behaviour (Rime et al., 1989; Suls & Marco, 1990). Indeed, the National Heart, Lung and Blood Institute review panel (Cooper et al., 1981) regarded the nature of specificity to be as plausible to various other health related outcomes (e.g., non-coronary atherosclerosis, peptic ulcer, physical symptoms complaints and stroke), as the association with CHD.

The conceptual link between Type A behaviour and vulnerability to physical symptoms complaints has been guided by a proposed relationship with stress (Chesney & Rosenman, 1980; Ganster, 1987; Heilbrun & Friedberg, 1988). Also, Type A behaviour has been found to increase vulnerability to stress by augmenting stress once it is aroused (Heilbrun &

Friedberg, 1988).

Empirical research has characterised the stress response as a wide and diverse constellation of physiological mechanisms, which leads to immuno-suppression and concomitant physical symptoms complaints (Dienstbier, 1989; Ganster et al., 1991). As noted in Chapter 2, the models developed by Glass (1977), Price (1982a) and Strube (1985, 1987) all pointed to an important link between Type A behaviour and physiological reactivity. Thus, drawing on the relationship between Type A behaviour and physiological reactivity, it is possible to conceptualise a relationship between Type A behaviour and physical symptoms complaints (Ganster et al., 1991; Suls & Marco, 1990).

In recent studies, there has been a precedent to examine sleep disturbances, gastrointestinal problems, respiratory problem, and headaches as a means of assessing the effects of Type A behaviour on physical health (Hicks, Cheers & Juarez, 1985; Rime et al., 1989; Suls & Sanders, 1988; Woods et al., 1984; Woods & Burns, 1984). Importantly, sleep patterns have been significantly related to CHD (Jenkins, 1988), which forms an important conceptual link to examining sleep disorders within the domain of Type A behaviour research. Furthermore, Type A behaviour has been shown to be significantly related to fatigue and restlessness (Howard, Cunningham & Rechnitzer, 1977), respiratory ailments (Barton, Brautigan, Foyle, Freitas & Hicks, 1982; Stout & Bloom, 1982), and migraine and tension headaches (Hicks & Campbell, 1983; Rappaport, McAnulty & Brantley, 1988; Woods, Morgan, Brendan, Jefferson & Harris, 1984; Woods & Burns, 1984). However, on closer examination, the relationship of the findings between global Type A behaviour and physical symptoms complaints has been reported to be inconsistent (Rime et al., 1989).

While positive relationships have been found between Type A behaviour and physical symptom reporting (Barton & Hicks, 1985; Carmody et al., 1984; Carver et al., 1981; Eagleston et al., 1986; Evans et al., 1987; Hicks & Campbell, 1983; Howard et al., 1976; Jamal, 1985; Keltikangas-Jarvinen, 1987; Kushnir & Melamed, 1991; Matteson & Ivancevich, 1982; Rime et al., 1989; Schlegel et al., 1980; Smith & Sheridan, 1983; Strube et al., 1985), contradictory findings are reported. Specifically, non-significant differences (Burke & Weir, 1980; Kelly & Houston, 1985; Lee et al., 1990; Langeldukke et al., 1987; Lundberg & Palmadi, 1981; Lacroix & Offutt, 1988; Offutt & Lacroix, 1987; Schmied & Lawler, 1986; Somes et al., 1981), and negative relationships have been found (Hart, 1983; Matthews & Brunson, 1979). One reason for this inconsistency may be attributed to a global conceptualisation of Type A behaviour, rather than examining the components independently.

In view of the equivocal findings, recent research adopted a bimodal conceptualisation of Type A behaviour and found that II, but not AS, was significantly related to physical symptoms complaints (Barling & Charbonneau, 1992; Northam, 1992; Spence et al., 1987). This research has assisted in establishing that within the Type A construct, certain factors can be independently related to health outcomes, to the exclusion of other factors (Spence et al., 1987). However, Spence et al. (1987) outlined the need for future Type A research to extend beyond the II and AS components and examine the independent association of anger, competitiveness and hostility, in relation to physical symptoms complaints. For example, research has shown migraine and tension headaches to be stress-related symptoms that are induced by muscle contractions in the head and neck and by vasoconstriction in these regions (Rappaport et al., 1988; Woods & Burns, 1984). As discussed in Chapter 4, anger has been significantly related to prolonged contraction of the muscles in the head and neck (Appel et

al., 1983), resulting in pain by the same mechanism (Everly, 1989). Also, anger has been found to be significantly related to an increase in respiratory rate, and to increased levels of gastric acid secretion (Everly, 1989). Hostility has been shown to increase colonic contractions, gastric acid secretion and contractile activity of the stomach (Everly, 1989). Furthermore, although modest relationships were found, competitiveness has been found to be significantly related to physical symptoms complaints (Spence et al., 1987).

The literature has revealed significant relationships between speed and impatience (Ohman et al., 1989; Smith, Houston & Stucky, 1984), anger (Siegel, 1984), hostility (Dembroski et al., 1978; Engebretson et al., 1989; Ganster et al., 1991; Siegman & Anderson, 1990), competitiveness (Dembroski et al., 1978; Glass, Lake, Contrada, Kehoe & Erlanger, 1983; Jennings, 1984; Van Egeren, 1979a) and physiological reactivity. The role of poor recovery from arousal of the sympathetic nervous system has been proposed as the contributing factor to physical symptoms complaints (Everly, 1989; Tortora & Anagnostakos, 1990). Taken together, these studies point to a predicted relationship between II, anger, hostility, competitiveness and physical symptoms complaints.

Also, Rime et al. (1989) reported a non-significant relationship between hard driving behaviour and physical symptoms complaints. The non-significant findings reported between AS and physical symptoms complaints in previous studies (Barling & Charbonneau, 1992; Spence et al., 1987), suggest a non-significant relationship between AS and physical symptoms complaints.

Therefore, the present study predicts that II, anger, hostility and competitiveness will be

positively related to physical symptoms complaints, while AS will be non-significantly related to physical symptoms complaints (see Figure 7.1).

Organisational Outcomes

It is widely recognised that the general activity of working, and the consequences that result, are of fundamental importance to most individuals in society (England & Harpaz, 1990; Kelloway & Barling, in press). The topic of work is central because of a) the time commitment involved, b) the economic and social-psychological benefits and costs, and c) because of the interrelation with important areas such as family, leisure and community commitments (England & Harpaz, 1990). In recent years, an hypothesised interaction between Type A and work environments has been proposed (Ivancevich & Matteson, 1988; Kirmeyer & Biggers, 1988). Phillips et al. (1990) state that the very nature of work tends to accentuate many of the components of Type A behaviour including achievement striving, time-urgency and competitiveness. Thus, work settings are a highly relevant context to study a multifaceted conceptualisation of Type A behaviour (Ganster, 1987; Lee, 1992). It has been suggested that Type A behaviour may not always have a negative influence on health (Bluen et al., 1990; Helmreich et al., 1988; Spence et al., 1987). Indeed, recent research notes that the achievement striving component of Type A behaviour appears to be well suited to organisational success (Barling & Boswell, 1991, Lee, 1992). The importance of job satisfaction, intention to leave and performance are three work related constructs that have been examined extensively in the organisational literature (Busch & Bush, 1978; Lance, 1988; Lee, 1988; Sager, 1991).

Job Satisfaction. Job satisfaction is defined as a function of the match between the rewards offered by the work environment and the individual's desires for those rewards (Griffin & Bateman, 1986; Locke, 1976; Locke, Smith, Kendall, Hulin & Miller, 1964). As such, job satisfaction is the perception of internal responses that arise through needs, values and expectations, derived from salient aspects of the job (Hackman & Oldham, 1976; Locke, 1976).

Job satisfaction has been studied extensively within the field of organisational psychology, productivity, and the work motivation literature (Cheloha & Farr, 1980; King, Murray & Atkinson, 1982; McFarlin & Rice, 1992). The importance of job satisfaction has also been extended into satisfaction in other areas such as general life satisfaction (Rain, Lane & Steiner, 1991; Tait, Padgett & Baldwin, 1989). This broadening of scope has encouraged more extensive examination of personal, rather than environmental factors, that might influence the affective response of individuals' to their jobs (King et al., 1982).

Principally, job satisfaction has been shown to be stable over time. Pulakos and Schmitt (1983) reported that the pre-employment expectations of high school students was a predictor of job satisfaction. Staw and Ross (1985) found job satisfaction to be stable over a five year period. Schneider and Dachler (1978) reported job satisfaction for managers and non-managers to be stable over a 16 month period. Drawing on the empirical support for the temporal stability of job satisfaction (Levin & Stokes, 1989), a possible question is to investigate individual differences in job satisfaction (Arvey et al., 1989; Day & Bedeian, 1991; Gerhart, 1987; Scarpello & Van Den Berg, 1992; Staw, Bell & Clausen, 1986; Staw & Ross, 1985).

The link between individual factors (e.g., locus of control) and job satisfaction (Arvey et al., 1989; Levin & Stokes, 1989; Pulakos & Schmitt, 1983; Staw et al., 1986; Staw & Ross, 1985) has been examined more closely in recent years.

Job satisfaction has been found to be negatively and significantly related to heart disease mortality rates (Jenkins, 1971), triglycerides and blood pressure (Howard, Cunningham & Rechnitzer, 1986). As noted earlier, a number of investigators have attempted to examine the relationship between Type A behaviour and CHD, triglycerides and blood pressure (e.g., Cinciripini, 1986; Rodin & Salovey, 1989). The focus of these findings suggests a conceptual link between Type A behaviour and job satisfaction (Howard et al., 1986).

Griffin and Bateman (1986) note that level of self-esteem is an important contributor to job satisfaction. Furthermore, Herman, Dunham and Hulin (1975) stress the importance of personal beliefs and interpretive frameworks, as important criteria to predicting job satisfaction. From Chapter 2, the importance of personal beliefs and overall self-esteem to the behavioural expression of Type A behaviour (Price, 1982a; Strube, 1985), suggests that Type A behaviour is conceptually related to job satisfaction. Furthermore, Landy (1985) argues that job satisfaction is an emotional phenomenon whereby the mechanism of emotional balance is thought to play a central role in determining job satisfaction. In viewing Type A behaviour as an 'action-emotion complex' (Friedman & Rosenman, 1974), a conceptual link between Type A behaviour and job satisfaction is supported (Day & Bedeian, 1991).

However, the relationship between Type A behaviour and job satisfaction is reported to be inconsistent (Matteson et al., 1984). While, Dearbon and Hastings (1987) found a negative

correlation between Type A behaviour and job satisfaction, other studies have reported non-significant relationships between Type A behaviour and job satisfaction (Burke & Weir, 1980; Greenglass, 1987; Ganster et al., 1991; Howard, Cunningham & Rechnitzer, 1977; Jamal, 1990; Lee, Ashford & Bobko, 1990; Matteson et al., 1984). One possible reason for these equivocal results may be the use of a global index, rather than a multifaceted conceptualisation of the construct.

Martin (1981) notes that those who invest more in their jobs are more likely to report greater job satisfaction. Also, the importance of expectation and values are contributory mechanisms to job satisfaction (Griffin & Bateman, 1986). To cope with challenge, effort is required and the expenditure of effort is congruent with the level of achievement striving exhibited by the person (Emmons, 1989; Emmons & King, 1989; Emmons & McCrae, 1991; Weiner, 1978). Thus, it is possible to predict a relationship between AS and job satisfaction (Day & Bedeian, 1991). Griffin and Bateman (1986) report a link between need for achievement and job satisfaction. Furthermore, Bluen et al. (1990) found AS, but not II, to be positively related to job satisfaction.

The differential relationship of II and AS to job satisfaction, appears to offer conceptual clarity to equivocal Type A-job satisfaction findings. However, the Bluen et al. (1990) findings are criticised for confining the scope of investigation to the AS and II dimensions of Type A behaviour and failing to operationalise the anger, hostility and competitive components. Consequently, there is a gap in the literature because anger, hostility and competitiveness have not been examined in relation to job satisfaction.

Consistent with the findings of the Bluen et al. (1990) study, the model shown in Figure 7.1 predicts that AS will be positively related to job satisfaction. Given the toxicity of II, anger, hostility and competitiveness in relation to health related outcomes (Williams, 1984), and not work attitudes, the model predicts that these three components will be non-significantly related to job satisfaction (see Figure 7.1).

Intention to leave. Due to the cost, time and energy requirements lost through turnover, the causes and antecedents of turnover have become an area of significant concern (Cotton & Tuttle, 1986; Futrell & Parasuraman, 1984; Hanisch & Hulin, 1991; Jenkins, 1988). That is, turnover is dysfunctional due to the loss of sizeable investments in training and selection, morale problems and lost productivity of others (Martin & Bartol, 1985; Sager, Varadarajan & Futrell, 1988). In answer to the high costs of turnover that organisations are faced with, researchers have sought to gain a more accurate understanding of the determinants of turnover (Sager et al., 1988).

The immediate precursor to actual quitting has been labelled intention to remain/leave (Futrell & Parasuraman, 1984). As defined, intention to remain/leave refers to the perceived probability that an individual will stay in an employing organisation or will terminate employment (Werbel & Bedeian, 1989). Although it is well entrenched that such intentions may change and are not necessarily predictive of future behaviour (Rosin & Korabik, 1991), turnover research has reported a significant relationship between intention and actual turnover (Kraut, 1975; Lee & Mowday, 1987; Michaels & Spector, 1982; Miller, Powell & Seltzer, 1990; Steel, Hendrix & Balogh, 1990; Steel & Ovalle, 1984; Steers, 1977; Waters, Roach & Waters, 1976).

Werbel and Bedeian (1989) argue for the preferential choice of intention to leave, over turnover behaviour, as an organisational variable. In their estimation, intention to leave stresses the volitional components of behaviour and the motivation to leave, circumventing variance attributed to accidental and unavoidable reasons for actual turnover (Werbel & Bedeian, 1989). Significant to this view is the proposal that individual factors may influence the behavioural intention-turnover relationship (Muchinsky & Morrow, 1980).

As an attitudinal variable, intention to leave is sensitive and responsive to real-time factors (e.g., alternative job opportunities), in addition to perceived expectations and evaluation of future events (e.g., career path goals; Cotton & Tuttle, 1986). Potential constructs for research on turnover processes, have included locus of control (Blau, 1987), self-efficacy beliefs (Gist, 1987) and optimistic explanatory style (Seligman & Schulman, 1986), which have influenced the identification of personal factors in the prediction of intention to leave.

Several authors have proposed withdrawal models in an attempt to show the turnover process more closely (Bluedorn, 1980; Forrest, Cummings & Johnson, 1977; Locke, 1976; Mobley, 1977; Mobley, Horner & Hollingsworth, 1978; Porter & Steers, 1973; Price, 1977). In sum, the models begin with job satisfaction or dissatisfaction and suggest a sequential load of steps, including: the individual thinks of quitting, intention to search for an alternative job, evaluation of job alternatives, intention to quit or stay, and finally the withdrawal decision (Mobley et al., 1979; Rosin & Korabik, 1991). The intention to leave is characterised by cognitive and behavioural phenomena that intervene between the evaluation of the individual's job and the withdrawal behaviour (Futrell & Parasuraman, 1984). Extending this appraisal, and considering the importance of cognitive, motivational and affective components in

contemporary models of Type A behaviour (e.g., Price, 1982a; see Chapter 2), and the conceptual link between Type A and job satisfaction (Bluen et al., 1990), a conceptual relationship between Type A behaviour and intention to leave is supported.

The importance of Type A behaviour as a potential identifier of intention to leave has been suggested in the literature (Sager, 1991). However, a literature review found the relationship between global Type A behaviour and intention to leave to be inconsistent. While Jamal (1990) and Greenglass (1987) reported a positive relationship, Burke (1988) and Chusmir and Hood (1986) reported a non-significant relationship between Type A behaviour and intention to leave. In response to these studies, the differential importance of the components, in relation to intention to leave, may help to explain the inconsistency in findings. But, no independent research findings could be found that examined the association between AS, II, anger, hostility, competitiveness and intention to leave. Given the positive relationship between job satisfaction and intention to remain with the organisation in previous research findings (Mobley, 1977; Mobley, Homer & Hollingsworth, 1978), and previous findings linking AS to job satisfaction (Bluen et al., 1990), the multidimensional model predicts that AS will be positively related to intention to remain (see Figure 7.1). The model also predicts that II, anger, hostility and competitiveness will be non-significantly related to the intention to leave (see Figure 7.1). This stems from the suggestion that there are toxic (II, anger, hostility, competitiveness) and work attitudinal predictors (AS) of Type A behaviour, that need to be delineated (Ganster, 1987; Lee, 1992).

Performance. The determinants of good sales performance has been an area of extensive research in the organisational literature (Churchill, Ford, Steven, Hartley & Walker, 1985).

In Kerber and Campbell's (1987) estimation, individual factors are an important criterion to predicting sales performance. However, there is inadequate literature to guide organisations on the most important behavioural and attitudinal predictors of sales performance (Sager et al., 1988).

The common descriptor that evolves from the conceptualisation of Type A behaviour is the notion of challenge (Sager, 1991). O'Rourke et al. (1988) note that Type A behaviour emerges when people are confronted with tasks that involve incentive for winning, harassment or persistence. The sales environment is characterised by quantifiable objectives, incentive and time pressure (Rosenberg, Gibson & Epley, 1981; Sager, 1991). Thus, using Sager's (1991) interpretation of the link between sales positions and the Type A literature, a conceptual link between Type A behaviour and sales performance is assumed.

Type A's have been found to attain higher academic success (Ovcharchyn et al., 1981; Perry et al., 1990; Sparacino & Hansell, 1981; Suls et al., 1981; Waldon et al., 1980), achieve greater scientific excellence (Matthews & Saal, 1978; Matthews et al., 1980), earn higher occupational status (Mettlin, 1976; Waldron, 1978; Waldron et al., 1977) and produce higher quality and quantity of work performance (Boyd, 1984; Fazio et al., 1982; Matteson et al., 1984; Matthews et al., 1980; Ovcharchyn et al., 1980; Taylor et al., 1984), in comparison to Type B's. However, despite the positive rewards attributed to Type A behaviour (Ovcharchyn et al., 1980; Waldron et al., 1980), the relationship between global Type A behaviour and performance is reported to be inconsistent.

In contradiction to the positive findings in the literature, non-significant (Jamal, 1985; Lee &

Gillen, 1989; Matteson et al., 1984) and negative (Jones, 1985) relationships between Type A behaviour and performance have been reported.

A possible explanation for the inconsistency in findings is that conceptualising and operationalising Type A behaviour as a global construct may not be appropriate (Lee, 1992). In contrast to a global conceptualisation of Type A behaviour, recent studies have found AS (but not II) to be positively related to performance (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Bluen et al., 1990; Helmreich et al., 1988; Spence et al., 1987, 1989; Volkmer & Feather, 1991). Furthermore, Bluen et al. (1990) conducted a follow-up study and found that after controlling for II, AS predicted sales performance. Conversely, after controlling for AS and tenure, II did not predict sales performance (Bluen et al., 1990).

Barling and Boswell (1991) note that there are two possible conceptual explanations for the link between AS and performance. First, it is possible that individuals displaying achievement orientated behaviour will ensure that they will perform at a level that is consistent with their AS (Barling & Boswell, 1991). Second, Barling and Boswell (1991) maintain that AS should be related to performance since those individuals who are high in AS are likely to perceive themselves to be more successful.

The AS and II components, when treated independently, facilitate a more refined prediction of performance than a global Type A construct (Barling & Boswell, 1991; Bluen et al., 1990). However, while AS and II are informative in the prediction of performance, the bidimensional model is criticised for not operationalising all of the conceptual components of Type A behaviour (Burns & Bluen, 1992). Specifically, the bi-dimensional model fails to

operationalise the anger, hostility and competitiveness components of Type A behaviour (Burns & Bluen, 1992). A literature review found no independent examination of anger and hostility in relation to work performance. Due to the toxicity of the anger and hostility dimensions in relation to health outcomes (as opposed to work-related outcomes; Ganster, 1987; Lee, 1992), it is hypothesised that anger and hostility will be non-significantly related to work performance.

Contrary to popular belief, research has found that competitiveness does not enhance performance (Helmreich & Spence, 1978; Helmreich et al., 1988; Kohn, 1986; Spence & Helmreich, 1983). Supporting this view, competitiveness has been negatively linked to goal attainment (Spence & Pred, 1983), which is a central characteristic to effective sales performance (Lee & Gillen, 1989). Furthermore, Spence et al. (1987) found interpersonal competitiveness to be non-significantly related to grade performance averages (GPA) in a sample of college students.

Following the above discussion, the model predicts that AS will be positively related to performance while II, anger, hostility and competitiveness will be non-significantly related to sales performance (see Figure 7.1).

METHOD

Sample and Setting

Questionnaires were distributed to life insurance salespeople from 28 branches across three regions of a South African life insurance organisation, employing approximately 5000 life insurance salespeople. The choice of organisation was based on two considerations. First, Type A behaviour is mostly studied in relation to white-collar workers (Jenkins, 1977; Sager, 1991), which supports the examination of life insurance salespeople. Second, collecting objective data on performance levels of individual salespeople overcomes self-report assessment of performance ratings, which has a monomethod bias (Bayer & Gerstein, 1988). An editorial review by Schmitt (1989), stressed the need for psychological and organisational research to direct attention to the collection of objective data.

Of the 710 questionnaires distributed to the insurance salespeople, 467 (65%) were returned[24]. Four of the questionnaires were eliminated because of incomplete or insufficient data. This left 463 usable questionnaires from the three sales regions (31% males; 61% whites; M age = 38,25 years, SD = 10,34; M education = 11,53 years, SD = 1,76; M organizational tenure = 4,35 years, SD = 6,17).

Procedure

Presentations of the proposed research were given to the key people that headed the sales

[24]On matching the questionnaires with the performance data, 20 salespeople did not provide their names. The branches were contacted in an attempt to correlate the biographical details, but both the secretaries and branch managers were unsure about the matches. Therefore, the sales performance figures for these 20 respondents were excluded from interpretation in attempting to predict sales performance.

regions. On approval, it was recommended that the respective branch managers of the regions be consulted about the practical implications of the study. Following this recommendation, the respective branch managers were consulted regarding the aim and purpose of the study. Once access had been approved, questionnaires were distributed to the salespeople to be completed in their own time. No branch manager refused access to the study.

On completion of the questionnaires by the respondents, in their own time, the questionnaires were signed and sealed in the envelopes provided and handed to the respective branch secretaries for safe keeping. The questionnaires were collected on a weekly basis, at a prearranged time, from the respective branch secretaries.

Design

A cross-sectional, within-groups design was adopted in the study (Christensen, 1985; Cook & Campbell, 1976). However, for the performance data in the present study, a six-month follow-up period was used (Cook & Campbell, 1976). Thus, the design facilitated a time sequence between questionnaire administration and evaluating subsequent sales performance. The combination of a survey method with the use of an objective performance measure addresses Schmitt's (1989) call for greater methodological robustness. There were five response (dependent) variables, namely depression, physical symptoms complaints, job satisfaction, intention to leave and sales performance, and five predictor (independent) variables; AS, II, anger, hostility and competitiveness.

Measuring Instruments

In addition to administering the MTABS (developed in Chapter 5 and shown to demonstrate suitable validity and reliability), the Physical Symptoms Scale (Spence et al., 1987) and Depression Scale (Goldberg, 1972) were once again administered in the present study. Three additional outcome measures (i.e., job satisfaction, intention to leave and performance) were examined in the present study. To avoid repetition, only these three outcome measures, that were not included in the previous study, are discussed in the present section of the chapter. The three measures include a performance index, consisting of a standardised measure of the number of policies sold, commission earned and sales revenue generated over a six-month follow-up period; the Propensity to Leave Scale (Lyons, 1971), and Specific Satisfactions Scale (Hackman & Oldham, 1975).

An initial paragraph on the face page set out the purpose of the study, encouraged participation from the salespeople, and assured complete confidentiality. Importantly, the voluntary response of the salespeople was noted within the covering letter. Also, a biograhical blank, eliciting information pertaining to age, sex, eduction, race and tenure was included in the questionnaire.

Job Satisfaction: Job Diagnostic Survey. As a robust and short form of the Job Diagnostic Survey, Hackman and Oldham (1975) developed a more comprehensive job satisfaction questionnaire, named the Specific Satisfaction Scale (see Appendix B). The Specific Satisfaction Scale consists of 14 items that tap job elements concerning pay, job security, social and supervisory satisfaction and growth satisfaction, which appear to be particularly

suited to the nature of the sales setting (Futrell, 1979; Parasuraman, 1984). In the present study, respondents were required to indicate on a seven-point rating, their satisfaction or dissatisfaction with each of the fourteen items specified. The higher the score for the items in the scale, the greater the job satisfaction (Hackman & Oldham, 1975).

A review of the relevant literature has shown the Specific Satisfaction Scale to demonstrate adequate validity and reliability estimation (Kulik, Oldham & Langer, 1988). In a study of 658 employees across seven different organisations, Hackman and Oldham (1975) report an acceptable Cronbach alpha of ,76 for the Specific Satisfaction Scale. Wall, Clegg and Jackson (1978) replicated the findings in a sample of 47 employees to record a Cronbach alpha of ,74. Oldham and Brass (1979) reported a Cronbach alpha of ,86 in a sample of 81 employees. Golembiewski, Munzenrider and Carter (1983) reported Cronbach alpha's ranging from 0,67 to 0,90 for the Specific Satisfaction Scale (M alpha = 0,76). Gaines and Jermier (1983) report a Cronbach alpha of 0,80 for the Specific Satisfaction Scale. Katz (1978) reports Cronbach alpha of ,74 for the Specific Satisfaction Scale across a sample of 2094 Government employees. Meglino, DeNisi, Youngblood and Williams (1988) reported suitable Cronbach alpha's ranging from 0,58 to 0,78 for pretest, post-test and follow-up testing for the Specific Satisfaction Scale. Tetrick and LaRocco (1987) report a suitable Cronbach alpha of 0,85 for a fifteen item version of the Specific Satisfaction Scale. Oldham, Hackman and Stepina (1978) report adequate Spearman-Brown reliability coefficients of 0,86, 0,73, 0,64, 0,87 and 0,84, respectively for the Pay, Security, Social, Supervisory and Growth dimensions of the Specific Satisfaction Scale. In South Africa, the Specific Satisfaction Scale has been shown to demonstrate adequate reliability. Else (1990) administered the Specific Satisfaction Scale to a sample of 223 human service professionals and reported a Cronbach Alpha of 0,87.

Moschides (1991) reported Cronbach alphas of 0,89 and 0,90 for the Specific Satisfaction Scale. Also, on administering the Specific Satisfaction Scale across two test administrations, Moschides (1991) reported an adequate test-retest reliability coefficient of 0,74 for the scale.

The Specific Satisfaction Scale has been shown to demonstrate suitable validity. Oldham and Brass (1979) found significant ($p < ,05$) and positive relations between the Specific Satisfactions Scale and interpersonal satisfaction, intern motivation, autonomy, task identity and skill variety. Oldham and Miller (1979) re[illegible]d that the complexity of jobs held was significantly ($p < ,05$) related to job satisfaction as measured by the Specific Satisfactions scale in a sample of 658 employees across a broad spectrum of job varieties in seven business organisations. Oldham (1976) found individuals scoring high on the Growth need facet of the Specific Satisfaction scale to perceive more valued rewards ($p < ,05$) than low scorers on the Growth need facet. Tetrick and LaRocco (1987) [illegible]d a 15-item version of the Specific Satisfaction Scale to be significant, ($p < ,05$) and negatively correlated with role ambiguity and role conflict. Oldham, Hackman and Pearce (1976) found the Specific Satisfaction Scale to be significantly ($p < ,05$) and positively related to internal motivation in a sample of 242 clerical workers.

In South Africa, Else (1990) reported significant and positive ($p < ,05$) relations between the Specific Satisfaction Scale and emotional exhaustion, personal accomplishment, psychological distress, propensity to leave, and negative and significant ($p < ,05$) relations between the Specific Satisfaction Scale and personality hardiness and peer cohesiveness. Moschides (1991) also demonstrated suitable validity for the Specific Satisfaction Scale in South Africa in reporting positive and significant [illegible] with lifestyle and life satisfaction and negative

relations ($p < .05$) with depression.

The psychometric adequacy of the Specific Satisfaction Scale, together with its extensive use within organisational settings and applicability to white-collar workers (Cook et al., 1981), render it particularly suited as a measure of job satisfaction within the present study (Kulik et al., 1988).

Intention to Leave/Remain. The intention to leave/remain the organisation was measured using Lyons' (1971) Propensity to Leave Scale (see Appendix B). The Propensity to Leave Scale consists of three items that assess a) how long respondents would like to remain with their current organisation; b) given the freedom to choose alternative positions, whether respondents would prefer to continue working for the present organisation, and c) if they were to leave work for a period of time, whether they would return to their present job (Lyons, 1971). A three-point Likert response format was applied to two of the items ranging from (1) No, through (2) not sure, to (3) yes. To maximise the response range for the third item, a six-point scale ranging from (1) 1 year, to (6), more than 10 years was used. This format has been adopted by other studies that have attempted to measure intention to leave in the organisational literature (Werbel & Bedeian, 1989). High scores denote an intention to remain with the organisation, as opposed to withdrawal behaviour (Lyons, 1971).

As the scale was originally developed for the examination of turnover intentions in a sample of 156 female nurses (Lyons, 1971), item wording has been modified (hospital changed to organisation) for use in the present study (see Appendix B). This is consistent with previous research that has reported suitable findings for the Propensity to Leave Scale in reflecting

these changes (Bluen, 1986, Chusmir & Hood, 1986; Rousseau, 1978; Werbel & Bedeian, 1989).

Lyons (1971) reports a Spearman-Brown internal reliability coefficient of 0,81 for the Propensity to Leave Scale. Mossholder, Bedeian and Armenakis (1982) report a Cronbach alpha of 0,79. Similarly, Bedeian and Armenakis (1981) report a Cronbach alpha of 0,76 for the Propensity to Leave Scale. Chusmir and Hood (1986) report a Cronbach alpha of 0,86 for the Propensity to Leave Scale. Turning to reliability estimation though studies of organisational employees, Rousseau (1978) reports an internal consistency of ,71 and a three month test-retest coefficient of ,63 for the Propensity to Leave Scale. Werbel and Bedeian (1989), in a sample of 418 accountants, report a Cronbach alpha of 0,90 for the Propensity to Leave Scale. Also, Bluen (1986) in a sample of South African IR representatives, reported a Cronbach alpha of ,72 (Time 1) and ,79 (Time 2) and internal consistency through a test retest reliability coefficient of ,57 assessed over a period of six months for the Propensity to Leave Scale. Else (1990), in a sample of 223 human service professionals, reported a Cronbach alpha of 0,77 for the Propensity to Leave Scale.

The Propensity to Leave Scale has been found to report satisfactory validity. Bedeian and Armenakis (1981) report significant correlations ($p < .05$) in the predicted direction between the Propensity to Leave Scale and role conflict, role ambiguity, work-related tension and job satisfaction. Similarly, Mossholder et al. (1982) report positive and significant correlations ($p < ,05$) between the Propensity to Leave Scale and peer group interaction and work related tension. Moreover, Sutton and Rousseau (1979) found the Propensity to Leave Scale to be positively and significantly ($p < ,05$) related to formalisation and participation at work, in a

sample of 155 managers. Werbel and Bedeian (1989) found the Propensity to Leave Scale to be inversely and significantly ($p < ,05$) related to performance. Bedeian, Mossholder and Armenakis (1983) reported a positive relationship ($p < ,05$) between the Propensity to Leave Scale and role ambiguity, while Netemeyer, Johnston and Burton (1990) reported positive relationships ($p < ,05$) between the Propensity to Leave Scale and role ambiguity and role conflict. Chusmir and Hood (1986) found significant and positive ($p < ,05$) relationships between the Propensity to Leave Scale and need for autonomy, need for power, and negative and significant ($p < ,05$) relationships with need for achievement, organisational commitment and job satisfaction. Brief and Aldag (1976) reported a positive relationship ($p < ,05$) between the Propensity to Leave Scale and role conflict.

In South Africa, Else (1990) reported positive and significant ($p < ,05$) correlations between the Propensity to Leave Scale and emotional exhaustion, personal accomplishment and job dissatisfaction. Furthermore, James (1990) reported negative and significant ($p < ,05$) relationships between the Propensity to Leave Scale and personality hardiness, peer cohesiveness and psychological distress. Furthermore, Bluen (1986) reported significant relationships ($p <,05$) between the Propensity to Leave Scale and negative stress, supervisor support and job satisfaction. Consequently, given the suitable reliability and validity of the Propensity to Leave Scale in previous studies, it is adjudged to be a suitable index of the respondents intention to remain/leave their present organisation.

Performance. As the criterion of sales performance is characterised by increased sales (Barling & Beattie, 1983), this is the criterion to be measured in the present study. Indices of sales performance, as a correlate of Type A behaviour, have been operationalised in

previous studies (Bluen et al., 1990; Matteson et al., 1984). Smith (1976) notes that direct measures of output are useful criteria in the ideal situation in which there is only one job to be examined. Consequently, the choice of sales performance is empirically supported in the literature[24] (Bluen et al., 1990; Matteson et al., 1984).

Barling and Beattie (1983) note that an assessment of sales performance indices, operationalised independently, in contrast to an aggregate, provides a truncated perspective of the true range of criteria required for successful sales performance prediction. Specifically, an adequate assessment of sales performance requires an examination of the number of policies sold, commission earned and sales revenue generated (Barling & Beattie, 1983; Seligman & Schulman, 1986). But a preliminary correlation matrix found the relationship between number of policies sold, commission earned, and sales revenue generated by the salespeople to be highly intercorrelated (M r = ,8[illegible] range = ,67-89). This is consistent with previous studies that have examined performance from company records and reported indices to be significantly intercorrelated (e.g., Kerber & Campbell, 1987).

Gardner and Erdle (1984) note that when equal variances or relatively equal correlations of the performance indices with other variables in the study are to be expected, the performance indices should be standardised prior to aggregation. Expanding on this recommendation, because there is no interval scale of measurement, it is difficult to judge the relative positions of respondents on the characteristics by examining the raw scores (Gardner & Erdle, 1984). Accordingly, it is more accurate to use the total distribution of raw scores as a frame of

[24] A previous review comment from Journal of Applied Psychology criticised the sole reliance on the number of policies sold as the sole index of sales performance and recommended the inclusion of other sales performance indices.

reference, or set of norms (Gardner & Erdle, 1984).

By transforming the performance indices into standardised scores and considering the mean and standard deviation of the total distribution of scores, assessment of the respondent's position compared to other salespeople can be achieved (Gardner & Erdle, 1984). Therefore, consistent with a previous study (Bluen & Burns, 1990), a standardised performance estimate was calculated to represent the sales performance figures of the salespeople.

Statistical Analysis

The aim of the present study is to explore the relations of the five components of Type A behaviour in association with health and work related outcomes. In attempting to show the multifaceted nature of Type A behaviour, a statistical technique is needed that assesses the multiple influences of the five dimensions. Of special relevance is multiple regression (Mason & Perreault, 1991). Multiple regression is chosen since it is able to ascertain the linear combination of a set of predictors that provides the best point estimate of the dependent variable, across a set of observations (Mason & Perreault, 1991).

Multiple regression is particularly suited to the present study since it attempts to estimate the mean value of the dependent variable on the basis of the predictor variables (Cohen & Cohen, 1983; Montgomery & Peck, 1982). Price (1982a; see Chapter 2) stated that it would be an oversimplification to view the components of Type A behaviour as unrelated. Rather, in her estimation, the components are related to one another to the extent that fluctuations in one, can create changes in another (see Chapter 2). Thus, multiple regression is particularly suited

to the aim of the present study since it considers the interactional nature of the components, but is able to assess the unique contribution of each component in association with the dependent variable (Yuen & Kuiper, 1992). A number of stress research studies have employed multiple regression as a significant statistical technique for examining the effects of the stressor on the individual (e.g., Greenglass, 1987; Kasl, 1987; Taylor & Cooper, 1988; Parkes, 1990; Yuen & Kuiper, 1991). Therefore, multiple regression is chosen as a suitable statistical technique for examining the data in the present study (Lee, 1992; Yuen & Kuiper, 1991).

Multiple Regression

Multiple regression is best defined as the technique for studying both the magnitudes and the effects of more than one predictor variable on a response variable, using the principles of correlation and regression (Belsley, 1991; Kerlinger, 1981). Operationally, multiple regression verifies how good a prediction is by specifying how much variance in the response variable is accounted for by the "best" linear combination of the predictor variables (Berry & Feldman, 1985; Darlington, 1968; Montgomery & Peck, 1982). The general formula for the multiple regression equation is:

$$Y = B+b_1x_1+b_2x_2+...b_kx_k+E \qquad \text{(Rawlings, 1988, p. 7)}$$

In the above equation, Y is named the dependent (response) variable. X's are defined as the measurements on the independent variable; more appropriately referred to as the predictor variable. The coefficient b_k in the equation refers to the relative contribution of each

independent (predictor) variable to the prediction of the dependent variable (Chatterjee & Price, 1977). Thus, it denotes the expected change in the response Y, per unit change in x_k, when the remaining predictor variables are held constant (Chatterjee & Price, 1977). The parameter B is the intercept of the regression plane. E is defined as an unobservable random variable commonly referred to as the error term (Chatterjee & Price, 1977). The test for significance of regression is a test to determine if there is a linear relationship between the response Y and the predictor variables x_1, x_2.....x_k (Chatterjee & Price, 1977).

To determine the utility of the regression equation (tightness-of-fit) in explaining the variance of the data, $\underline{R}^2$ is used[25] (Kerlinger & Pedhazur, 1973; Lewis-Beck, 1980). $\underline{R}^2$ is characterised as an estimate of the proportion of the variation in the dependent variable accounted for by the predictor variables (Dillon & Goldstein, 1984; Kerlinger, 1981). It is more appropriately referred to as the square of the multiple correlation coefficient, also named the coefficient of multiple determination (Belsley, 1991; Berry & Feldman, 1985). The larger its value, the better the equation explains the variation in the response variable (Montgomery & Peck, 1982). $\underline{R}^2$ can range in value between 0 and 1, where a value of 1 indicates that the model explains the data perfectly well, whereas a value of 0 denotes a lack of contribution of the predictor (Dillon & Goldstein, 1984).

A further consideration for inclusion of the predictor variables in the multiple regression

[25]The explanatory power of the regression analysis can also be assessed by means of the $\underline{R}^2_{adj}$ which is able to explain the amount of s_y^2 explained by the regression equation and is generally the accepted technique to adopt in small sample size cases (Henderson & Denison, 1989). Given the sample size of 463 respondents in the present study, this technique was disregarded in attempting to explain the variance of the multiple regression analysis.

equation is that they meet the significance criterion, that has been specified before interpreting the results (Cohen & Cohen, 1983). The significance of the variables in the equation is concluded by comparing the tabled values with the predicted F values (Belsley, 1991; Berry & Feldman, 1985; Montgomery & Peck, 1982; Pedhazur, 1980). Testing for significance is the procedure of applying criteria that are designed to control the making of a Type 1 error in inference (i.e., the error of rejecting the true null hypothesis; Cohen & Cohen, 1983). On the recommendation of a number of experts in the multiple regression literature (Belsley, Kuh & Welsch, 1980; Cohen & Cohen, 1983; Rawlings, 1988), the ,05 level of significance is adopted as a cut-off criterion for the inclusion of predictor variables in the final model in the present study. In adopting this rule to the multiple regression analysis, it is important to note that a change in R^2 must not only contribute significantly to the variance of the dependent variables, but must also be statistically significant (Chatterjee & Price, 1977; Lewis-Beck, 1980).

In addressing this rule, Cohen and Cohen's (1983) recommended method of determining the degrees of freedom for the final F-ratio (assessing whether the predictor variables make a significant contribution to the final model) is adopted in the present study. Cohen and Cohen (1983) suggest that the degree of freedom should be represented as k/ n-k-1, where k represents the number of predictor variables included in the model by that step. In other words, employing this formula, the degrees of freedom numerator is held constant at one, while the denominator is reduced by one after each step in the multiple regression (Cohen & Cohen, 1983). This figure is always one less to account for subtraction of the correction factor, which has one degree of freedom (Cohen & Cohen, 1983; Lewis-Beck, 1980).

Choice of Multiple Regression Method

An important step within multiple regression analysis is variable selection (Montgomery & Peck, 1982). When examining many variables, it is customary to include all variables that are deemed fit for inclusion in the equation (Darlington, 1968; Montgomery & Peck, 1982). The object is then to select a regression procedure that offers the best combination of the variables for inclusion in the model (Montgomery & Peck, 1982).

The decision of what multiple regression technique to use is a complex one (Cohen & Cohen, 1983). It depends on the result of choosing between a conceptual model (hierarchical regression) and an empirical evaluation (stepwise regression).

Hierarchical regression. The central feature of hierarchical regression is its utility in examining the relationships between predictor variables and the dependent variable through the adoption of an a priori hierarchy (Cohen & Cohen, 1983). As such, predictor variables are entered cumulatively, according to a specified heirarchy which is hypothesised in advance by the purpose and logic of the research (Cohen & Cohen, 1983; Draper & Smith, 1966). In computing the hierarchical model, it is necessary to determine R^2 and the partial coefficients of each variable at the point where it is added to the equation (Cohen & Cohen, 1983). The hierarchical model may proceed by entering the predictor variables in the specified order and determining R^2 after each addition that is conceptually explained. The direction of the relationship is determined by the sign of the partial coefficients (unsquared; Cohen & Cohen, 1983).

In performing hierarchical regression, the partial coefficients are tested for significance at their point of entry into the equation. Two error models are obtained. In the first model, the error term and its relative degree of freedom are calculated from the $\underline{R}^2$ produced by only the predictor variables in the equation at that point. The second model depends on all of the predictor variables and the degrees of freedom used. The consequences of these two error models and of different hierarchical ordering are discussed in the relevant literature (see Cohen & Cohen, 1983; Pedhazur, 1982).

Although stepwise regression has many surface similarities to heirarchical multiple regression, it is considered separately because it differs in underlying assumptions and application of computer techniques (Cohen & Cohen, 1983). A summary of this technique is presented below.

Stepwise regression. Stepwise regression is an important statistical method for exploratory data analysis (McIntyre, Montgomery, Srinivasan & Weitz, 1983). Stepwise regression is a set of iterative search and model comparison procedures that determines a set of predictor variables which are associated with the dependent variable (Henderson & Denison, 1989; Montgomery & Peck, 1982). Typically, a number of alternative models are considered with variables being added and removed in the process depending on their relevance and uniqueness to the model (Dillon & Goldstein, 1984). Thus, a variable included in the model at an early stage may be trivial, because of its relationship with subsequent predictor variables entered into the model (Montgomery & Peck, 1982; Rawlings, 1988). To monitor this, the stepwise procedure works from a zero-order correlation matrix and adds predictor variables, sequentially, until a satisfactory equation is found (McIntyre et al., 1983; Montgomery &

Peck, 1982). The process is continued until the best predictor equation (empirically derived model) is determined (Achen, 1983; Dillon & Goldstein, 1984; Montgomery & Peck, 1982; Rawlings, 1988).

The equation adopted as the optimal solution is dependent on the partial correlation of the predictor variables (Montgomery & Peck, 1982). Henderson and Denison (1989) note that the term partial correlation is used because it determines whether a predictor variable affects the dependent variable after the impact of all the other variables in the equation have been accounted for.

Stepwise regression is considered to be a more strict rule to the purpose of the present study since it is empirically derived while heirarchical is defined by an a priori heirarchy of predictor variable inclusion (Cohen & Cohen, 1983; McIntyre et al., 1983; Montgomery & Peck, 1982). The post hoc nature of findings attributed to stepwise regression made it particularly suited to examining the correlates of the components within the present study (Cohen & Cohen, 1983; Montgomery & Peck, 1982). Specifically, no previous Type A research has attempted to examine the multidimensional model proposed in Figure 7.1, which made an empirically derived model suited to the aim of the present study.

Inclusion of Covariates

Both Kenny (1975) and Neale and Liebert (1980) state that by controlling for demographic confounds within a multiple regression analysis, the chances of obtaining spurious findings are reduced. In the present study, five covariates were considered for inclusion in the multiple

regression analysis, namely, age, tenure, sex, race, marital status. Three procedures were considered in calculating the relevant demographic variables to include in the multiple regression equation. First, the correlation matrix was examined to determine whether any of the continuous demographic variables were significantly associated with the predictor variables.

Second, t-tests were conducted to examine significant differences on the predictor variables for the dichotomous variables sex and race and finally, one-way analyses of variance were performed on the predictor variables for marital status and education since these are multiple-level, discrete demographic variables in the present study. In translating the effects of the results from the t-tests and analysis of variance, it was necessary to consider dummy variables; which are discussed below.

Dummy Variables. The variables in multiple regression usually contain values on a continuous range (Pedhazur, 1980). However, the need may arise to characterise a factor with a number of discrete levels (Rawlings, 1988). The variable in question needs to be assigned levels which comprise separate deterministic effects on the response (Berry & Feldman, 1985). Thus, on a categorical variable, a person either belongs to the category specified (assigned 0), or a separate category (assigned 1; Berry & Feldman, 1985; Rawlings, 1988). Such variables are termed dummy variables and are found to increase the flexibility of a regression model (Pedhazur, 1980; Rawlings, 1988).

In assigning arbitrary metric values of 0 and 1, dummy variables can be treated as interval variables and inserted into the regression equation (Montgomery & Peck, 1982). Examples

of dummy variables are marital status (single, divorced, widowed), and sex of the respondent (male or female). A mathematical interpretation of the construct requires that there is one less dummy variable than categories (Cohen & Cohen, 1983; Darlington, 1968; Montgomery & Peck, 1982). Therefore, the last dummy variable within the model is omitted to act as a reference category against which the other dummy variables can be compared (Dillo · & Goldstein, 1984; Kerlinger & Pedhazur, 1973).

Assumption Tests Underlyi. ·; Multiple Regression

Before interpreting the multiple regression analysis, assumptions regarding the model need to be checked (Belsley, 1991; Lewis-Beck, 1980; Montgomery & Peck, 1982; Velleman & Welsch, 1981). Violations of any of the assumptions is said to produce unstable findings in the study (Belsley, 1991; Lewis-Beck, 1980). Consequently, it is important to transform the data, should any of the assumptions be violated (Montgomery & Peck, 1982).

To test for the accuracy of the multiple regression equation, five assumptions are discussed, namely measurement error, linearity, normality, homoskedasticity, outlier detection and multicollinearity (Belsley 1991; Berry & Feldman, 1985; Christensen, 1990; Kerlinger & Pedhazur, 1973; Lewis-Beck, 1980).

Measurement Error. The first assumption is that the data must not contain any measurement error: All variables included in the regression model should be measured accurately (Anastasi, 1988; Berry & Feldman, 1985). A major source of measurement error is method effect (Cote & Buckley, 1987). Therefore, in addressing the measurement error assumption,

two procedures were adopted. First, the reliability estimates for all the instruments used in the main study were calculated. Two types of reliability were assessed. First, the internal consistency of the instruments used were calculated by means of the standardised Cronbach's alpha formula (see Chapter 6). Second, to determine the stability of the instruments used, test-retest reliabilities were calculated by correlating Time 1 and Time 2 scores over a six month interval (Cook et al., 1980).

Second, on the recommendation of a number of theorists in the field, confirmatory factor analysis to check for consistency of factor structures was employed (Cudeck & Browne, 1983; Loehlin, 1987; Velicer & Jackson, 1990). Loehlin (1987) notes that to attain the most comprehensive solution for a factor structure, it is important to examine whether the factor structure will be replicated in an independent sample of subjects. Thus, if the ultimate criterion for factor stability is cross-validation, it seems appropriate as a criterion for detecting measurement error (Cudeck & Browne, 1983). Specifically, if the factor structure reported for an independent sample is inconsistent with the proposed solution, the coefficient estimates will be biased and difficult to interpret (Loehlin, 1987). This usually leads to random error in the response variable which, in turn, increases the variance of the error term (Berry & Feldman, 1985; Dillon & Goldstein, 1984).

The identification of inconsistency in factor replication is an indication that the measurement error assumption of multiple regression is violated (Guadagnoli & Velicer, 1991). Therefore, in addressing the need for cross-validation, a five factor solution was hypothesised for the MTABS. Adopting the same factor extraction criteria discussed in Chapter 6, five methods were employed in the present study, namely Kaiser's sampling of measurement accuracy (>

,50), communality estimates (< ,20) factor loadings criterion (> ,30), scree test and the chi-square factor criterion test. Furthermore, to ensure factor stability and minimum measurement error for the factor solution, the coefficient of congruence[26] (C) and root mean square deviation (RMS) values were calculated (Guadagnoli & Velicer, 1991; Wrigley & Neuhaus, 1955). C is defined as a measure of proportional similarity between the factor loadings of the two independent samples (Wrigley & Neuhaus, 1955). The values of C can range between -1 and 1, with c = 0 representing a lack of agreement between the independent factors of comparison (Guadagnoli & Velicer, 1991). A more conservative comparison statistic is the Root Mean Square (RMS). RMS is calculated through computing the square root of the average squared deviations between the independent factor loadings of comparison (Guadagnoli & Velicer, 1991). In calculating RMS, a perfect match between components is reflected by an index value of 1 and total independence between the components is indicated by a value of 0 (Guadagnoli & Velicer, 1991).

Error Term

From the model equation of multiple regression presented earlier, E refers to the error term that can be used to determine the stability of the regression equation (Belsley et al., 1980; Montgomery & Peck, 1982). The interpretation of the regression estimates, together with the test statistics used in the hypothesis testing, depend on the assumption that all random errors have the same variance (Darlington, 1968; Montgomery & Peck, 1982). To test this

[26]It is important to note that C is conceptually distinguished from being treated as a correlation coefficient (Guadagnoli & Velicer, 1991). The reason for this differentiation is that the values that are used to compute the statistic are not deviates form their respective means (Guadagnoli & Velicer, 1991). Although this may seem obvious to some researchers familiar with the technique, it has been misinterpreted at times in the factor analytic literature (Guadagnoli & Velicer, 1991).

assumption more closely, it is necessary to perform residual plots (Montgomery & Peck, 1982). A residual is best viewed as the deviation between the predicted value and the actual value of the data where it represents the variability not explained by the regression model (Berry & Feldman, 1985; Dillon & Goldstein, 1984; Montgomery & Peck, 1982). Thus, in multiple regression analysis, residuals are conceived as measures of the error component (Dillon & Goldstein, 1984). Residuals are used within the regression analysis to check for linearity, heteroskedasticity of variances, normality and to identify outliers (Anscombe, 1973; Christensen, 1991). By plotting residuals, trends in the data can be examined more closely (Anscombe, 1973). Thus, should any of the assumptions be violated, the regression model is inaccurate.

Linearity Assumption. A second assumption to be considered is that there must be no specification error (Berry & Feldman, 1985). This assumption implies that the regression of dependent and predictor variables is linear (Montgomery & Peck, 1982). In testing for the linearity assumption, residual plots need to be computed on the predictor and dependent variables (Chatterjee & Price, 1977; Montgomery & Peck, 1982; Pedhazur, 1980). The plots are visually inspected for signs of deviation from linearity (Anscombe, 1973; Pedhazur, 1980).

Violation of the linearity assumption may require the addition of terms to the equation (Montgomery & Peck, 1982). More specifically, multiplicative terms (to account for interaction) and polynomial terms (to adjust for curvilinearity) are recommended if the linearity assumption is violated (Chatterjee & Price, 1977; Dillon & Goldstein, 1984). In explaining this inclusion of terms, a regression analysis for a polynomial model is performed by using the values of all the required powers of the predictor variables (Pedhazur, 1980).

Because the degree of polynomial is not known a priori, it is customary to build an appropriate model by sequentially fitting equations with higher order terms until a satisfactory fit has been achieved (Montgomery & Peck, 1982)

Homoskedasticity assumption. A third assumption that needs to be considered is that the data must not show signs of heteroskedasticity (Anscombe, 1973; Montgomery & Peck, 1982). Specifically, the spread of residuals within the residual plot must not be different for some of the regions of the plot, compared to others (Anscombe, 1973; Berry & Feldman, 1985; Dillon & Goldstein, 1984; Lewis-Beck, 1980; Vinod & Ullah, 1981). If differences result, a transformation of the data is needed (Dillon & Goldstein, 1984). The transformation can be employed on either the dependent, or predictor variable, to reduce the effects of heteroskedasticity (Montgomery & Peck, 1982). Transformation is considered to be a powerful tool in providing more precise estimates of the model parameter and increased sensitivity for the statistical tests (Montgomery & Peck, 1982; Parker, 1988; Rawlings, 1988).

The purpose of transformation is to attain a linear model with constant error variance and an error distribution that is symmetric and close to normal (Chatterjee & Price, 1977). The strength of the transformation employed on the data is dependent on the amount of curvature that it induces (Montgomery & Peck, 1982). Therefore, the appropriate transformation to be selected is chosen through a careful examination of the scatter diagram, or residual analysis (Chatterjee & Price, 1977; Montgomery & Peck, 1982).

Three situations are considered important to examine. First, if the residual plot shows the data

to be closely related at one end and loosely related at the other, a fan-shaped distribution[27] is found. The violation of the assumption of homoskedasticity, through the shape of a fan-shaped distribution, usually requires a log transformation (Anscombe, 1973; Montgomery & Peck, 1982). Second, if the residual plot reflects a parabolic pattern in the data, a square root transformation is usually employed (Montgomery & Peck, 1982). Finally, a bow-shaped distribution in the data, implies an arcsine transformation (Draper & Smith, 1980; Montgomery & Peck, 1982).

Normality assumption. A third assumption to be tested within multiple regression is that the distribution of errors is described as normal, and not skewed or flat tailed (Lewis-Beck, 1980; Rawlings, 1988). The test of normality is a central assumption of multiple regression largely because the mean of the sample, intercept, and slope parameters of the regression line should follow a normal distribution (Rawlings, 1988). To detect non-normality, it is important to plot the ordered residuals against the normal order statistics[28] (Belsley et al., 1980).

The expected result (to satisfy the normality assumption) is that an approximate straight line, passing through zero with the slope of the line determined by the standard deviation of the residuals, is obtained (Rawlings, 1988). A skewed distribution will reflect a curved normal plot with the curve of the plot influenced by the direction of the skewness (Montgomery & Peck, 1982). The presence of an S-shaped curve suggests heavy-tailed or light-tailed

[27]The statistical literature employs the term fan-shaped for the distribution since the standard-deviation is found to increase in direct proportion to the mean, which results in a fan-tail of data points in the scatterplot (Montgomery & Peck, 1982). Montgomery and Peck (1982) present examples of heteroscedasticity of the data that necessitates a log transformation.

[28]In defining the normal order statistics, these are commonly known as the expected values of the ordered observations from the normal distribution with zero mean and unit variance. Thus, plotting the observed residuals against their normal order statistics provides the normal plot (Rawlings, 1988).

distributions[39] (Rawlings, 1988). If the distribution is found to be irregular, then the assumption of normality is violated (Montgomery & Peck, 1982), and transformations of the data need to be considered. If the sample size is large, the violation of the assumption of normality is not considered to be serious (Lewis-Beck, 1980; Montgomery & Peck, 1982).

Detection of Outliers. A fourth assumption test to be considered before conducting the multiple regression is that the data does not contain outliers (Belsley, Kuh & Welsh, 1980). An outlier is defined as an observation that is not consistent with the pattern of the majority of data (Belsley et al., 1980). Two meanings are attributed to potential outliers; namely, that the variance is not constant, or that the true relationship between the predictor and response variable is not linear (Chatterjee & Price, 1977). Once an outlier has been detected, it can either be retained, deleted, excluded, or transformed (Montgomery & Peck, 1982). However, the automatic rejection of outliers is not a recommended strategy (Montgomery & Peck, 1982). Therefore, a general rule is to reject outliers only when errors are recorded in the data (Montgomery & Peck, 1982) and to perform a transformation on the data if outliers are detected.

A recommended method for detecting outliers is Cook's D statistic (Rawlings, 1988). The recommended value to consider as indicators of outlier presence is represented by the equation:

$$\text{Cook's } D = 4/n$$

(n represents the sample size; Rawlings, 1988, p. 269)

[39] In defining these distributions, heavy-tailed distributions have a relatively higher frequency of extreme observations than the normal distribution would show, while light-tailed distributions reflect relatively fewer observations (Rawlings, 1988).

Multicollinearity and matrix ill-conditioning. The final assumption to be considered before interpreting the multiple regression model is the detection of multicollinearity (Askin, 1982; Chatterjee & Price, 1977; Farrar & Glauber, 1967). Multicollinearity (also termed collinearity and ill-conditioning; Belsley, 1991) is defined as the problem that arises when the predictor variables are highly correlated (Berry & Feldman, 1985). The detection of linear dependencies (i.e. shared variance) among the predictor variables affects the size of the regression coefficients in the multiple regression equation (Belsley, 1991; Stewart, 1987). This, in turn, affects the generality and applicability of the multiple regression model (Mason, Gunst, & Webster, 1975; Silvey, 1969).

In theory, two extremes are found: no collinearity and perfect collinearity. In practice, the dependencies of the predictor variables are usually found to be between these two extremes (Mason & Perreault, 1991). Thus, it is correct to infer that collinearity is a matter of degree (Mason & Perreault, 1991). The important issue is to determine the point at which "harmful" effects are recorded because of collinearity among the predictor variables (Belsley, 1991; Dillon & Goldstein, 1984; Mason & Perreault, 1991; Rawlings, 1988; Velleman & Welsch, 1981). There are a number of choice methods to diagnosing the presence of collinearity. First, a common step is to examine the correlation matrix of the explanatory variables (Mason & Perreault, 1991). Lewis-Beck (1980) asserts that no correlations between the predictor variables should be above 0,80. However, this assumption can be criticised for failing to consider the relationships of all the other predictor variables simultaneously with the predictor variable in question (Belsley, 1991; Lewis-Beck, 1980). Thus, it is recommended to use a number of other collinearity tests (Belsley, 1991), which are discussed overleaf.

A second recommended method to check for multicollinearity effects is to regress each predictor variable against all of the other predictor variables (Mason & Perreault, 1991), so that no total R^2 is greater than ,64 (Lewis-Beck, 1980). This technique is regarded as more stringent than the correlation technique discussed above (Lewis-Beck, 1980).

A third multicollinearity test, is termed the variance inflation factor (Belsley, 1991; Farrar & Glauber, 1967). The variance inflation factor measures the combined effect of the dependencies of the predictor variables on the variance of the terms described (Rawlings, 1988). Thus, a large variance inflation factor implies multicollinearity. Montgomery and Peck (1982) note that the main advantage of calculating the variance inflation factor is that it gives a cogent sign of how much the estimated coefficients are affected by the multicollinearity. The diagnostic value of the variance inflation factor is shown as follows:

$$VIF=\frac{1}{1-R_i^2} \quad (1)$$ Rawlings (1988, p. 217).

In the above equation, R_i^2 is the coefficient of determination. The literature suggests that a variable inflation factor exceeding 10 denotes high multicollinearity (Montgomery & Peck, 1982), which will be used as the cut-off point in the present study.

A fourth method for evaluating multicollinearity is to examine the eigenvalues or eigenvector (principal components) of the predictor variables (Belsley, 1991). Specifically, the condition number is the term adopted by the literature as an index of the ratio of the largest to smallest eigenvalues (Rawlings, 1988; Vinod & Ullah, 1981). In adopting this technique, the condition

number examines the spread in the data of the predictor variables such that large reported condition indices warn of collinearities (Belsley, 1991; Vinod & Ullah, 1981). On the recommendation of experts in the multiple regression literature, the present study will consider condition indices above 30 to reflect moderate to strong multicollinearity (Belsley, 1991; Belsley et al., 1980; Rawlings, 1988), while indices greater than 100 indicate serious collinearity problems (Montgomery and Peck, 1982; Rawlings, 1988). The number of condition indices in this critical range reflect the number of near-dependencies contributing to the collinearity problem (Belsley, 1991).

If high multicollinearity is detected between the predictor variables in the regression equation, the transformation recommended is ridge regression (Belsley, 1991). Ridge regression involves adding a biasing constant (lambda) to the diagonal of the correlation matrix so that all of the diagonal elements equal 1 (Neter, Wasserman & Kutner, 1985). In more general terms, the purpose of ridge regression is to artificially decrease the correlation coefficient so that a more stable estimate (beta weight) is obtained for the data (Vinod & Ullah, 1981) which reduces the effects of multicollinearity.

If the assumptions of multiple regression have been met, it is possible to perform the multiple regression analysis (Dillon & Goldstein, 1984; Lewis-Beck, 1980). If not, it is important to transform the data. If the transformed data step complies with the assumptions tests, it is possible to perform the multiple regression analysis, which is carried out on the transformed effects of the dependent variable.

Results

First, the covariates are discussed for inclusion in the model. This is followed by a discussion of the results of the assumptions tests for linearity, measurement error, error distribution and multicollinearity. Finally, the results of the multiple regression analyses, operationalising the stepwise multiple regression procedure, are described.

Inclusion of Covariates

Covariates were examined to determine whether they suited inclusion in the regression equation. As can be seen from the correlation matrix in Table 7.1, age and tenure were significantly related to anger, II, competitiveness and AS ($p < ,05$). Therefore, age and tenure were included as covariates in the multiple regression equation. Furthermore, t-tests were conducted for the dichotomous variables sex and race (see Table 7.2) and one-way analysis of variance was employed for the multiple, discrete, demographic variables, namely education and marital status (see Table 7.3). From Table 7.2, it can be seen that sex was significantly related to AS and anger ($p < ,05$), while race was significantly related to competitiveness ($p < ,05$). Therefore, sex and race were included as covariates (dummy variables) in the stepwise

Table 7.1

Pearson correlations between the predictor variables and covariates and dependent variables ($\underline{N}$ = 462)[a]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1) Age												
(2) Tenure	49**											
(3) Achievement Striving	03	01	68									
(4) Impatience-Irritability	-02	09*	08	71								
(5) Anger	-16**	-08	09	37**	71							
(6) Hostility	-03	06	04	48**	39**	71						
(7) Competitiveness	-22**	-18**	12**	10**	19**	11*	69					
(8) Depression	-08	-08	-18**	22**	21**	10*	16**	89				
(9) Physical symptom complaints	-06	05	-10*	31**	24**	23**	10*	41**	85			
(10) Intention to leave[b]	-11*	-11*	14**	-13**	-04	-11	06	-10*	11*	72		
(11) Job satisfaction	03	09	24**	-18**	-12**	-09	-02	-31**	31**	40**	91	
(12) Performance	12**	26**	13*	03	-06	12*	03	-13*	05	03	14*	

* $p < ,05$
** $p < ,01$

a Sample size ranges between 319 and 462.
b This item is scored such that high scores means an intention to remain.

Note. Underlined figures in the diagonal represent Cronbach alpha's.
For ease of representation, the decimal points have been omitted in the correlation matrix.

Table 7.2

T-tests of the dichotomous demographic variables for the independent variables.

Predictor Variables		Achievement Striving			Impatience/ Irritability			Anger			Hostility			Competitiveness		
	Levels	n	M	t	n	M	t	n	M	t	n	M	t	n	M	t
Sex																
	Male	390	22,85	-2,87**	391	16,07	-0,89	391	10,28		390	9,76	0,17	389	3,60	0,17
	Female	55	13,77		56	16,54		55	9,49		55	9,69		55	2,82	
Race																
	White	399	22,93	-1,76	401	16,24	1,83	400	10,19	0,31	399	9,74	-0,25	398	3,44	-2,22*
	Black	42	23,86		42	15,00		42	10,05		42	9,86		42	2,40	

Table 7.3

Summary table of oneway analysis of variance of education and marital status for the predictor variables [a].

	AS		II		Anger		Hostility		Competitiveness	
Demographic variables	F	df	F	df	F	df	F	df	F	df
Education	0,65	4/ 453	1,45	4/ 453	0,10	4/ 452	1,38	4/ 451	2,46	4/ 451
Marital status	0,55	4/ 452	0,22	4/ 452	0,99	4/ 451	2,30	4/ 450	1,02	4/ 449

a. No significant differences were found for the covariates education and marital status on the predictor variables.

regression equations. From the one-way analyses of variance tests, shown in Table 7.3, no significant ($p < ,05$) differences were found between education and marital status on the predictor variables. Consequently, there was no need to control for education or marital status as covariates within the stepwise regression equations (Neale & Liebert, 1980).

Results of the Assumptions Tests

Measurement Error

Reliability of the Instruments. The results of the internal consistency (Cronbach alpha) and test-retest reliability coefficients are presented in Table 7.4. Nunnally (1967) recommends a reliability cut-off estimate of 0,60. As can be seen in Table 7.4, all of the predictor variables ($M r = ,70$, range = ,68 - ,71) and response variables ($M r = ,84$, range = ,72 - ,91) demonstrated acceptable Cronbach alpha's by recording values above 0,60 (Nunnally, 1967). Also, test-retest reliabilities were examined for a subsample of 65 respondents. As shown in Table 7.4, significant test-retest correlations were found for all predictor variables in the model (M age = 40,62 years, SD = 10,96 years; M organisational tenure = 4,10 years, SD = 4,81 years; M education = 11,89 years; SD = 0,95 years). Results for the test-retest reliabilities, over a six month period were satisfactory ($M r = ,64$; range = ,58 - ,80; $p < ,05$). Thus, drawing from both the calculated reliability scores and those reported for reliability and validity data of the scales, the condition of effective operationalisation of constructs appears satisfactory to the present study.

A second consideration to test for measurement error was to examine the cross-validation of

Table 7.4

Internal and temporal consistency of the measuring instruments[a]

	N of items	M	SD	Alpha	r[b]
(1) Achievement Striving	6	23,02	3,44	,69	,60**
(2) Impatience-Irritability	5	16,15	3,71	,71	,80**
(3) Anger	4	10,18	2,70	,71	,58**
(4) Hostility	5	9,74	2,81	,71	,60**
(5) Competitiveness	4	3,53	2,67	,69	,64**
(6) Depression	7	3.53	2,67	,69	,44**
(7) Physical symptoms complaints	19	77,72	10,51	,85	,79**
(8) Job satisfaction	14	76,51	12,66	,91	,36**
(9) Intention to leave	3	10,70	2,08	,72	,46**

** $p < ,01$

a Sample size ranges between 449 and 462.
b Test-retest sample (N = 65).

the five factor solution of the components of Type A behaviour (Cudeck & Browne, 1983; Loehlin, 1987). To comply with this assumption, confirmatory factor analysis of the MTABS was employed (Jackson, 1991) using the same factor analytic techniques that were adopted in Chapter 6. The factor solution of the confirmatory factor analysis is shown in Table 7.5

As seen from Table 7.5, the overall MSA for the MTABS was satisfactory (0,80). No item was found with an MSA below the critical value of 0,5 (Cureton & D'Agostino, 1983). However, on examining the communality estimates from Table 7.5, two items ("I strike out at whatever infuriates me") and ("Would people who know you well agree that you take your work too seriously"?) compromised the minimum cut-off of 0,20. All other items met this assumption. Furthermore, "Kaisers Little Jiffy" technique, factor loadings criterion (>,30) and the Chi-square estimation method confirmed a five factor solution. A further extraction criterion was the scree test which is presented in Figure 7.2. As can be seen from Figure 7.2, the scree test suggested the extraction of a seven factor solution. The chi-square factor extraction criterion ($\underline{x}^2$ = 1,70, $\underline{p}$ < ,01) recommended the extraction of five factors as the best factor solution. As shown in Table 7.5, three cases of multiple loadings occurred for the factor structure ("I feel infuriated when I do a good job and get a poor evaluation"), ("Would people who know you well agree that you tend to get irritated easily") and ("Do you find yourself hurrying to places when there is plenty of time?). However, in applying Harris' (1967) definition of a factor as comprising three items or more, a five factor solution was interpreted as appropriate to the data and the multiple factor loadings and scree test were not considered to compromise the final factor solution. The factor structure replicated the original factor solution (see Chapter 6) and accounted for 78% of the variance.

Table 7.5
Varimax rotated factor loadings on five factors of the MTABS.

Type A component	Factor I	Factor II	Factor III	Factor IV	Factor V	h^2	MSA
Hostility							
1. I express my anger.	44	11	10	03	01	22	79
2. I tell someone how I feel if they annoy me.	69	09	14	15	02	53	83
3. I lose my temper.	70	-02	09	27	05	57	85
4. I argue with others.	64	-04	08	09	11	44	85
5. I strike out at whatever infuriates me.	42	-03	10	04	01	19	85
Achievement Striving							
6. Do you ever set deadlines or quotas for yourself at work or at home?	00	54	-01	11	06	34	83
7. Nowadays, do you consider yourself to be hard-driving and competitive?	-05	51	-08	02	04	27	74
8. Would people who know you well agree that you take your work too seriously?	02	41	10	09	05	19	77
9. In amount of effort put forth, I give:	00	52	05	00	02	28	75
10. Does your job stir you into action?	01	62	04	-01	01	38	73
11. How would your spouse (or closest friend) rate your general level of activity?	09	46	10	01	01	22	75
Anger							
12. I feel infuriated when I do a good job and get a poor evaluation.	30	07	21	32	-03	25	89
13. I feel annoyed when I am not given recognition for good work.	19	07	71	12	13	57	75
14. I get angry when slowed down by other's mistakes.	18	06	83	09	16	76	72
15. It makes me furious when I am criticised in front of others.	16	-01	50	12	06	29	85
Impatience-Irritability							
16. Would people who know you well agree that you tend to get irritated easily?	20	04	11	39	-05	21	83
17. How is your temper nowadays?	15	09	11	55	06	34	83
18. Would people who know you well, agree that you tend to do most things in a hurry?	47	-04	02	54	-02		
19. When you listen to someone talking and this person takes too long to come to the point do you feel like hurrying him or her along?	07	11	04	67	12	48	78
20. Do you find yourself hurrying to places when there is plenty of time?	60	-03	08	35	06	49	86
Competitiveness							
21. To be a real success I feel I have to do better than everyone I come up against.	11	-03	01	08	73	55	74
22. It is important to me to perform better than others on a task.	16	06	16	16	57	40	81
23. I judge my performance on whether I do better than others rather than on getting a good result.	07	-06	-01	04	46	22	74
24. It annoys me when other people perform better than I do.	04	13	09	21	42.	24	79
Eigenvalues	8,34	3,57	2,56	2,02	1,36		
% Common variance accounted for	34	48	60	71	78		
% Total variance accounted for	34	14	12	11	07		
Overall MSA							80

Note. To save space, decimal points have been ommitted for all factor loadings, communalities and MSA's.
Underlined values denote factor loadings greater than ,30.

To examine consistency of factor structures across samples (factor solution for bank employees discussed in Chapter 6 and the sample of insurance salespeople in the main study), the rotated solutions were compared with respect to the magnitude and pattern of loadings, using two comparison statistics, namely C (Guadagnoli & Velicer, 1991) and RMS (Harman, 1976). The levels of fit between the five factors for the two samples were high for both indices (C: M rating = 0,95, range = 0,89 - 0,99; RMS: M rating = 0,12, range = 0,06 - 0,23). The magnitude of the C and RMS coefficient suggested that there was no factor invariance. Consequently, the results signified that the two samples yielded highly comparable factor solutions (Guadagnoli & Velicer, 1991).

Tests for Distribution of Residuals

To test that the assumptions of linearity, homoskedasticity, normality and no presence of outliers for the error terms were not violated, residual plots were employed before interpreting the multiple regression analysis. The series of residual plots is presented in Appendix C (linearity and homoskedasticity), Appendix D (normality) and Appendix E (outlier detection) and are discussed below.

Linearity. As shown in Appendix C, residual plots were considered in examining the assumption of linearity for the regression equation. In performing this step, the residuals were plotted against each of the predictor variables (AS, II, anger, hostility and competitiveness) and the response variables (depression, physical symptoms complaints, job satisfaction, intention to leave and performance). As can be seen from Appendix C, the residual plots conformed to the absence of specification error (Lewis-Beck, 1980) which supported the

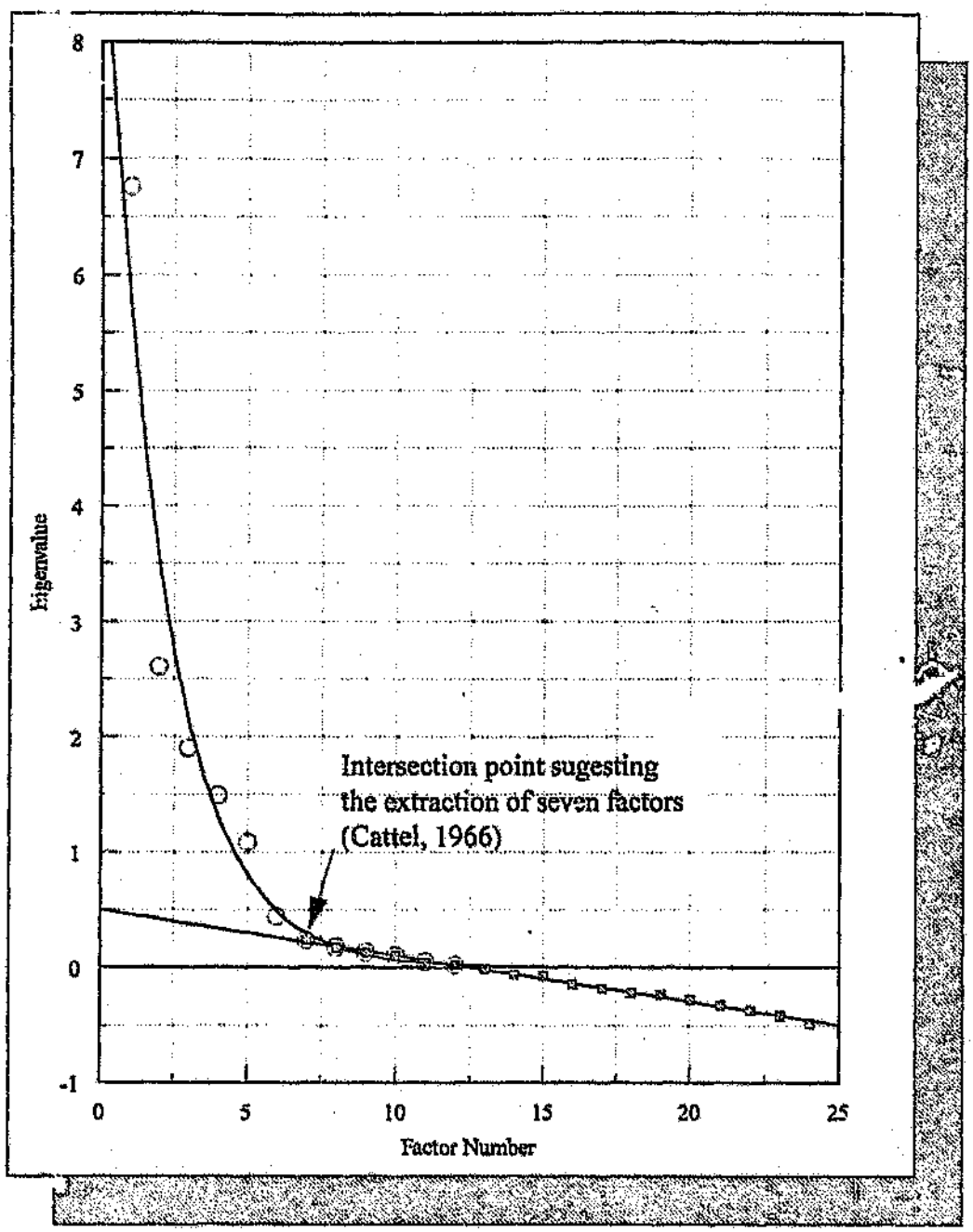


Figure 7.2 : The Scree test.

assumption of linearity.

Homoskedasticity. To test the assumption of homoskedasticity, the residual plots for depression, physical symptoms complaints, job satisfaction, intention to leave and performance were examined closely for the presence of fan-shaped, parabolic and bow-shaped distributions (see Appendix C; Montgomery & Peck, 1982). The residual plot for depression showed a fan-shaped distribution in the data (Anscombe, 1973; Montgomery & Peck, 1982). As a result, it was necessary to log transform the data. As can be seen from the log transformed residual plot in Appendix C, a more even distribution of the data was achieved and supported the assumption of homoskedasticity.[30] For the other residual plots considered in Appendix C on physical symptom complaints, job satisfaction, intention to leave and performance, there were no indications that the assumption of homoskedasticity had been violated. Consequently, the residual plots for physical symptoms complaints, job satisfaction, intention to leave and performance satisfied the assumption of homoskedasticity.

Tests for Normality. A third assumption related to the error term in the present study, was to consider normality plots (Lewis-Beck, 1980). As mentioned earlier, the normal probability plot displays the cumulative normal distribution of the data as a straight line. In achieving this end, the slope measures the standard deviation and intercept reflects the mean (Belsley et al., 1980). As shown in Appendix D, the assumption of normality test for depression is not satisfactory since the residuals are not normally distributed. A log transformation of the data represented a more close to normal slope, which satisfied the assumption of normality for

[30]It should be noted that because a log transformation was required to satisfy the assumption of homoskedasticity, this is the transformed dependent variable to be considered when performing the stepwise regression analysis. Thus, in achieving a 'robust' solution for depression, all further interpretation on the depression variable concerns a log transformed data set.

depression (see Appendix D for a representation of the log transformed normality plot on depression).

As shown in Appendix D, except for intention to leave[31], an examination of the residual plots for the remaining dependent variables revealed no distinct curvature in the data and a relatively straight line for the residual plots on physical symptom complaints, job satisfaction and performance. Thus, from an inspection of the residual plots shown in Appendix D, the assumption of normality was satisfied in the present study.

Tests for Outlier Diagnostics. To test for the presence of outliers, Cook's D was calculated and compared with the values from the plot (see Appendix E). The Cook's D cut-off was found to be 0,09[32]. As shown by the graphs, the values obtained for the data points on the distribution were generally well below the value of 0,09 for Cook's D ($p < ,05$). Thus, from an analysis of the residual scatterplot, the detection of no outliers was not violated by the present study.

Tests for Multicollinearity. From the correlation matrix presented in Table 7.1, no predictor variables were found to be significantly correlated above 0,80 (Lewis-Beck, 1980). Thus, following this assumption, no multicollinearity was evident for AS, II, anger, hostility and

[31] To satisfy the normality assumption for intention to leave, log, square and arcsine transformations were performed on the data in an attempt to achieve a more optimal slope (Montgomery & Peck, 1982). However, the transformations did not assist in providing a more sensible solution. It was concluded that the best plot that satisfied the assumption of normality was the untransformed data (see Montgomery & Peck, 1982). Lewis-Beck (1980) notes that a violation of the normality assumption can be ignored if the sample size is large enough, since it is possible to invoke the central-limit theorem. Given the size of the sample of 463 respondents within the main study, violation of the intention to leave normality assumption was not considered serious (Lewis-Beck, 1980).

[32] As mentioned earlier in the chapter, the method of calculating Cook's *D* is by the equation Cook's D = 4/n, which translates into 4/463 = 0,09; where n represents the sample size.

competitiveness However, it should be noted that collinearity and correlation are not synonymous; a high correlation implies multicollinearity, but the converse of this statement is not true (Montgomery & Peck, 1982). Therefore, a number of alternative tests were employed to test for the presence of multicollinearity.

A second test for multicollinearity detection was to regress each predictor variable on the remaining predictor variables. The $\underline{R}^2$ values ranged from ,01 to ,23, thereby not challenging the multicollinearity assumption (Lewis-Beck, 1980).

A third test employed was to examine the variance inflation factor for the predictor variables (Montgomery & Peck, 1982). As noted earlier, the variance inflation factor is an estimate of the degree to which a change in one predictor variable affects the others. The lower the variance inflation estimate, the less influence the predictor variables have on each other when examined independently (Belsley, 1991). As can be seen from Table 7.6., the variance inflation factor estimates for the predictor variables were well below the cut-off value of 10 (Montgomery Peck, 1982; $\underline{M}$ VIF = 1,22; range = 1,02-1,40), which provided evidence that the assumption of multicollinearity was not violated for the present findings.

A fourth test employed to detect multicollinearity was to conduct an analysis of the eigenvalues and eigenvectors of the predictor variables. A summary of this statistic is presented in Table 7.6 As can be seen from Table 7.6, the eigenvalues are arranged from largest to smallest. Drawing from these values, it can be recalled that the condition number is the index that results when the square root of the ratio of the largest to smallest eigenvalue is taken (Montgomery & Peck, 1982). As shown in Table 7.6, the condition numbers of the

TABLE 7.6

Assumption tests to detect multicollinearity[a]

	VIF[b]	Eigenvalue	Condition number
(1) Hostility	1,40	1,91	1,00
(2) Impatience-Irritability	1,38	1,05	1,35
(3) Competitiveness	1,05	0,89	1,47
(4) Anger	1,27	0,63	1,74
(5) Achievement Striving	1,02	0,51	1,93

a Sample size ranges between 449 and 462
b Variance inflation factor

present study were well below the suggested cut-off of 30 (Belsley, 1991; M condition number = 1,49, range = 1,00-1,93) and satisfied the assumption of multicollinearity (Note, 2).

Given that all the assumptions underlying multiple regression had been satisfied in the present study, stepwise regression analysis could be performed. The results for each of the dependent variables included in the model statement are presented below.

Results of the Stepwise Regression Analysis

Depression[11] Depression was regressed on AS, II, anger, hostility and competitiveness controlling for sex, race, age and tenure. Results of the stepwise regression are presented in Table 7.7. After excluding 2% of the variance as a result of the covariates, three of the components of Type A behaviour (II, AS and competitiveness) contributed significantly ($p < ,05$) to the variance in depression. II was positively and significantly associated with depression ($F(1/445) = 14,60$, $p < ,01$; beta = 0,04), accounting for 6 % of the variance. Conversely, AS was negatively related to depression ($F(1/444) = 18,98$, $p < ,01$; beta = -0,21) and accounted for 5 % of the variance. Finally, anger was positively related to depression ($F(1/443) = 11,89$), $p < ,01$; beta = 0,17) and accounted for 2 % of the variance. Contrary to initial predictions (see Figure 7.1.), anger and hostility were not found to contribute significantly to the variance in depression.

[11] In conducting the multiple regression analysis, it is important to note that the predictor variables were regressed on the log transformed index of depression

Table 7.7. Stepwise regression for depression[a] (N = 448)[b]

Variable entering equation	R^2	$R^2\Delta$	β	F-Statistic	df
Covariate					
sex			,15	0,95	1/446
race			-,02	0,01	1/446
age			,01	1,60*	1/446
Tenure	,02	,02	,00	1,17**	1/446
Predictor variable					
Impatience-Irritability	,08	,06	,04	14,60**	1/445
Achievement Striving	,13	,05	-,21	18,98**	1/444
Competitiveness	,15	,02	,17	11,89**	1/443

a. The depression variable considered is the log transformed variable.

b. The sample size was reduced from 463 to 448 because of a listwise deletion of missing cases (Cohen & Cohen, 1983).

Note. The predictor variables anger and hostility did not contribute significantly to the variance of depression.

Physical Symptoms Complaints. Physical symptoms complaints was regressed on AS, II, anger, hostility and competitiveness, controlling for sex, race, age and tenure. Results of the stepwise regression are presented in Table 7.8. After controlling for 3% of the variance as a result of the covariates (see Cohen & Cohen, 1983), three components of Type A behaviour (II, AS and anger) contributed significantly ($p < ,05$) to the variance in physical symptoms complaints. As can be seen from Table 7.8., II was positively associated with physical symptoms complaints ($F(1/445) = 41,90$, $p < ,01$; beta = 0,73) and accounted for 9 % of the variance. Conversely, the stepwise regression analysis found AS to be negatively associated

with physical symptoms complaints ($F(1/444) = 11,74$, $p < ,01$; beta = -0,55) and accounted for 2 % of the variance. Finally, anger was positively related to physical symptoms complaints ($F(1/ 443) = 12,21$, $p < ,01$; beta = 0,63) and accounted for 2 % of the variance. Contrary to expectations, competitiveness and hostility did not contribute significantly ($p < ,05$) to the variance in physical symptoms complaints.

Table 7.8 Stepwise regression for physical symptoms complaints (N = 448)[a]

Variable entering equation	R^2	$R^2\Delta$	β	F-Statistic	df
Covariate					
sex			-4,25	8,20**	1/446
race			3,34	1,31*	1/446
age			0,07	1,68	1/446
Tenure	,03	,03	-0,01	1,58	1/446
Predictor variable					
Impatience-Irritability	,12	,09	0,73	41,90**	1/445
Achievement Striving	,14	,02	-0,55	11,74**	1/444
Anger	,16	,02	0,63	12,21**	1/443

a. The sample size was reduced from 463 to 448 because of a listwise deletion of missing cases (Cohen & Cohen, 1983).

Note. The predictor variables competitiveness and hostility did not contribute significantly to the variance of physical symptoms complaints.

Job Satisfaction. Job satisfaction was regressed on AS, II, anger, hostility and competitiveness, controlling for sex, race, age and tenure. Results of the stepwise regression are presented in Table 7.9.

Table 7.9. Stepwise regression for job satisfaction (N = 451)[a]

Variable entering equation	R^2	$R^2\Delta$	β	F-Statistic	df
Covariate					
sex			-1,33	0,72	1/449
race			-1,70	7,28**	1/449
age			0,91	28,58**	1/449
Tenure	,02	,02	-0,68	17,58**	1/449
Predictor variable					
Achievement Striving	,07	,05	0,91	21,12**	1/448
Impatience-Irritability	,11	,04	-0,68	17,58**	1/447

a. The sample size was reduced from 463 to 451 because of a listwise deletion of missing cases (Cohen & Cohen, 1983).

Note. The predictor variables anger, competitiveness and hostility did not contribute significantly to the variance of job satisfaction.

After controlling for 2% of the variance as a result of the covariates, the AS and II components of Type A behaviour contributed significantly ($p < ,05$) to the variance in job satisfaction. Specifically, AS contributed positively to job satisfaction ($F(1/448) = 21,12$, $p < ,01$; beta = 0,91) and accounted for 5 % of the variance. Conversely, II was negatively associated with job satisfaction ($F(1/447) = 17,58$, $p < ,01$; beta = -0,68) and accounted for 4 % of the variance. Also, consistent with predictions, anger, competitiveness and hostility did not contribute significantly to the variance in job satisfaction.

Intention to Leave[34]. Intention to leave was regressed on AS, II, anger, hostility and competitiveness, controlling for age, tenure, race and sex, which were included as covariates in the stepwise regression. Results of the stepwise regression analyses for intention to leave are presented in Table 7.10. As can be seen from Table 7.10., only two (AS and II) of the five components of Type A behaviour contributed significantly ($p < ,05$) to the variance in intention to leave.

Table 7.10. Stepwise regression for intention to leave[a] (N = 451)[b]

Variable entering equation	R^2	$R^2\Delta$	β	F-Statistic	df
Covariate					
sex			-0,15	0,21	1/449
race			-0,10	0,09	1/449
age			0,02	2,60	1/449
Tenure	,02	,02	0,00	1,08	1/449
Predictor variable					
Achievemen. striving	,04	,02	0,09	8,01**	1/448
Impatience-Irritability	,06	,02	-0,08	8,77**	1/447

a. It should be noted that high scores on this variable denote an intention to remain

b. The sample size was reduced from 463 to 451 because of a listwise deletion of missing cases (Cohen & Cohen, 1983).

Note. The predictor variables anger, competitiveness and hostility did not contribute significantly to the variance of intention to leave.

AS was positively associated with intention to remain ($F(1/448) = 8,01$, $p < ,01$; beta = 0,09)

[34]It should be recalled that high scores on this construct denote an intention to remain with the organisation. Therefore, it is appropriately interpreted as intention to remain when positive relationships are recorded.

and accounted for 2 % of the variance. Conversely, II was negatively related to intention to remain ($F(1/447) = 8,77$, $p < ,01$; beta = -0,08) and accounted for 2 % of the variance. Consistent with predictions, anger, hostility and competitiveness did not contribute significantly to the variance of intention to leave.

Performance. Performance was regressed on AS, II, anger, hostility and competitiveness, controlling for sex, race, age and tenure. Results of the stepwise regression are presented in Table 7.11.

Table 7.11. Stepwise regression for performance (N = 328)[a]

Variable entering equation	R^2	$R^2\Delta$	β	F-Statistic	df
Covariate					
sex			1,03	0,35	1/326
race			3,15	3,08	1/326
age			0,00	0,00	1/326
Tenure	,08	,08	0,03	18,21**	1/326
Predictor variable					
Achievement Striving	,10	,02	0,48	7,78**	1/325
Anger	,11	,01	-0,44	4,07**	1/324

a. The sample size was reduced from 463 to 328 because of a listwise deletion of missing cases (Cohen & Cohen, 1983).

Note. The predictor variables II, competitiveness and hostility did not contribute significantly to the variance of performance.

As shown in Table 7.11, after excluding 8% of the variance as a result of the covariates, the only components of Type A behaviour to contribute significantly ($p < ,05$) to the variance in performance were AS and anger. Consistent with predictions, AS was positively related to performance ($F(1/325) = 7,78$, $p < ,01$; beta = 0,48), accounting for 2 % of the variance. Conversely, anger was negatively associated with performance ($F(1/324) = 4,07$, $p < ,01$; beta = -0,44) and accounted for 1 % of the variance. Consistent with predictions, II, hostility and competitiveness did not contribute significantly to the variance in performance.

Conclusion

In this chapter, a multidimensional model of the independent relations of AS, II, anger, hostility and competitiveness to health and work related outcomes is presented and empirically tested (see Figure 7.1.). In testing the multidimensional model, stepwise regression was conceptually supported as the chosen technique for examining the predictive utility of the components of Type A behaviour, when assessed independently. As demonstrated by the results, the five components of Type A behaviour (AS, II, anger, hostility and competitiveness) were differentially related to depression, physical symptoms complaints, job satisfaction, intention to leave and performance. The differential relations of the components of Type A behaviour attest to the importance of reconceptualising Type A behaviour as a multifaceted construct. It remains important to discuss the results in association with the relevant literature, which is the purpose of Chapter 8.

CHAPTER 8

DISCUSSION OF RESULTS[35]

The aim of the present thesis is to develop and test a multidimensional model of the correlates of the components of Type A behaviour. Based on the literature (see Chapters 1-3), a theoretical model of the components of multifaceted Type A behaviour was presented in Chapter 4 and a multidimensional Type A behaviour scale, the MTABS, was developed and empirically evaluated in Chapter 6. In the main study (Chapter 7), the differential relationships of the independent components of Type A behaviour was examined. In the present chapter, the findings of the main study will be discussed and interpreted in relation to the literature. Thereafter, theoretical and practical implications of the findings will be discussed. This will be followed by an examination of the limitations that arose in the present study. Finally, contingent on both theory and an extension of the results in the present thesis, a revised model is presented in Chapter 9 with a view to discussing future implications of the study.

In the present study, the components of Type A behaviour were found to be differentially related to health (depression and physical symptoms complaints) and work related outcomes (job satisfaction, intention to leave and performance; see Figure 8.1). The differential relations of AS, II, anger, hostility and competitiveness in association with health and work related outcomes supports recent suggestions in the literature that Type A behaviour is best conceptualised as a multifaceted construct (Dembroski & Williams, 1989; Gray et al., 1989).

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[35] Aspects of the present chapter were presented at the Eighth Annual Psychological Congress, Stellenbosch, 1-3 October 1992. The paper discussed the differential relations of the components of Type A behaviour (AS, II, anger, hostility, competitiveness) in relation to health (depression, physical symptoms compl and work related (job satisfaction, intention to leave, performance) outcomes, using the stepwise regression findings of the present stud ams & Blues, 1992).

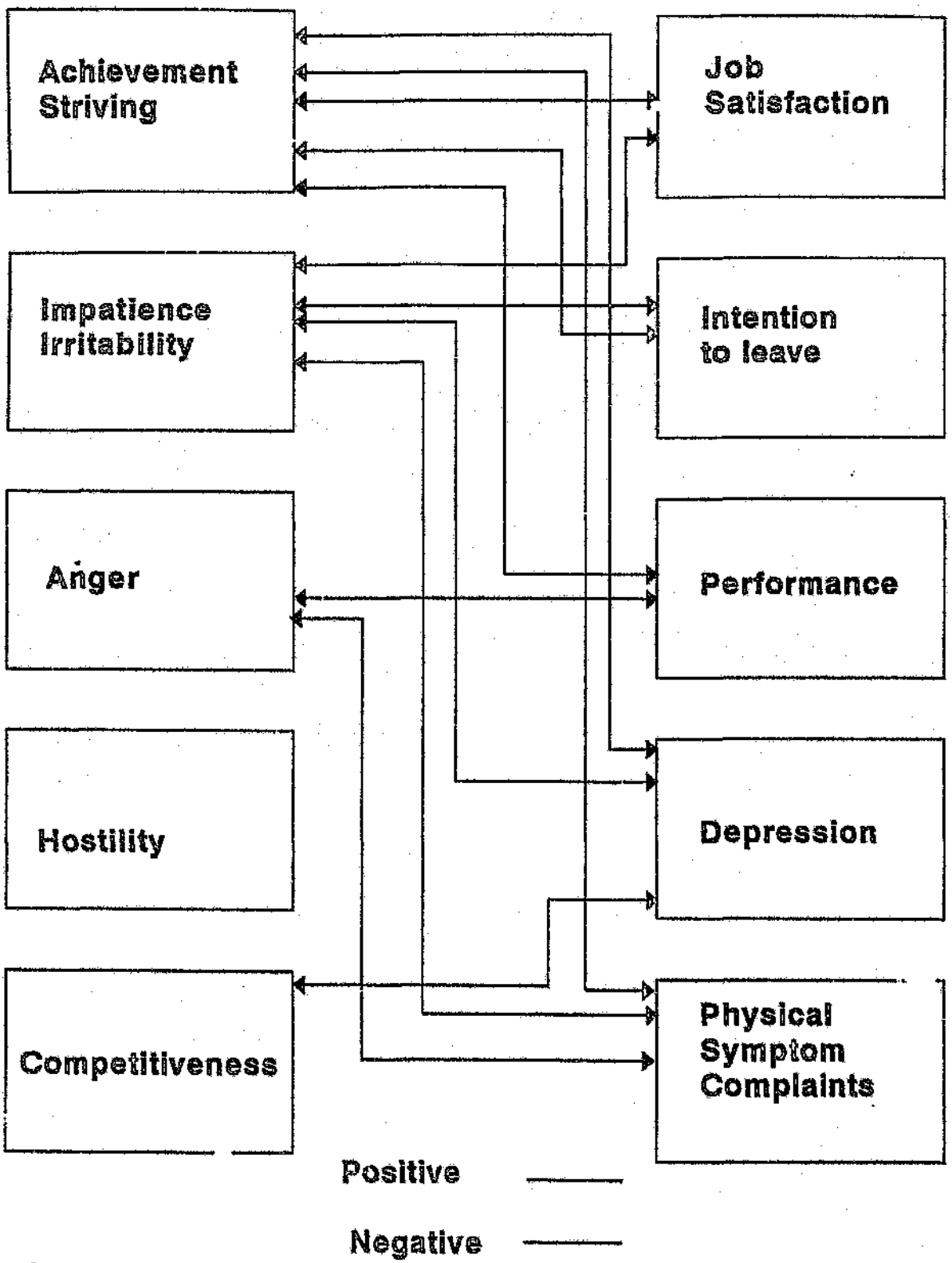


Figure 8.1 Summary of findings of the differential relationships of the components of Multidimensional Type A behaviour

Clearly, a global construct is unable to show the independent relations of the components, which results in a loss of information (Carver, 1989). The differential relations of the components to health (depression and physical symptoms complaints), and work related outcomes (job satisfaction, intention to leave and performance), are discussed below. In describing the findings, the order with which the predictor variables were empirically derived from the stepwise regression model in association with the dependent variable, will be discussed.

Discussion of Results

Depression. Results of the present study reveal that AS, II, anger, hostility and competitiveness were differentially related to depression. Specifically, II and competitiveness were positively related, AS was negatively related, and anger and hostility were unrelated to depression (see Figure 8.1). The non-significant findings contradict initial predictions that anger and hostility would be positively related to depression. Similarly, the AS/depression linkage, albeit inverse, was contrary to expectations

As predicted, II was found to be positively and significantly related to depression. A possible explanation for the II-depression relationship is to consider Strube's (1985, 1987; see Chapter 2) model, which suggests that the association may be strongly affected through uncontrollability and self-appraisal level. The essence of Strube's (1985) argument is that II may be a hyperreaction to uncontrollable environmental stress (e.g., time deadlines). In response, Type A's are impatient and time urgent in attempting to regain a sense of control over the aversive situation (Strube, 1987). If the efforts of those demonstrating II to regain

control are reported to be unsuccessful, Type A's are most likely to abandon their attempts at mastery, whereby "giving up" and feelings of helplessness may result (Houston, 1983; Matthews & Brunson, 1979; Musante et al., 1984; Weidner, 1980). The motivational change that develops, as a result of the learned helplessness, is considered to be the contributing factor to depression (Abrahamson et al., 1978; Krantz et al., 1974). In support of this conceptual argument, Linville (1987) maintains that impatience and high levels of irritable behaviour create negative thoughts and feelings associated with aspects of the self. It is well documented that the emergence of negative self-appraisal is a contributing factor to depression (Beck, 1987; Belsher & Costello, 1988; Kuiper & Martin, 1989). Thus, II may stimulate negative appraisal of the self (see Strube, 1985) that contributes directly to depression (Lewinsohn et al., 1980).

The conceptual link between II and depression conforms to past research on the II dimension of Type A behaviour (Bluen et al., 1990). That is, Bluen et al (1990) found in a previous sample of life insurance salespeople, after controlling for AS, a positive and significant relationship between II and depression. Further empirical support is provided by independent studies by Edwards and Baglioni (1990b) and Edwards et al. (1991) where speed and impatience was found to be significantly related to depression. The significant relationship led Edwards and Baglioni (1991) to conclude that an accelerated pace of time urgency was the most significant contributor of Type A behaviour to depression. Moreover, Billings and Moss (1982) reported time urgency to be significantly related to depression, which corroborated the II-depression link within the present study.

AS was found to be negatively associated with depression. By definition, AS refers to the

level of energy, target setting and hard-driving behaviour an individual exhibits in their lives (Friedman & Rosenman, 1974). Since depression is associated with a reduction in physical energy and loss of motivation to succeed (Beck, 1987; Weisse, 1992), the negative relationship between AS and depression is conceptually defensible, although the present study did not hypothesise such a relationship. Striving to do well, desiring to fully utilise resources to succeed, and set targets (characteristic of AS; Fineman, 1977), seems incompatible with negative perceptions of outcomes and sad affect (Beck, 1987), which explains the negative relationship between AS and depression within the present study.

The differential relationship between AS (in comparison to II) and depression confirms previous findings (Bluen et al., 1990; Northam, 1992). Edwards and Baglioni (1991) did not report a significant relationship between either ambition or hard driving behaviour and depression. Similarly, component analysis of Type A behaviour by Chesney et al. (1981) did not reflect a significant association between hard-driving behaviour and depression.

The present results extend previous findings in the literature by revealing that AS not only contributes differentially to depression, but in the opposite direction. However, rather than detracting from the importance of adopting a component analysis, it reinforces the need to reconceptualise Type A behaviour as a multifaceted construct. Specifically, as described by the present findings, a multifaceted conceptualisation is able to account for the negative relationship reported between AS and depression (Bluen et al., 1990), a result that a global index, by definition, would be unable to show (Carver, 1989).

Consistent with predictions, competitiveness was found to be positively associated with

depression. This finding is consistent with Kohn's (1986) model, where he suggests that competitiveness reduces positive mental health and leads to higher reports of depression. As such, competitiveness is often associated with unpleasantness, which can translate into an aroused state of negative ideas and feelings (Meeker, 1990; Wilder & Shapiro, 1989). In this respect, drawing on Price's (1982a, see Chapter 2) model, competitiveness has been characterised by a constant need to prove oneself through attempting to outdo others. If the person perceives that these dysfunctional self-worth contingencies are incongruent with expectations, he/she is more prone to a negative self-view that promotes depression (Martin et al., 1989). Specifically, should the person lose in an interpersonal encounter, he/she may perceive themselves more negatively through guilt, self-reprisal, or expectations of failure (Johnson et al., 1981; Kuhn, 1986; Price, 1982a), which are contributory factors to depression (Martin et al., 1989; Meeker, 1990). Inevitably, the unrealistic self-worth contingencies of competitive individuals are likely to result in low self-esteem (Kuiper & Martin, 1989; Price, 1982a). The threat to self-esteem, in turn, has been interpreted as a contributory link to depression (Martin et al., 1989).

The above view is consistent with interpersonal models that focus on the aversive patterns of communication and the negative feedback that these patterns create within depressed individuals (Coyne, 1976a, 1976b). Given the pervasiveness of competitiveness within society today (Griffen-Pierson, 1988; Johnson et al., 1981; Schmitt, 1981, 1984, 1986; Taylor, 1989), the relationship between competitiveness and depression is an area that deserves future study. Clearly, the construct of competitiveness has been misconstrued to be a positive state of arousal (Meeker, 1990) which is not supported by the present findings.

Contrary to expectations, anger was not significantly related to depression. The unexpected finding does not support the initial prediction that anger would be positively related to depression. Novaco (1976a) notes that anger can lead to adaptive coping in that it energises behaviour, reduces feelings of vulnerability and can foster a sense of mastery and control over the immediate environment. Beck (1976) proposed that maladaptive cognitive schemas are responsible for lack of self-worth, low energy level and feelings of withdrawal in depressives. Thus, in comparing these two views, angry response seems incongruent with the rigidity in thinking that has been attributed to the thought processes of the depressed (Beck, 1970; Belsher & Costello, 1988; Lewinsohn, Mischel, Chaplin & Barton, 1980). Also, anger has been found to be a counteractive step to restoring low self-esteem levels (Kernis, Granneman & Barclay, 1989), which would challenge traditional conceptualisations of a positive relationship between anger and depression (Biaggio, 1987; Biaggio & Godwin, 1987; Deffenbacher, Demm & Barandon, 1986; Finman & Berkowitz, 1989; Maiuro et al., 1988). Employing depth of processing notions (Berkowitz, 1983; Novaco, 1976), anger can be viewed as a combination of arousal and cognitive labelling of that arousal that induces an active coping response in the individual (Rosenman, 1986). The active coping response suggests that anger is unlikely to be positively related to depression.

Hostility did not contribute significantly to depression. The non-significant finding contradicts earlier predictions and past research where hostility has been positively associated with depression (Lemaire & Clopton, 1981; Novaco, 1977; Paykel, Weissman & Prusoff, 1971; Schless et al., 1974; Weissman et al., 1971; Wolff, 1973). One possible explanation for this finding concerns the type of hostility (aggressive-hostility, see Chapter 4) examined in the present study (Biaggio & Godwin, 1987).

An examination of the studies that have reported a significant relationship between hostility and depression reveals that inwardly expressed hostility is the contributory factor to depression (Biaggio & Godwin, 1987; Hayworth et al., 1980; Lemaire & Clopton, 1981; Wolff, 1969). Conversely, the present study operationalised aggressive-hostility as the conceptual component of Type A behaviour in association with depression (Ganster et al., 1991; Siegman et al., 1987). But, while a non-significant relationship was reported, the question remains as to why no significant relationship between aggressive-hostility and depression was found.

Finman and Berkowitz (1989) note that cognitive theories of depression do not propose a relationship between aggressive-hostility and depression. Rather, Finman and Berkowitz (1989) note that apathy and passivity are more likely to be associated with depression than the behavioural expression of aggressive-hostility. Thus, in reviewing the factors influencing depressed mood, low levels of aggressive-hostility are more likely to be related to depression (Finman & Berkowitz, 1989). In support of the non-significant relationship in the present study, Ganster et al. (1991) found no significant relationship between hostility and depression.

In summarising the results reported above, it is clear that the components of the multidimensional model are differentially related to depression. Past research has found the relationship between Type A behaviour and depression to be inconsistent. Some studies have reported a positive relationship (Brief et al., 1983; Byrne & Rosenman, 1986a; Carmody et al., 1984; Dimsdale et al., 1978; Francis, 1981; Howard et al., 1976; Matteson & Ivancevich, 1982; Nowack, 1986; Suls & Wan, 1989), others a non-significant relationship (Caplan & Jones, 1975; Chesney et al., 1981; Jenkins et al., 1977; Sparacino, 1979; Weidner & Andrews,

1983), and others a negative relationship (Burke & Weir, 1980). The inconsistency in findings may be due to conceptualising and operationalising Type A behaviour as a global index, and ignoring the differential contribution of the components (Edwards et al., 1991; Wright, 1988), as shown in the present findings. Specifically, there is insufficient cause to operationalise a global composite of Type A behaviour if AS contributes negatively and II and competitiveness contribute positively to depression, since a cancelling effect is highly likely (Carver, 1989). Furthermore, anger and hostility were found to be non-significantly related to depression. As such, the inconsistency in previous global Type A-depression findings may be a consequence of the failure to operationalise AS, II, anger, hostility and competitiveness, independently.

Physical Symptom Complaints. Results of the present study reveal II, anger and AS to predict physical symptom complaints. On the one hand, II and anger were positively associated with physical symptom complaints, while AS was negatively related to physical symptom complaints (see Figure 8.1). The negative relationship between AS and physical symptom complaints did not support initial predictions that a non-significant relationship would be found. Also, contrary to expectations, hostility and competitiveness were not related to physical symptom complaints.

As predicted, II was found to be positively related to physical symptoms complaints. The finding suggests an association between level of impatience and irritability at being slowed down and physical symptoms complaints. A conceptual explanation for the relation between II and physical symptom reporting is supported through recent advances on physiological reactivity (see Chapter 2) as the mediating mechanism to predicting physical symptoms

complaints (Dienstbier, 1989; Rodin & Salovey, 1989).

II has been found to be associated with sympathetic nervous system arousal (Jennings, 1984; Krantz & Manuck, 1984; Ohman et al., 1989). Sympathetic nervous system arousal, in turn, has been shown to produce immunosuppression (Bourne et al., 1974; Dienstbier, 1989; Rodin & Salovey, 1989; Rogers, Dubey & Reich, 1979), which effects susceptibility to physical illness symptom reporting (Jemmott & Locke, 1984). Thus, a conceptual link between II and physical symptoms complaints is supported by the literature. In other words, the continuous arousal of the sympathetic nervous system, through II, is likely to overload the healthy functioning of the body, which affects headaches, sleep disorders, gastrointestinal upset and respiratory functioning (Dienstbier, 1989; Everly, 1989).

Other plausible explanations for a conceptual relationship between II and physical symptoms complaints have been suggested. For example, Suls and Sanders (1988) maintain that increased levels of II may leave little time for exercise or a balanced diet as a result of a continuous obsession with time. Indeed, an improper diet is found to stimulate the sympathetic stress response directly and lead to increases in II (Sailer, Schlacter & Edwards, 1982). The literature points to the benefits of exercise in effectively reducing physical symptoms and the management of stress (Plante & Rodin, 1990; Sarafino, 1991). Also, the importance of a well balanced diet is vital to satisfactory physical health (Sarafino, 1991). Therefore, future studies should consider the importance of exercise and eating habits as moderators, over II, in attempting to study the relationship between II and physical symptom complaints.

A further explanation stems from the symptom-suppression hypothesis proposed by Carver

et al. (1976). A number of researchers have reported that Type A adults fail to attend to the frequency and intensity of physical symptoms under conditions of environmental challenge (Carver et al., 1976; Matthews & Brunson, 1979) and work environments that are characterised as demanding (Matthews et al., 1983; Schlegel et al., 1980). The failure by those who reflect high levels of Type A behaviour to seek and attend to medical advice could worsen the physical symptoms and reduce levels of physiological regulation (Pennebaker, 1982). From this interpretation, the association between II and physical symptom complaints may be a consequence of neglecting the basics of health care (Matthews & Haynes, 1986), symptom suppression (Smith et al., 1984) and creating overexposure to stress, which are all potential pathways to physical illness (Pennebaker, 1982).

Confirmation of the toxic nature of II, in relation to physical symptoms reporting, has been consistently reported in the literature (Barling & Charbonneau, 1992; Bluen et al., 1990; Helmreich et al., 1988; Northam, 1992; Spence et al., 1987). Moreover, the significant relationship reported for the present study has been replicated outside the II/AS domain: Woods and Burns (1984) found speed and impatience to be significantly related to sleep disorders, respiratory disorders and chest pains. Edwards et al. (1990), in performing a factor analysis of the Bortner Scale, found the speed and impatience component of Type A behaviour to be significantly related to physical symptom reporting. Rime et al. (1990) reported speed and impatience to be significantly related to psychosomatic and general health indices. Therefore, the relationship between II and physical symptom reporting is empirically supported by the literature.

Results of the present study reported AS to be negatively related to physical symptom

reporting. The significant finding was contrary to predictions. Classically conceived, Type A behaviour creates high stress levels (Heilbrun & Friedberg, 1988). However, it is possible that the nature of achievement striving and hard-driving behaviour does not create overexposure to stress (Emmons, 1989; Emmons & McAdams, 1991). In fact, Barling and Beattie (1992) found AS to be positively related to job-related concentration, which would suggest that AS is independent of the effects of sympathetic arousal (Dembroski & Williams, 1989) and is more seated in cognitive mechanisms (Emmons, 1986; 1989; Weiner, 1978). It remains for future research to examine the positive affects of AS on physical health since this relationship was not predicted.

The differential contribution by AS (in comparison to II) to physical symptom reporting is consistent with recent research findings (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Northam, 1992; Spence et al., 1987). Consistent with the importance of the ambitious, hard driving component of Type A behaviour in relation to low physical symptom reporting, a number of studies have found Type A's to report fewer physical symptoms when involved in their work (e.g., Carver et al., 1976; Weidner & Matthews, 1978; Schlegal et al., 1980).

Results of the present study showed anger to be positively related to physical symptom reporting. This finding suggests an association between level of angry reaction and physical symptoms complaints. The feeling of anger has been characterised by a number of proposed autonomic reactions (cardiovascular, gastrointestinal, muscle tension; Averill, 1982; Durel & Krantz, 1985; Feshbach, 1989; Fisher, 1991; Novaco, 1975) that are considered to be contributory mechanisms to physical symptoms complaints (Chesney & Rosenman, 1985; Durel & Krantz, 1985; Everly, 1989; Feshbach, 1989; Harburg et al., 1979; Totora &

Anagnostakos, 1990; Williams & Jenkins, 1986). For example, anger has been significantly related to an increase in repiratory rate and increases in gastric acid secretion that would suggest a relationship with respiratory and gastrointestinal problems (Everly, 1989). Furthermore, anger has been significantly related to prolonged contraction in the muscles and neck (Appel et al., 1983), resulting in pain in the same mechanism (Everly, 1989). Because migraine and tension headaches are induced by muscle contractions in the head and neck by vasoconstriction in these regions, a relationship between anger and physical symptoms complaints is supported conceptually (Everly, 1989). Thus, drawing on studies that have found anger to be associated with sympathetic nervous system arousal (Engebretson et al., 1989), and the fact that sympathetic arousal has been found to increase susceptibility to physical illness (Dienstbier, 1989), a conceptual relation between anger and physical symptoms complaints is supported.

Traditionally, attempts to clarify the association between anger and physical illness have been hindered by ambiguity on the acceptable methods to assess anger arousal (Appel et al., 1983). Since researchers have misinterpreted the construct of anger, it is difficult to compare or integrate findings easily (Appel et al., 1983). Nor .theless, by refining the definition of anger and operationalising the conceptual component considered to be consistent with Type A behaviour, a more consistent set of findings, as shown in the present study, may be obtained.

A number of laboratory and community based studies have found anger to be significantly related to hypertension (Appel et al., 1983; Barefoot, Dahlstrom & Williams, 1983; Cottington et al., 1986; Diamond, 1982; Harburg et al., 1979), atherosclerosis (Tennant et al., 1987), susceptibility to diseases (Rosenman, 1985) and links to physical health (King & Emmons,

1991; Novaco, 1985; Gentry et al., 1982). Hence the relationship between anger and physical symptoms complaints reported is empirically supported in the literature.

Contrary to expectations, hostility was not related to physical symptoms complaints. The results suggest that aggressive-hostility is not associated with physical symptoms complaints. This finding is contrary to expectations, since the toxicity of hostility is highlighted by a number of researchers (Dembroski & Costa, 1987; Dembroski & Williams, 1989; Engebretson & Matthews, 1992; Williams, 1984). However, a review of the literature suggests that the link between hostility and physical symptom reporting has been found to be inconsistent. Langeludekke et al. (1987) found no significant relationship between hostility and gastrointestinal upset. Also, Ganster et al. (1991) found no significant association between hostility and physical symptom reporting.

A possible explanation for the unexpected finding is that there may be a restricted range in hostility level that would obscure any significant relationships (Williams et al., 1980). Therefore, only certain extreme scores of hostility may be toxic in relation to physical symptom reporting (Cohen, 1979; Maes, Vingerhoets & Van Heck, 1987; Williams et al., 1980). The present study attempted to address this view and considered the upper tenth percentile of hostility scores (a choice adopted by Williams et al., 1980), in relation to physical illness. The restricted range was recorded for 63 respondents, for whom a separate regression analysis was performed. The results of the regression analysis are presented in Appendix F.

As can be seen from Appendix F, after controlling for 3% of the variance due to the effects

of age, tenure, race and sex; hostility contributed 22 % to the variance in physical symptom complaints and was significant (F (1 / 60) = 23,44, p < , 01; beta = 1,09). Although not hypothesised for the present study, future research should consider the implications of the restricted range of hostility scores in relation to physical symptoms complaints. Future research may address this recommendation by developing a more sensitive scale that is skewed in the direction of measuring extreme levels of hostility.

In attempting to explain the positive findings for the upper percentile of hostility reporting, norepinephrine has been significantly linked to overt-expressive hostility (Antelman & Caggiula, 1977; Cohen & Silverman, 1959; Elmadjian, Hope & Lamson, 1957; Fine & Sweeney, 1968). The relationship between norepinephrine and physical symptoms complaints has been noted in the literature (Everly, 1989; Tortora & Anagnostakos, 1990). Furthermore, Suarez and Williams (1989) compared levels of hostility where it was found that the relationship to cardiovascular and emotional reactivity was stronger for high levels of hostility, compared to low hostility levels. Thus, it is possible that extreme levels of aggressive-hostility are significantly related to physical symptom complaints.

Contrary to predictions, competitiveness was not found to be significantly related to physical symptoms complaints. As noted in Chapter 4, the importance of competitiveness, as a toxic component of Type A behaviour, has been emphasised in the literature (Rosenman, 1991; Van Egeren, 1979a, Van Egeren et al., 1982). A number of studies have recorded competitiveness to be significantly and positively related to sympathetic nervous system arousal in the Type A literature (Rosenman, 1991; Van Egeren et al., 1982). Furthermore, studies have reported sympathetic arousal to be related to physical symptoms reporting (Everly, 1989; Jemmott &

Locke, 1984; Tortora & Anagnostakos, 1990). Thus, the non-significant relationship between competitiveness and physical symptoms complaints is in need of clarification.

A central question is whether physiological changes associated with competitiveness reflect only a general activation dimension, or whether competitiveness is associated with distinct physiological patterns (Jennings, 1984). That is, there may be physiological patterning differences between competitiveness and II, anger and hostility in relation to sympathetic nervous system arousal (Jennings, 1984). For example, competitiveness could stem from the fear of failure and create anxiety (Griffin-Pierson, 1988; Kohn, 1986). The literature has shown anger and fear to have differential physiological patterning (Schwartz, Weinberger & Singer, 1981; Weerts & Roberts, 1976), which may explain the unexpected findings in the present study. This is an important issue to address in future research. For example, some Type A's have been shown to have different kinds of sympathetic nervous system reactivity, compared to others (Contrada, Wright & Glass, 1985), with differential effects on physical illness (Everly, 1989; Jennings, 1984). Spence et al. (1987) support the present findings in reporting a non-significant relationship between competitiveness and physical symptoms reports. Also, Offutt and Lacroix (1988) reported a non-significant relationship between competitiveness and the frequency of respiratory infections.

In discussing the above findings, the differential relation between II, AS, anger, hostility and competitiveness and physical symptom complaints offers rejoinders to mixed results in the Type A literature. While positive and significant relationships have been reported between Type A behaviour and physical symptom reporting (Barton & Hicks, 1985; Barton et al., 1982; Carmody et al., 1984; Carver et al., 1976; Carver et al., 1981; Cramer, 1991; Eagleston

et al., 1986; Evans et al., 1987; Hicks & Campbell, 1983; Howard et al., 1976; Jamal, 1985; Keltikangas-Jarvinen, 1987; Kopac et al., 1988; Kushnir & Melamed, 1991; Matteson & Ivancevich, 1982; Rime et al., 1989; Schlegel et al., 1980; Smith & Sheridan, 1983; Stout & Bloom, 1982; Suls & Marco, 1990; Woods & Burns, 1984; Woods et al., 1984), contradictory findings are also prevalent. Specifically, non-significant relationships (Burke & Weir, 1980; Fagleston et al., 1987; Kelly & Houston, 1985; Lee et al., 1990; Langeldukke et al., 1987; Lundberg & Paludi, 1981; Lacroix & Offutt, 1988: Schmied & Lawler, 1986; Somes et al., 1981), and negative relationships (Hart, 1983; Matthews & Brunson, 1979) between global Type A behaviour and physical symptom reporting have been reported. The differential relationships of the components in association with physical symptoms complaints adds to the growing awareness that Type A behaviour needs to be reconceptualised as a multifaceted construct.

Job Satisfaction. In the present study, II and AS were found to be differentially related to job satisfaction. The positive and significant relationship between AS and job satisfaction was consistent with predictions. However, the negative relationship reported between II and job satisfaction was contrary to expectations (see Figure 8.1). Also, in support of predictions, anger, hostility and competitiveness were not related to job satisfaction. Confirmation of the hypothesised non-significant findings in the present study highlight the importance of a multifaceted operationalisation of Type A behaviour in association with job satisfaction. Contrasting with this view, a global index is unable to delineate the unique contribution of the components (Bluen et al., 1990).

As predicted, AS was found to be positively related to job satisfaction. Locke (1976) argues

that any intention exhibited by a person is believed to affect job satisfaction. Klinger (1977) distinguishes between positive and negative goals, whereby the sign of one's goals influences job satisfaction level. Consistent with this view, Roberson (1990) reports that individuals' who exhibit positive goals are more likely to attain pleasurable incentives. AS is suggested to act in such a way that it maximises positive affect within achievement situations[36] (Nicholls, 1984a, 1984b, Reuman et al., 1984). That is, the AS generates thoughts and actions that are focused on achieving positive outcomes (Emmons, 1989; Emmons & King, 1989; Emmons & McAdams, 1991). Thus, it would appear that the impact of AS on thoughts is likely to influence affective reactions as well (Emmons, 1989; Emmons & King, 1989; Nicholls, 1984a; Weiner, 1978), which would suggest a positive relationship between AS and job satisfaction (Day & Bedeian, 1991).

An alternative explanation for the AS-job satisfaction relationship is that individuals are content with aspects of their work to the extent that they are involved in meaningful activities (Diener, 1984). Drawing on this suggestion and the specific items of AS, individuals who perceive themselves to be "stirred into action" by their jobs; place an inordinate amount of effort into their jobs, and take their work seriously, are more likely to report higher levels of job satisfaction. In support of the present findings, Bluen et al. (1990) reported a positive relation between AS and job satisfaction.

Although no relationship between II and job satisfaction was hypothesised, II was found to

[36] The conditions under which AS would be expected to contribute to job satisfaction would be 1) when high AS leads to the attainment of the individual's important job values, for example task values such as success, and rewards such as high earnings and growth potential and 2) when high AS was not attained at such a high personal cost (e.g., burnout, fatigue) as to undermine the affective reaction of job facets or to negate other values (e.g., family relationships; Locke, 1976). Future research should assess the moderating effects of money and prestige (Tang, 1992) and social support on examining the relationship between AS and job satisfaction.

be negatively related to job satisfaction. Explorations of the cognitive mechanisms underlying II and job satisfaction can assist in explaining the unexpected association between II and job satisfaction. Locke (1976) argues that the way in which an individual perceives themselves, affects job attitudes. Thus, an impatience and frustration through attempting to accomplish more things faster (Bingham & Hailey, 1989), affects the perceptions of the rewards offered by the sales environment (Levin & Stokes, 1989). Expanding on this view, the experience of low job satisfaction is an unpleasant psychological state (Locke, 1976). Locke (1976) notes that low job satisfaction creates a state of conflict since the person is holding a job he / she is not satisfied with. Similarly, II is perceived to be an unpleasant emotional reaction (Barling & Boswell, 1991). Thus, a relationship between II and job satisfaction is conceptually supported.

A further conceptual explanation for the significant relationship between II and job satisfaction is through the mediating effects of role overload. Consistent with this view, Kirmeyer (1988) reported a positive and significant relationship between time urgency and role overload[37]. Furthermore, several studies have reported on the relation between role overload and Type A behaviour (Caplan & Jones, 1975; Kushnir & Melamed, 1991). Research in organisational settings have found role overload to be a stressor that affects level of reported job satisfaction (Beehr, Walsh & Taber, 1976; Caplan & Jones, 1975). As indicated by the specific items (e.g., "Do you find yourself hurrying to places when there is plenty of time?"), individuals who rate themselves highly on the II dimension perceive themselves as more time urgent. Thus, a conceptual link between II and job satisfaction is supported by the

[37]Role overload is defined by Kahn, Wolfe, Quinn, Snoek and Rosenthal (1964) as having too much to do in the time available; which has been found to have important implications for employee health and quality of work (Kirmeyer, 1988).

literature.

Empirical support for the relationship between II and job satisfaction has been found. A reanalysis of the Bortner Type A Scale found speed and impatience to be negatively related to job satisfaction (Ganster et al., 1991). Ganster et al. (1991) attributed their results to the possibility that speed and impatience detracted from achieving job related goals, including monetary rewards, status and promotion; which culminated in reduced job satisfaction. Consistent with this view, literature supports work stressors, including role conflict, role ambiguity, interpersonal conflict, workload and situational constraints to be positively related to feelings of frustration and irritability (Chen & Spector, 1992).

Further empirical support for the II/job satisfaction relationship is provided by Kushnir and Melamed (1992) in a study of industrial workers where high levels of irritability were negatively associated with job satisfaction. Also, Landy et al. (1990) reported a negative relationship between Behaviourally Anchored Rating Scales (BARS) of awareness of time and speed of speech with the general job satisfaction, and satisfaction with coworkers dimensions of the Job Descriptive Index, respectively (Smith, Kendall & Hulin, 1969).

Consistent with predictions, anger, hostility and competitiveness were not found to be significantly related to job satisfaction. These non-significant findings point to the overall differential relations of the five components to job satisfaction and support the need to examine Type A behaviour as a multifaceted construct.

In summarising the above findings, the differential relations of AS, II, anger, hostility and

competitiveness, in association with job satisfaction, may help to explain previous inconsistent findings. That is, positive (Gamble & Matteson, 1992; Kushnir & Melamed, 1991), as well as non-significant (Burke & Weir, 1980; Burke, 1988; Frost & Wilson, 1983; Ganster et al., 1991; Jamal, 1991; Keenan & McBain, 1979) and negative relationships (Dearborn & Hastings, 1987), have been reported between global Type A behaviour and job satisfaction. But, by viewing Type A behaviour as a multifaceted construct, it is possible to detect whether the components contrib te negatively or positively to job satisfaction, a result that is obscured when a global index is used. Furthermore, a multifaceted conceptualisation ensures no cancelling effect between the components of Type A behaviour, which enhances the predictive utility of examining AS, II, anger, hostility and competitiveness in association with job satisfaction.

Intention to Leave. Results of the present study reveal that II and AS are differentially related to intention to leave the employing organisation. Also, as predicted, anger, hostility and competitiveness were not associated with intention to leave (see Figure 8.1). The positive relationship between AS and intention to remain is consistent with predictions. Conversely, II was negatively associated with intention to remain, reflecting an intention to leave.

As predicted, AS was found to be positively associated with an intention to remain. The association between AS and intention to remain suggests that the inclination to work hard could enhance survival with the firm. In attempting to explain this relationship, Diener (1984) maintains that a need for achievement leads to feelings of competency if goals are achieved, which ultimately leads to an intention to remain with the firm. A further explanation for the relationship between AS and intention to remain are presented overleaf.

Salespeople in the life insurance industry repeatedly encounter negative cues such as rejection, failure and indifference from prospective buyers (Seligman & Schulman, 1986). However, it is possible that a link between AS and instrumentality exists in facing the negative cues (Furnham & Linfoot, 1987; Grimm & Yarnold, 1984). That is, AS may provide salespeople with an enhanced sense of mastery and personal competence (Emmons, 1989; Emmons & King, 1991). The efficacy of the AS can be a source of positive affect, value fulfilment and self confidence (Burke & Weir, 1980; DeGregorio & Carver, 1980; Friedman & Ulmer, 1985) which would appear instrumental in dealing with the negativity experienced when faced with situations of rejection by prospective clients (Seligman & Schulman, 1986; Weilbaker, 1990). Target setting and achievement orientated behaviour, then, becomes a crucial area of investigation when considering perseverance and overcoming withdrawal feelings (Werbel & Bedeian, 1989).

Although no empirical study could be found that had examined the AS-intention to remain relationship, Parasuraman (1982) found job involvement to be significantly related to an intention to remain with the firm. Given the nature of an item such as 'does your job stir you into action' within the AS definition, the positive relation between AS and intention to remain would appear to be partially supported by Parasuraman's (1982) findings.

Although no II-intention to leave relationship was hypothesised, II was found to be negatively related to intention to remain. Greenglass (1987, p. 646) notes that intention to turnover is an 'action-orientated technique' of coping when stress demands are more than the person perceives they can face. Adding to this conceptualisation of coping behaviour, Landy et al. (1990) note that level of impatience and time urgency (Behaviourally Anchored Rating Scale

of speed of speech) correlated with nervous energy and trait and state anxiety, respectively. Furthermore, the stress effects of poor time management and impatience have been shown in the literature (Bingham & Hailey, 1989), which would support a conceptual relationship between II and withdrawal behaviour (Chen & Spector, 1992). The agitation in attempting to manage time effectively can augment job pressure and perceptions of coping ability (Bingham & Hailey, 1989; Price, 1982a). Indeed, tasks involving patience, tolerance, concentration and a broadened perspective do not seem compatible with high levels of frustration and irritability (Avila & Fern, 1986). Consistent with the present findings, Greenglass (1987) cites a previous study that she conducted where the irritability component of Type A behaviour was positively related to an intention to leave. Thus, direct support for the II-intention to leave relationship has been found.

Results further indicated that anger, hostility and competitiveness were not related to an intention to leave. This finding was exploratory in its attempts to examine the relation between anger, hostility and competitiveness and intention to leave. However, consistent with the initial hypothesis, these three components were not found to be related to intention to leave. As a result, it is possible that these components only apply to health outcomes, which is consistent with initial predictions.

The present results may help to address previous inconsistent reports between global Type A behaviour and intention to leave. In reviewing the literature, Greenglass (1987) and Jamal (1990) reported a positive relationship between global Type A behaviour and intention to leave, while Burke (1988) and Chusmir and Hood (1986) reported a non-significant relationship between Type A behaviour and the intention to leave. The differential relations

of the components suggests that a global conceptualisation creates a confounding among the explanatory elements (Carver, 1989).

As shown in the present study, the AS and II components are significantly associated with intention to remain, but in opposite directions; a feature that is obscured when Type A behaviour is operationalised as a global construct. Accordingly, because AS and II exert differential relations, the conceptual validity and practical utility of a global conceptualisation would be questionable (Carver, 1989; Lee, 1992). Furthermore, assumptions that the effects of Type A behaviour are uniformly and inevitably negative are not applicable to the present findings. Thus, future studies examining the relationship between Type A behaviour and intention to leave/remain should examine the components, independently.

Performance. As hypothesised, AS predicted sales performance. The present results suggest that individuals whose jobs "stir them into action", are hard-driving, and target setting in their behaviour, perform better than those who exert low levels of AS. Accordingly, individuals who are achievement orientated, are more effective and productive at work. Although no anger-performance relationship was hypothesised, anger was found to be negatively related to performance. Conversely, and consistent with predictions, II, hostility and competitiveness were unrelated to performance (see Figure 8.1). The non-significant finding is informative since it illustrates the utility of a multifaceted conceptualisation of Type A behaviour.

Consistent with predictions, AS was found to be positively related to performance Achievement striving has been positively linked to the self setting of challenging goals, the seeking of responsibility for solving problems, and persistence in goal-orientated behaviour

(Platt, 1988; Snow, 1978). The nature of sales performance is such that it demands persistence and endurance (Lee & Gillen, 1989). Therefore, the predictive utility of AS, in relation to performance, is supported conceptually by the literature (Barling & Boswell, 1990; Emmons & McAdams, 1991).

Research in the sales setting has attempted to understand more comprehensively the behavioural attributes considered important for success (Johnston et al., 1989; Lamont & Lundstrom, 1977). Characteristics that have been identified have included enthusiasm, ambition, goal setting, and hard driving behaviour (Johnston et al., 1989; Stanton & Buskirk, 1978), which is consistent with the AS component of Type A behaviour in the present study (Price, 1982a). Indeed, AS is built on personal goals (Emmons, 1989; Platt, 1988; Johnston et al., 1989). Thus, a possible explanation for the AS-performance relationship is that AS may contribute to enhanced performance through the setting of higher goals (Lee et al., 1988; Nicholls, 1984a; Platt, 1988) and energy directed to their attainment (Lee et al., 1988; Wiener, 1978). Accordingly, the setting of goals may serve as a motivational tool to direct salespeople exhibiting AS to attain a higher level of performance (Lee et al., 1988; Locke et al., 1981; Nicholls, 1984a, 1984b; Taylor et al., 1984). Thus, AS is perceived to be the application of high effort by individuals to maximise their mastery of the task and perceived ability (Emmons, 1989; McIntire & Levine, 1991), which in turn is reported to increase performance levels (Nicholls, 1984a). Consistent with this view, Type A's have been shown to expend more effort at tasks (Perry et al., 1990; Suls et al., 1981; Tang, 1988; Waldron et al., 1980), compared to their Type B counterparts. Furthermore, making sales calls is the most frequent activity found within the sales job (Moncreif, 1986). Consequently, without AS, and its concomitant of increased effort, it is unlikely for salespeople to perform well (Perry et al.,

1990).

A further conceptual explanation for the findings is that enhanced sales performance may arise through higher self-efficacy[38] perceptions (Lee, 1988; Lee et al., 1988; Taylor et al., 1984). Extending this view, self-efficacy perceptions are described as the appraisal of one's capabilities to organise and execute courses of action required that enhance performance (Bandura, 1986). Thus, the relationship between AS and sales performance may be mediated through the effort and perseverance, expended as a result of perceived self-efficacy (Barling & Beattie, 1983). This view is confirmed by Stanton and Buskirk (1978) in identifying self-confidence, perseverance, high energy level, hunger for money and AS as the determining factors of sales success. It remains for future research to examine the mediating role of self-efficacy in explaining the relation between AS and performance.

The present findings do not rule out the likelihood of bidirectional effects of AS on performance. That is, AS may enhance sales success, which, in turn, reinforces AS (Nicholls, 1984a, 1984b). Thus, a salesperson demonstrating high report of AS may persist more with the impending consequence of elevated sales performance. When feedback demonstrates satisfactory performance, the salesperson is likely to believe that they are demonstrating high ability, and apply further effort, intention, and persistence (Mcintire & Levine, 1991) to maintain this perception (Nicholls, 1984a). This view is supported by experimental studies performed by Wiener (1985), where performance feedback was found to affect future

[38] Bandura (1977, 1982, 1986) defines self-efficacy as the personal conviction a person exhibits in believing that they can perform the behaviors necessary to achieve the expected outcome. It is suggested that self-efficacy is increased when a person experiences an outcome that is perceived to be better than the one they expected or feared. Bandura (1986) argues that self-efficacy can assist performance since it can affect the amount of effort expended and duration of persistence in the face of obstacles (Bandura, 1986). Drawing from this definition, self-efficacy is an important explanation for the link between AS and sales performance.

performance levels. The methodology employed in the present study excludes measurement of these reciprocal effects. Therefore, it is recommended that future research address this issue by considering frequent measurement of the AS and sales performance figures across time.

Confirmation of the AS-performance linkage has been found in previous studies (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Helmreich et al., 1988; Lee, 1992; Spence et al., 1987). Furthermore, Matthews et al. (1980), in a sample of 118 academics, found that the hard driving component of Type A behaviour was significantly related to author citation and productivity indices. Spence et al. (1989) reported AS to have considerable temporal stability and remained related to student's academic performance over a period spanning more than two years of their undergraduate careers. Similarly, Cohen and Burns (1990) found AS to be significantly related to number of policies sold by salespeople, measured over a follow-up period of one year. The present study has important implications since the performance examined was for a period spanning six months. Accordingly, the positive relationship indicates that AS can forecast future sales performance.

Although no anger-performance relationship was hypothesised, anger was found to be negatively related to sales performance. A literature search indicated no previous anger-performance relationship. Nonetheless, the finding is informative since it considers the anger component to detract from high sales performance.

The first consideration is that anger may be a counteraction to low levels of confidence in ability (Stanton & Buskirk, 1978). Indeed, ability is an integral component of sales performance (Weilbaker, 1990). Anger items such as "I feel annoyed when I am not given

recognition for doing good work" indicates that the person lacks confidence in their ability to monitor their own progress since they depend on recognition (Stanton & Buskirk, 1978; see Chapter 2, Price's, 1982a model). Weilbaker (1990) points to adaptability, perseverance and the ability to handle rejection as important criteria to successful performance. Since perseverance can be assessed by people's reaction to frustrating sales scenarios (Weilbaker, 1990), and the high level of frustration that is characterised within the definition of anger (Fischer, 1991), a conceptual link between anger and poor sales performance appears to be supported conceptually.

The nonsignificant relationship found between II, hostility and performance is consistent with predictions. Recent research has supported the positive contribution by AS, but not II, to performance (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Bluen et al., 1990, 1992; Helmreich et al., 1988; Pred et al., 1986; Spence et al, 1987, 1989). Also, Helmreich et al. (1988) argued that it was highly unlikely for hostility and irritability to enhance the performance of Type A's. Indeed, tasks involving cooperation, patience, concentration and a broadened perspective do not seem compatible with the toxic components of Type A behaviour (Lee & Gillen, 1988). For example, Strube et al. (1984) found Type A's to exhibit high levels of hostility within an interpersonal situation that threatened their sense of control. Indeed, the nature of selling is such that interpersonal cooperation and a commitment to work hard and set targets (which is characteristic of AS; see Chapter 4), is more suited to sales success (Matteson et al., 1984), than either hostility or II (Matteson et al., 1984).

As predicted, competitiveness was not found to predict levels of sales performance. This is an informative finding since the rewarding qualities of competitiveness are often distorted in

the literature (Kohn, 1986). Spence and Helmreich (1983) note that competitiveness has been misinterpreted as a predictor of performance. On closer examination of the competitive-performance relationship in the literature, competitiveness has not been found to predict performance (Helmreich et al., 1988; Spence et al., 1987). Also, it is possible that competitive individuals focus so heavily on outdoing others, and putting themselves ahead, that they neglect the issues concerning client service, which is instrumental to enhanced sales performance (Avila & Fern, 1986). Also, the issue of target setting is overlooked because of concentrating on outdoing others, rather than getting on with the task at hand (Kohn, 1986). Thus, consistent with the present findings, an enhanced AS appears more suited to attaining greater sales success (Lee & Gillen, 1989).

Contrasting with this view, cooperation is perceived to be more reward engendering through the avoidance of over-arousal, or defeatism, that is reported in competitive situations (Cosier & Dalton, 1988). Furthermore, Kohn (1986) contends that competitiveness detracts from empathy, a vital ingredient to effective sales success (Greenberg & Mayer, 1984; Weilbaker, 1990).

In summarising the findings reported above, the differential relations of AS, anger, II, hostility and competitiveness in association with performance, has important explanations for previous inconsistency in the Type A literature. To date, Type A behaviour has not been reported to be a reliable predictor of performance. While positive relationships between Type A behaviour and performance (Fazio et al., 1982; Gastorf et al., 1980; Glass, 1977a; Ovcharchyn et al., 1980; Matthews et al., 1980; Taylor et al., 1984) have been found, a number of studies have reported non-significant (Jamal, 1985; Lee & Gillen, 1986; Lee & Gillen, 1989; Matteson et

al., 1984) and negative (Jones, 1985) relationships. Thus the relationship between Type A behaviour and performance has been reported to be inconsistent (Jamal, 1985; Lee & Gillen, 1989).

The present findings provide a possible explanation to the ambiguity in Type A-performance findings by reconceptualising Type A behaviour as a multifaceted construct. Consistent with predictions, AS, but not II, competitiveness, or hostility, contributed positively to sales performance. Conversely, anger was negatively related to performance. Therefore, the differential relations of AS, II, anger, hostility, and competitiveness in association with performance facilitate a more refined prediction of performance than that achieved using global Type A behaviour. Thus, Jones' (1985) characterisation that global Type A behaviour is a strategy of resource allocation to maximise success outcomes is not entirely correct. Rather, it is the AS dimension that seems to maximise performance and limit the effects of failure (Nicholls, 1984a), while angry response appears to predict the reverse. Thus, in viewing the present findings, a multidimensional model of the components of Type A behaviour in predicting performance is supported empirically.

Theoretical Implications of the Study

Within theory construction, a model is developed or employed to guide and integrate empirical data in a systematic manner (Chen, 1990; Schutz, 1978; Steigleder, Weiss, Balling & Wenninger, 1980). Without such a framework, there is ambiguity in the findings, which causes the chosen methodology to define the theory rather than to test it (Chen, 1990; Ivancevich & Matteson, 1984; Schafer & Fals-Stewart, 1991). Price (1982a) clearly outlined the need for a comprehensive model of Type A behaviour.

In addressing this need, Chapter 2 described three models that have attempted to explain the cognitive mechanisms underlying Type A behaviour. An appraisal of Glass' (1977), Price's (1982a) and Strube's (1985) models presented some important theoretical implications. To date, the three models have been treated as three separate, but overlapping streams, for explaining the acquisition and maintenance of Type A behaviour. Apart from the work of Matthews (1982), a literature search indicated no previous theoretical review that had attempted to compare these three models of Type A behaviour. This is surprising in view of the conceptual confusion that exists in the field (Booth-Kewley & Friedman, 1987; Evans, 1990; Ganster et al., 1991; Yuen & Kuiper, 1992). Thus, by attempting to refine the cognitive mechanisms underlying the construct, Chapter 2 provided an important overview towards describing the causes of Type A behaviour.

At a very broad level, Chapter 2 pointed to the need for a more process-orientated approach to understanding the self-evaluations of Type A behaviour in the literature (Yuen & Kuiper, 1992). Addressing this view, important suggestions were made to building on the models

through a more thorough understanding of affective, motivational, behavioural and cognitive factors that may explain the self-evaluation of Type A behaviour. One means of doing so, as suggested in Chapter 2, is to consider the integration of cognitive psychology in attempting to achieve more refined explanations. In achieving this end, a more comprehensive understanding of the acquisition and maintenance of Type A behaviour may be achieved in the future.

Operationalising the five dimensions of Type A behaviour, through the MTABS, a multidimensional model was tested in the present thesis. Consistent with predictions, the components were differentially related to health and work related consequences, a finding that a global Type A measure, by definition, is unable to determine (Carver, 1989). The theoretical implications of a multidimensional model are far-reaching, particularly in light of the continuing debate regarding the predictive utility of global Type A behaviour (Ray, 1991). First, in association with recent advances in the literature (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Barling et al., 1990; Bluen et al., 1990; Helmreich et al., 1988; Lee, 1992; Spence et al., 1987, 1989) the findings of the present study challenge the predictive utility of a global conceptualisation of Type A behaviour in suggesting that the components should be conceptualised and operationalised independently. As Chapter 3 highlighted, inconsistency has been prevalent in exploring the relation between Type A behaviour and health, work-related and behavioural outcomes, which has generated debate on the relevance of the construct. By reconceptualising Type A behaviour as a multifaceted construct, the components are shown to offer more consistent results than a global index (Barling & Charbonneau, 1992; Bluen et al., 1990; Spence et al., 1987).

There are two broad attitudes to Type A behaviour which have evolved through research on the construct. The first view suggests that Type A behaviour is an extremely vague construct, attracting too many scarce resources for research (Williams, 1984) and is "a false trail that should now be abandoned" (Ray, 1985, p. 1). Conversely, a more optimistic interpretation of Type A behaviour has suggested that it is an extremely useful construct with productive and significant results (Ivancevich & Matteson, 1988). The theoretical implication of the multidimensional model (see Figure 8.1) is that Type A research must consider a balance between these two perspectives. By examining the components of Type A behaviour as independent constructs, the question exists whether a global index has lost its raison d'etre as a predictor of work related and organisational outcomes. As noted by Ray (1991), uncritical enthusiasm for the A-B concept has overlooked many other important behavioural characteristics that do predict heart disease.

The question that follows the rationale of a multifaceted conceptualisation of Type A behaviour is whether there are other personality and behavioural constructs that have been ignored through the restrictive focus of a global Type A construct. For example, Krug and Sherman (1977) pointed out through two large studies that 10 of the scales underlying the 16 PF predicted CHD occlusion. Smith and Williams (1992) report that future considerations on predicting health outcomes should include the operationalisation of neuroticism, extraversion, openness to experience, agreeableness and conscientiousness. The present findings suggest that a multifaceted conceptualisation and operationalisation of Type A behaviour supports the independent examination of other behavioural constructs (traditionally ignored through global Type A research) that could potentially predict health related outcomes.

The present findings offer important avenues for examining the consequences of Type A. From the findings, health, work attitude and performance relationships with AS, II, anger and competitiveness were found which confirms previous research on the differential relations of a multifaceted conceptualisation of Type A behaviour (Barling & Boswell, 1991; Barling & Charbonneau, 1992; Barling et al., 1990; Bluen et al., 1990; Helmreich et al., 1998; Lee, 1992; Spence et al., 1987, 1989). Traditionally, component analyses have focused on health outcomes (Arrowood et al., 1982; Blumenthal, Herman, O'Toole & Haley, 1985; Blumenthal et al., 1987; Dembroski & Costa, 1987; Dembroski et al., 1985; Hecker, Chesney, Black & Frautschi, 1988; Matthews, Glass, Rosenman & Bortner, 1977). Also, through the differential relations of AS, II and anger in association with work related outcomes, the present results stress that the predictive utility of a component assessment of Type A behaviour can be broadened to include work-related outcomes.

A further theoretical implication (linked to the practical implications to be discussed in the following section) is that viewing Type A behaviour as a multifaceted construct opens up new theoretical perspectives on intervention. To date, it has been impossible to determine whether instrumental strategies such as assertion and time management are more important than the strategy of relaxation because of the failure to consider the components independently (Conduit, 1992). Furthermore, there are inadequate models of anger expression because of the failure to operationalise anger and aggressive-hostility through inadequate measurement technology (Spielberger et al., 1985). Questions such as these can be more adequately addressed through adopting a multidimensional conceptualisation of the Type A literature with the intent on bridging the gap between psychology and physical illness prevention (Conduit, 1992).

Finally, the independent operationalisation of the components opens perspectives on how hostility, competitiveness and anger should be conceptualised in the medical and psychological literature.

Contrary to popular conception, hostility was not found to be related to health outcomes (Barefoot et al., 1983; MacDougall et al., 1985; Weekes & Waterhouse, 1991). Recent research has pointed to the 'toxic' nature of hostility (Dembroski & Williams, 1989; Williams, 1989). However, these studies have restricted their focus to examining more severe physical illness outcomes than those examined in the present study. Nonetheless, the non-significant relationship between hostility and physical health in the present study cautions the use of the 'toxic' label within Type A research. Rather, in noting previo empirical relationships between hostility and CHD, it is perhaps more accurate to attribute hostility to a 'coronary-prone' behaviour (Dembroski & Costa, 1987) definition in considering health outcomes.

Similarly, it is important to refine thinking on the definition of competitiveness. Kohn (1986) notes that the competitiveness literature has tended to view competitiveness as a positive construct (Kohn, 1986). This traditional view is inaccurate in the light of the present findings. Specifically, competitiveness was found to be related to depression and did not predict performance. The reported findings on competitiveness caution the positive label that has been attributed to competitiveness in the past. Rather, the theoretical literature needs to refine the differentiation between competitiveness and AS (Griffin-Pierson, 1988). Thus, the present study serves to caution future interpretations on the nature of competitiveness in relation to psychological, behavioural, and medical literature.

Finally, the toxic label of anger within the AHA definition needs to be broadened to include the examination of work-related outcomes. The present findings reported anger to negatively predict sales performance, which suggests that anger can affect work related outcomes. Thus, the toxic label attributed to anger needs to be refined to allow for work-related prediction as well (Wright, 1988). Also, contrary to traditional views on the role of anger in depression (Biaggio, 1987; Biaggio & Godwin, 1987; Deffenbacher et al., 1986), anger was not related to depression which opens up theoretical debate on the cognitive-regulatory processes underlying anger in association with depression.

Practical Implications

The field of organisational behaviour and medical research has broadened horizons to focus on research that is useful for both theory and practice (see Administrative Science Quarterly, 1983; Lawler, Mohrman, Mohrman, Ledford & Cummings, 1985; Roskies, 1987). In support of this view, research and intervention on Type A behaviour needs to be combined to produce findings of value for policy formulation (Burke, 1987). For example, The National Academy of Sciences Medical Institute report stated that medical research should focus on behaviour alteration as a method for preventing disease (Harburg, Elliott & Parron, 1982). Addressing this focus, the findings of the present study have numerous practical implications.

Traditionally, intervention programmes are designed to alter the behavioural expression of Type A behaviour (Nakano, 1990; Roskies, 1987). However, as demonstrated by the positive and negative relationships of AS, II, anger, hostility and competitiveness in relation to health and work-related outcomes in the present study, a more rational focus to behaviour

modification efforts may accrue if Type A interventions concentrate on positive and negative predictors of the construct (Hart, 1984; Kelly & Stone, 1987; Suinn, 1982; Suinn & Bloom, 1978). Advice to relax and reduce involvement at work, to individuals who are high in AS, seems counterproductive (Helmreich et al., 1988), and misguided (Friedman, Hall & Harris, 1985). Rather, intervention programmes should be tailored to encourage the expression of AS and attempt to control the behavioural expression of II, anger, hostility and competitiveness. As such, the solution to constructive change involves an increase in the person's awareness and personal skills in controlling their response and perceptions (Levenkron, Cohen, Mueller & Fisher, 1983; Roskies, Spevack, Surkis, Cohen & Gilman, 1978; Roskies et al., 1979; Roskies, 1987), which is consistent with the nature of achievement striving (Emmons, 1989; Emmons & King, 1989; Emmons & McCrae, 1991). Also, the present findings reported AS to be negatively associated with depression and physical symptoms complaints which points to a protective mechanism underlying achievement orientated behaviour.

Extending the importance of a multifaceted conceptualisation of the components, intervention strategies on how to reduce II and anger, through relaxation and cognitive reappraisal could assist in the reduction of physical symptoms complaints and depression (Eagleston et al., 1986; Roskies et al., 1979; Suinn, 1982). For example, Roskies et al. (1978) found that a multimodal stress-management program, similar in many respects to anxiety management training, assisted in the reduction of perceived time pressure. Also, Levenkron et al. (1983) used a self-control, therapeutic intervention (known as comprehensive behaviour therapy[39]) in an attempt to modify Type A behaviour. Findings revealed that comprehensive behaviour

[39]The techniques employed within comprehensive behaviour therapy have traditionally included three cognitive modes of rationalising behaviour which are commonly referred to as self control desensitisation, stimulus control and alteration of internal dialogue as a means to averting angry feelings within the person (see Levenkron et al., 1983).

therapy led to a significant reduction in reports of anger by the respondents in the programme. Drawing on the positive relationship between II, anger, competitiveness and depression and physical symptoms complaints in the present study, intervention studies could be channelled to reducing the toxic components and simultaneously increase health.

The MTABS is a newly developed Type A measure that demonstrates adequate reliability and construct validity (Burns & Bluen, 1992). Therefore, it has enormous practical implications to research since there is no multifaceted Type A measuring instrument that operationalises AS, II, anger, hostility and competitiveness. A bothersome trend in global Type A behaviour research is the high incidence of Type A reporting (Matthews, 1985). For example, some studies have reported between 70 and 90 % of respondents to be classified as Type A (Chesney et al., 1981; Dembroski & Macdougall, 1983; Friedman et al., 1982; Shekelle et al., 1985). This limits the utility of epidemiological and clinical practice since such large incidence of respondents in an "at-risk" category is disproportionate (Dembroski & Williams, 1989). Independent examination of the components, through the MTABS, may reduce over-classification which could have enormous practical applications to CHD prediction in the future.

The results of the present study have numerous practical implications to organisational research.

Research suggests that successful recruiting is a complex process whereby the needs of the organisation are matched with the behavioural characteristics of the individual (Anderson & Shackelton, 1986; Dubinsky, Howell, Ingram & Bellenger, 1986; Suszko & Breaugh, 1986).

By identifying, in advance, individuals who are particularly suited (AS), or unsuited (II, anger, hostility and competitiveness), to work corresponding to rejection and failure, organisations may be able to reduce a rigid turnover base rate and select good performers (Seligman & Schulman, 1986). For example, a national study by the Life Insurance Marketing Research Association (LIMRA, 1983) found that 78% of life insurance agents hired, quit within 3 years of service with the company (Seligman & Schulman, 1986). This has enormous spillover costs to the firm. Indeed, the average cost of selecting and training new sales recruits has increased significantly, providing an important need to address areas of selection within the selling profession (Futrell & Parasuraman, 1984). The positive relationship reported between AS and job satisfaction, intention to remain and performance in the present study suggests that AS is appealing as a selection tool that may enhance survival with the firm. Also, the conceptual relation between AS and an ability to learn, handle rejection, adaptability and perseverance (all of which have been shown to increase sales performance; Weilbaker, 1990) suggest that AS is an important selection tool to consider in the future.

In addition to selection, the present findings may have practical benefits to intervening between stages of organisational withdrawal (see Mobley, 1977). Following this, managers need to be taught to monitor stages of organisational withdrawal (Sager et al., 1988) so they can intervene if they notice unusual levels of II or low AS. Tactics that have been suggested in withdrawal counselling include job enrichment programmes, commitment building programmes and mentoring systems (Sager et al., 1988). These techniques could serve to maintain, or increase AS (or reduce II) with the objective toward increasing communication and profitability of the firm.

Finally, the present findings may have significant importance to sales training programmes which may improve performance. The classic debate on whether salespeople are 'born' and not 'made' can be addressed (Weilbaker, 1990). According to a literature review of several articles on the success dynamic of high performers (e.g., Emmons, 1989; Emmons & McCrae, 1991; Stanton & Buskirk, 1978; Weilbaker, 1990), AS can be instilled and maintained and thus supports the contention that salespeople can be 'made'. The manager is in a unique position to provide positive reinforcement to a salesperson who is intent on doing well (AS), rather than outperforming others (competitiveness). This would appear useful in developing confidence and encouraging a focus on goals and their realisation (Lee, 1988). Therefore, through continuous feedback, vicarious learning and positive reinforcement to focus on achieving, and to deal with angry reaction when faced with rejection and despondency (Seligman & Schulman, 1986, Stanton & Buskirk, 1978), positive rewards may accrue.

Limitations of the Research

Although the results of the present study support a multidimensional conceptualisation of Type A behaviour, it is necessary to specify some of the limitations of the study and the analytical methods adopted. In addressing the limitations of the present thesis, it is possible to highlight some future areas for research.

The first consideration in discussing the limitations of the present findings concerns the statistics employed. Of primary concern, the fact that stepwise regression depends on distributional assumptions (Montgomery & Peck, 1982), is a limitation of the study (Henderson & Denison, 1989). Because of this limitation, it is recommended that the

regression model in the present study be applied to a new set of data in the future (McIntyre et al., 1983). A criticism of stepwise regression is that in many research problems, the ad hoc order produced by the set of predictor variables in one study is unlikely to be found in other samples from the same population (Henderson & Denison, 1989; McIntyre et al., 1983). Of concern is the presence of multicollinearity that may compromise the results (McIntyre et al., 1983). Multicollinearity was checked for as an assumption before performing stepwise regression, but the effects cannot be partialled out completely (Montgomery & Peck, 1982). Furthermore, a limitation of stepwise regression is the incidence of suppressor variables (Montgomery & Peck, 1982). Although not regarded to be a common phenomenon in practice, when there is suppression between two variables, neither may reach the criterion for entrance to the equation, which is a limitation of stepwise regression (Montgomery & Peck, 1982). Addressing these issues, future research could adopt hierarchical regression techniques by using the exploratory nature of the present findings as an a priori base for examining the predictive utility of the components (McIntyre et al., 1983).

Of further concern in examining the results of the present study are the relatively low R^2 values reported for the findings. As described in Chapter 7, five variables were simultaneously regressed against the dependent variable, where three at best contributed significantly to the dependent variable at any one time. Thus, it is important for future research to include other key variables that would increase the proportion of explained variance. The consideration of moderator variables (e.g., personal control) could assist in maximising the variance in future studies. Three guaranteed methods of increasing R^2 involve the choice of an alternative

measure[40], a lagged value and aggregation of units[41] (O'Grady, 1982).

A further possible limitation of the study is the generalisability of the findings (Chen, 1990; Cudeck & Browne, 1983). Certain features of the sample (e.g., sample homogeneity) may have limited the generalisability of the results. The sample consisted of white-collar men and women employed as life insurance salespeople. The focus on white-collar samples is consistent with Type A research in general (Sager, 1991). However, the applicability of the findings to other work settings, academics, non-whites, blue-collar workers and young adults is needed in the future (Cooper & Smith, 1985; Edwards et al., 1990a; Edwards et al., 1990; Haynes & Matthews, 1986; Matthews & Haynes, 1988; Wallace, Levens & Singer, 1988).

Third, the results were limited by the research methodology employed. Alwin (1977, p. 131) stated that "It is untenable to confront survey data as if they were error free" for " no matter how sophisticated one's analytic tools, the quality of one's inferences is intimately tied to the quality of the data." Some of the important considerations are discussed below:

It is well documented that self report, paper-and-pencil techniques may produce artefactual results through acquiescence (Davison & Srichantra, 1988; Husek, 1961; Ray & Pratt, 1979; Spector, 1987; Winkler, Kanouse & Ware, 1984), carelessness, inconsistency, demand characteristics, response tendencies, potential order defects, faking and malingering (Furnham, 1986, 1990; Hamilton, 1968) and social desirability (Emmons & McAdams, 1991; Furnham,

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[40] O'Grady (1982) recommends that the alternative measure suggested be simply the adoption of another measure of the criterion variable as an exogenous (predictor) variable. The limitation of this suggestion, in turn, is that R^2 will be more an indication of reliability than predictability.

[41] The method of achieving a high R^2 according to the aggregate of data is to combine respondents into groups and make groups the units of analysis (O'Grady, 1982).

1986, 1990; Ganster, Hennessey & Luthans, 1983; Matthews & Haynes, 1986). Consistent with this view, Furnham (1990) describes the tendency by Type A's to describe themselves in favourable ways as motivational distortion. Accordingly, positive traits such as ambition and AS are over-reported (Emmons & McAdams, 1991), whereas aggressive-hostility and freneticism tend to be under-reported (Furnham, 1990; Herman et al., 1981). Furnham (1990) asserts that the motivational distortion that arises can generate measurement problems (Carver & Matthews, 1989; Furnham, 1990; Furnham & Craig, 1987).

Collecting objective data on physical health records may present more accurate results than the self-report assessment of physical health and depression, which has a monomethod bias (Bayer & Gerstein, 1988; Rime et al., 1989; Schmitt, 1989; Suls & Sanders, 1988; Watson & Pennebaker, 1989). Costa and McCrae (1987) present a strong case against the validity of self-reported medical complaints. They suggest that self-report measures ignore the profound influence of personality dispositions on the perception, recollection and reporting of medical symptoms (Costa & McCrae, 1987). However, in defence of self-report data, significant correlations between self-rated, and physician-rated health, have been recorded (Kobasa, Maddi & Courington, 1981). Moreover, paper-and-pencil, self-report questionnaires are described as sensitive to a broad range of measurement contexts, highly amenable to actuarial methods of scoring and are reported to be economical (Anastasi, 1988). They were therefore considered suitable for use in the present study. But, future studies could examine the medical records, objective medical examination data, and/or reports from significant others in order to obtain stronger test reliability and validity (Rime et al., 1989; Suls & Marco, 1990; Suls & Sanders, 1990).

As an extension of the research methodology, the identification of measurement error is an important consideration in the present study. Although the present study adopted the minimum cut-off of 0,60 as recommended in the literature (Nunnally, 1967), James and James (1989) note that confirmatory analyses should increase the reliability cut-off to at least 0,70 as a recommended strategy. This is a limitation of the present study if the minimum cut-off of 0,70 is considered for the present study. Specifically, the competitiveness and II dimensions of the present study compromised this cut-off criterion in the development of the MTABS. Although James and James (1989) acknowledge that there is no accepted definition of what is high, it is recommended that more stringent cut-offs be adopted in the future. Thus, future studies should consider this recommended strategy and attempt to replicate the present study by combining items that reflect higher reliabilities.

A further possible limitation of the measurement error assumption is the adoption of C (coefficient of congruence) as an index of factor replication (Guadagnoli & Velicer, 1991). Guadagnoli and Velicer (1991) note that when calculating C, spuriously high values can result when factors contain the same sign and a high proportion of salient loadings are compared. This is a possible limitation of the measurement error assumption, since high congruence can be expected, even though the pattern of loadings may not be similar (Guadagnoli & Velicer, 1991). A further problem to consider is that no adequate test of significance has been developed for C (Guadagnoli & Velicer, 1991). On the recommendation of Guadagnoli and Velicer (1991), it is possible for future research to calculate the s-Statistic[42] as an additional indication of whether the measurement error assumption has not been violated.

[42]Cattell, Balcar, Horn and Nesselroade (1969) define the s-Statistic as the index whereby the number of salient loadings, common between two factors, may have occurred by chance. In a similar capacity to C, values range from 1 (perfect agreement) to -1 (complete reflection), with 0 denoting chance agreement between the two factors. The value of this statistic is that a table of significance has been developed by Cattell (1978).

A final limitation of the methodology is that procedural and distributional equivalence effects on the design of the MTABS may have compounded measurement error (Cooper & Richardson, 1986). Two important limitations of concern are highlighted. First, the response formats for the items on the MTABS were not equivalent. Considering the unidimensional measures in the present study, competitiveness comprised a three-point Likert scale, anger and hostility a four-point Likert scale and AS and II a five-point Likert scale. Second, the number of items comprising each scale differed: Competitiveness, anger and II consisted of four-items, hostility comprised five items and AS consisted of six-items. Adopting Cooper and Richardson's (1986) recommendation that the design of measuring instruments should offer fair comparisons, the predictive utility of anger, hostility, II, competitiveness and AS require that the five components be measured with equal number of items. Also, it is important for future research to treat the response formats fairly to reflect the same Likert scale (Cooper & Richardson, 1986).

The use of intention to leave as a surrogate measure of turnover is a possible limitation of the present study. Of concern, some reported correlations between intention to leave and actual turnover for salespeople have been found to be modest (Lucas, Parasuraman, Davis & Enis, 1987). Therefore, a possibility for future research is to consider actual turnover, rather than intention to leave as an index of turnover. For example, a literature search by Lucas et al. (1987) found that the average duration of longitudinal follow-up for turnover studies was 18 months. Consequently, future research studies could consider the differential effects of the components in relation to actual turnover incidence.

The failure by the present study to examine CHD is a possible limitation of the present study.

Traditionally, CHD has been treated as the most prominent consequence of Type A research (Haynes & Matthews, 1988). Therefore, it seems logical that any reconceptualisation of the Type A construct should start with CHD. Unfortunately, the sample in the present study was not large enough to warrant an examination of CHD prediction. Therefore, a future research need is to test the predictive validity of the model in relation to CHD and sympathetic arousal indices (Fletcher, 1991; Houston, 1986). Only then will it be possible to describe the significance of the present findings in relation to the coronary outcomes.

Finally, besides an examination of the performance outcomes, the study was cross-sectional, thereby limiting the strength of causal inferences which can be extrapolated from the findings (Edwards et al., 1990b; Frese & Zapf, 1988; Kasl, 1978; Kish, 1978). The cross-sectional nature of the study design does not facilitate a discussion around this point (House, 1980; De Wolf, 1988). Haynes and Matthews (1986) maintain that there are few studies examining the prevalence of Type A behaviour over time, which makes secular trend analyses impossible to determine. Although this feature is an important consideration, it was not the focus of the present study and was therefore not measured. However, future research should make use of longitudinal and/or quasi-experimental manipulations to identify the temporal sequelae of components and health and organisational outcomes (Edwards et al., 1990b; Evans et al., 1987; Frese & Zapf, 1988; Keltikangas-Jarvinen, 1989). Furthermore, longitudinal designs allow for controlled and uniform measurement of exposure history and other factors related to physical and organisational outcomes (Ware, 1985). Since factors such as perceived control (Lee et al., 1989), salutogenesis (Antonovsky, 1979, 1984) and social support (Suls & Sanders, 1987) have been found to reduce the reported incidence of physical illness, future research should examine the moderating role of these variables, using longitudinal designs.

Conclusion

Before attempting to outline the possible directions for future research, a brief summary of what was found in the present study is discussed below.

The current research was an attempt to address the plausibility of a multidimensional model of Type A behaviour. To this end, the conceptual components of Type A behaviour were independently assessed. The importance of reconceptualising Type A behaviour as a multifaceted construct was confirmed by the differential relationship of the components in association with the outcomes examined. Specifically, AS on the one hand, and II, anger and competitiveness, on the other, were differentially related to work and health outcomes. Also, hostility was not found to contribute significantly to any of the outcomes examined. Drawing upon recent developments on the dimensionality of Type A behaviour, a model of multidimensional Type A behaviour was hypothesised and tested.

A summary of the model is presented in Figure 8.1. Francis Bacon observed that "All rising to great place is by winding stair." Glass (1989) asserts that Type A research can be severely criticised for lack of a conceptual model consisting of environmental demands, personality and coping style, emotion and emotional expression and psychophysiology. In his estimation, all other well developed bodies of scientific knowledge are accompanied by a conceptual model, yet within Type A research, little theoretical and empirical emphasis has been placed on identifying the psychological processes that produce and sustain the pattern (Glass, 1989).

Over two decades ago, Caffrey (1969) observed that Type A research was in need of

systematic theoretical interpretation. In what amounts to just over two decades, Glass (1989 p. 1151) notes that "we are still waiting." Furthermore, Glass (1989) expresses concern about the limited theoretical advances which have evolved in the past decade. In addition, where theoretical in-roads have been attempted, little effort has been expended in following up on those advances that have been made (Glass, 1989). As Glass (1989, p. 1152) states, "prediction is not enough; explanation remains a paramount consideration." Therefore, in echoing the call to address the above issues, a revised model is developed and discussed in Chapter 9. The model serves to outline the future implications of the present findings in synergy with the findings from the present study.

Chapter 9

Future Implications: Towards the Development of a Revised Model of Type A Behaviour

The aim of this thesis was the provision of a model of the correlates of the components of multidimensional Type A behaviour. Although a component evaluation of Type A behaviour has been employed before (Bluen et al., 1990; Ohman et al., 1989; Spence et al., 1987), no empirical research could be found that examined a model consisting of all five of the conceptual dimensions of Type A behaviour in relation to psychological and physical health and work attitudes and behavioural outcomes. This omission stems from an inadequate psychological understanding of the components and the neglect by popularised Type A measuring instruments to operationalise all of the components of Type A behaviour (Edwards & Baglioni, 1991; Edwards et al., 1990a; Price, 1982a; Wright, 1988). Consequently, there was a need to develop and test a multidimensional model of Type A behaviour (Edwards et al., 1990a; Ganster et al., 1991). In compliance with this need, two studies were performed in the present thesis.

The first study was designed to develop and test a multidimensional measure of the conceptual components of Type A behaviour. The scale developed, named the MTABS, consisted of items from previous scales that operationalised AS, II, anger, hostility and competitiveness. The MTABS could then be used as a measure of the components of Type A behaviour in the second study, to examine health and work related outcomes of the multidimensional model. Subsequent multiple regression analysis confirmed the differential relations between the components and health and work-related outcomes.

The multidimensional model presented in Figure 8.1 is by no means exhaustive: The model needs to be broadened to include environmental demands, personality and coping style, psychophysiology and CHD (Price, 1982a; Smith, 1989; Smith & Anderson, 1986). However, it was beyond the scope of the present thesis to evaluate and interpret the causal mechanisms involved: This remains an avenue for future research to be discussed in the present chapter. Consequently, together with the results of the first study and the conceptual and methodological issues discussed in Chapter 8, a revised model of the c:· es and consequences of the components of Type A behaviour is presented in Figure 9.1.

As shown in Figure 9.1, there are antecedent, moderator and outcome variables which compliment the utility of a multifaceted conceptualisation of Type A behaviour. The scope of the model provides valuable insights to future considerations of examining the components independently. For example, recent advances suggest that perceived control is a central psychological dynamic, underlying Type A behaviour (Lee et al., 1990). Furthermore, the study of CHD, as a consequence of the multidimensional model, needs future empirical validation (Burns & Bluen, 1992; Spence et al., 1987). Some of these additions to the model will now be discussed in association with the findings from the present study, in an attempt to provide future guidelines to Type A research.

Certain guidelines have already been suggested in the discussion of Chapter 8. To avoid the risk of being repetitive, the discussion focuses primarily on the new constructs proposed in the revised model that were not included in the original model presented in Chapter 8.

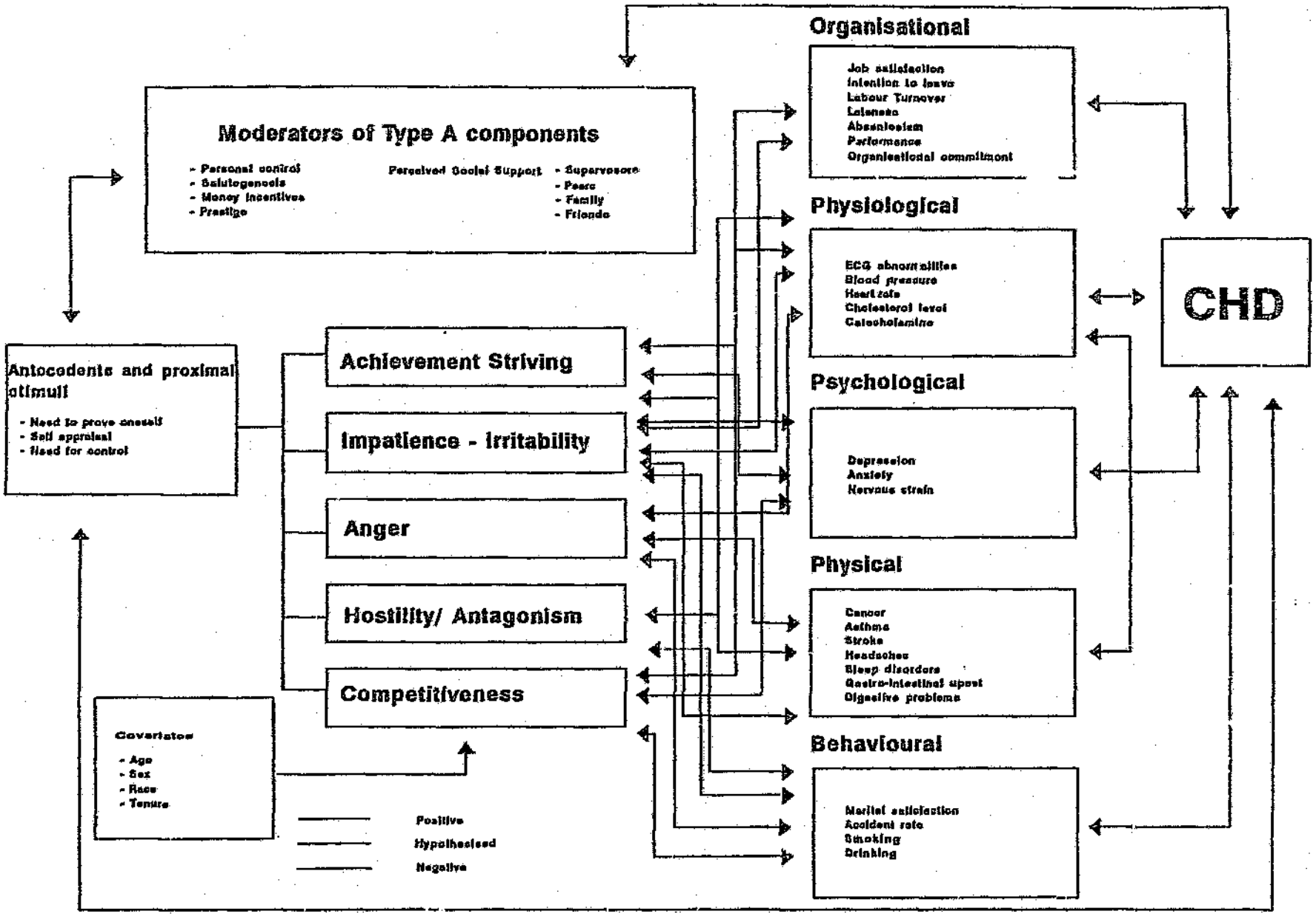


Figure 9.1 A REVISED MODEL OF THE CAUSES AND CONSEQUENCES OF MULTI-DIMENSIONAL TYPE A BEHAVIOUR

Antecedents and Proximal Environment

Duda (1987) contends that it is impossible to adequately assess and interpret behaviour if the intentions behind, and antecedents to the actions, are not studied comprehensively. Notably, it is important to stress that the expression of the components may take different forms within different cultures, social groups and between particular contexts (Duda, 1987). If researchers expect ultimately to be able to prevent the development of some of the behavioural characteristics (II, anger, hostility, competitiveness), and promote others (AS), it is necessary to know some of the physical and social environmental conditions (e.g., educational system, urbanisation, socioeconomic factors; Price, 1982a), that promote the development of the components (Roskies, 1987). Related to this issue is the maintenance of Type A behaviour (see Chapter 2). Thus, future research needs to identify and empirically validate the factors in the person and environment that cause Type A behaviour (Smith & Anderson, 1986).

To secure a more accurate understanding of the causal origin of AS, II, anger, hostility and competitiveness, the assistance of developmental personality psychologists (e.g., Daniels, 1986), evolutionary psychologists (who might focus on the adaptive origins of individual differences; e.g., Buss, 1992), and behavioural geneticists (who could research genetic and environmental sources of individual differences; e.g., Plomin, DeFries & McClean, 1980) could provide relevant contributions.

For example, understanding the developmental factors (see Strube, 1987; Chapter 2), has been shown to assist in explaining the acquisition and maintenance of achievement striving, impatience-irritability, anger, hostility and competitiveness in mature adults (Bergman &

Magnusson, 1986; Matthews, 1982; Matthews & Angulo, 1980). Furthermore, empirical research exploring specific familial factors that may promote the behavioural expression of AS, II, anger, hostility and competitiveness are needed in the future (Price, 1982a).

Chapter 2 attempted to review the antecedents of Type A behaviour through an examination of Glass (1977), Price (1982a) and Strube's (1987) models of Type A behaviour. The chapter highlighted several future research avenues for understanding the causes of Type A behaviour. These suggestions are linked to the model presented in Figure 9.1. For example, in reviewing Price's (1982a) model, Lee (1992) notes that it is possible that a different set of beliefs and fears may account for AS, compared to II, anger, hostility and competitiveness. Lee (1992) suggests that future studies should employ the social learning theory framework of Price's (1982a) model and consider the role of vicarious learning, emotional arousal, verbal persuasion and performance accomplishments as they affect the AS component. Moreover, the importance of refining cognitive explanations for how self-appraisal influences the behavioural expression of AS, II, anger, hostility and competitiveness need to be examined in the future (Yuen & Kuiper, 1992). Thus, a more comprehensive understanding of the antecedents of multifaceted Type A behaviour may be achieved through the integration of other disciplines such as cognitive psychology.

AS, II, Anger, Hostility/Antagonism and Competitiveness

Out of the broad array of Type A dimensions that grew out of medical intuitions and observations (Price, 1982), only five components have been conceptualised as central to the definition of Type A behaviour (Edwards et al., 1990; Glass, 1977a; Price, 1982a; Wright,

1988). Consistent with this view, the development of the MTABS in the present thesis supported a five factor model of Type A behaviour (Glass, 1977a). The five dimensions delineated in the revised model have been shown to be independent and to demonstrate suitable construct validity. Furthermore, a cross validation study on the recommendation of experts in the literature (Cudeck & Browne, 1983; Loehlin, 1987), supported a five factor structure for the MTABS. Moreover, for the factor solutions compared, factor invariance was not compromised for the five factor model hypothesised.

Friedman (1977, p. 601) pointed out, "If a new concept is to survive and prevail, it must be capable of enduring and surmounting all the strictures that may be mounted against it." The revised model presented in Figure 9.1 suggests that Type A behaviour should be reconceptualised as a multifaceted construct. As such, the theoretical contribution made by the present study is that global Type A behaviour should be viewed as an old concept, to be replaced by the independent assessment of AS, II, anger, hostility and competitiveness. Indeed, each of the components in the model can be theoretically justified for inclusion in the model[43]. But, a future research need is to test whether there are any other psychological constructs, in addition to the Type A components, that may predict depression, physical symptoms complaints, CHD, job satisfaction, intention to leave and performance. In adopting this strategy, Carver's (1989) view that the sketch has been sought, rather than the detailed drawing, is addressed. Also, it exposes the need to reassess the definition of Type A

[43]It is important to recall that hostility did not contribute to any of the work-related and health outcomes predicted in the main study. In addressing this unexpected finding, the lack of relationship was attributed to the possibility of a restricted range of aggressive-hostility values in predicting health. In support of this view, Williams et al. (1980) reported a significant relationship between hostility and CHD when a restricted range of hostility scores was considered. Future research may overcome this problem by developing a more sensitive scale that is skewed in the direction of measuring extreme levels of aggressive-hostility. Given the toxic label of aggressive-hostility in relation to CHD and physiological arousal (Engebretson & Matthews, 1992; Siegman et al., 1987), it is considered important for inclusion in future models even though it did not predict the mild symptoms of health complaints in the present study.

behaviour.

For example, the study of success attribution is extensively researched in the psychological literature (Berglas, 1986; Furnham, 1990). However, to limit the focus of Type A inquiry to AS, is vague and limited. Rather, issues of assertiveness (Berglas, 1986), self-monitoring (Snyder, 1979, 1987), and optimism (Seligman & Schulman, 1986; Smith & Williams, 1992) should be considered for future consideration. Furthermore, recent contributions by Smith and Williams (1992; Digman, 1990) have indicated the importance of neuroticism, extraversion, openness to experience, agreeableness, and conscientiousness (referred to as the 'big five') as a viable taxonomy of personality traits to consider as health predictors. Supporting this view, it would seem that the antagonism dimension would be conceptually related to hostility (Siegman et al., 1987), which suggests a potential area for future consideration (Smith & Williams, 1992). Thus, as pointed out in Figure 9.1, the interactive nature of an antagonism/hostility dimension needs to be operationalised as an important construct for evaluation (Smith & Williams, 1992).

From the above discussion, there is a need for future research to consider redefining Type A behaviour in the light of a categorisation of positive behavioural patterns and a separate classification of negative behavioural and emotional attributes. Such an approach will take full advantage of the conceptual and methodological developments that have been made by psychology in recent years (Smith & Williams, 1992). Also, it will address the unintegrated nature of potential health and work-related personality predictors that have been found in the medical, psychological and organisational literature (Glass, 1989). Without considering the broader personality literature, it may happen that traits and behavioural constructs will be

reinvented or mislabelled (Smith & Williams, 1992).

Covariates

As a precaution against the effects of semi-partial correlations, a number of researchers have insisted that all plausible confounds should be controlled for statistically (Cohen & Cohen, 1983; Cook & Campbell, 1976; James et al., 1983). Considering this statistical control, there are occasions where demographic variables should be included as covariates, because of their conceptual and empirical relation to the independent variables (Scarr, 1988). In the present study, age, tenure, sex and race were the only covariates to be conceptually and statistically ($p < .05$) related to the predictor variables, and warranted inclusion as covariates. Future research could expand on the need to include other covariates (depending on the biographical characteristics of the sample considered) that are significant to the revised model presented in Figure 9.1.

Moderators

To date, most research has considered linear relationships involving Type A behaviour (Ivancevich & Matteson, 1988). However, causal models that include mediated and moderated relationships, as related to Type A behaviour, are needed in the future (Fletcher, 1991; Lee et al., 1990; Price, 1982a). The most obvious benefit is the formulation and testing of relationships on the basis of a sound theoretical framework (Ivancevich & Matteson, 1988). A possible moderator of AS, II, anger, hostility and competitiveness, in relation to health and work outcomes, is perceived control of the environment (Folkman, 1984; Lee et al., 1991).

Two central moderating influences are suggested. First, if perceived control is low, those high in AS may be distracted from their performance goals in an effort to divert their concentration on regaining control, which could affect work related attitudes. Conversely, those high in AS, and high in perceived control, are less distracted by the need to re-establish control, with concomitant positive effects of job satisfaction, intention to remain, enhanced performance, reduced absenteeism, job involvement and commitment to the organisation (Lee et al., 1990). Indeed, several studies have demonstrated the positive effects of controlling the environment (Perrewe, Nelson & Maroney, 1990; Schorr & Rodin, 1984). Spector (1986) reports that perceived control is a moderator of emotional distress, role stress, absenteeism, intention to leave and turnover. In addition, perceived control is found to increase levels of commitment, involvement, motivation, performance and satisfaction at work (Spector, 1986). This coincides well with the utility of the AS dimension in relation to work related outcomes (Barling & Boswell, 1991; Bluen et al., 1990; Spence et al., 1987).

Second, the important moderating influences of perceived control on the relationship between II, anger, hostility and competitiveness and health outcomes is also considered. Strube (1987) contends that those individuals characterised by the overt expression of the toxic dimensions will find situations involving low perceptions of control to be stressful. Thus, the distracting quality of anger, II, hostility and competitiveness, in low control situations, is likely to augment physical and psychological health complaints (Lee et al., 1989). Furthermore, the struggle for control has been described by Glass (1977) as a contributory agent to heightened physiological activity, with the concomitant effect of increased CHD incidence (see Chapter 2; Smith & Anderson, 1986; Smith, 1989). Therefore, future research could profit from an analysis of these findings and examine the moderating role of perceived control on AS, II,

anger, hostility and competitiveness in relation to psychological and physical health, CHD and work related outcomes

A third moderator of AS, II, anger, hostility and competitiveness to be considered in the prediction of health is sense of coherence (salutogenesis; Antonovsky, 1979, 1987). Antonovsky (1979) defines sense of coherence as a global orientation that expresses the sense of self-confidence that 1) stimuli aroused through the environment are structured and predictable (comprehensibility), 2) resources are freely available to match demands (manageability) and 3) demands are challenges that are worthy of addressing (meaningfulness). Smith and Williams (1992) propose that sense of coherence is an important determinant of vulnerability to physical illness. Thus, it is hypothesised that sense of coherence would tie in well with AS, II, anger, hostility and competitiveness in the prediction of physical illness outcomes. In general, this construct has not received extensive support for examination (Smith & Williams, 1992), but it may prove to be a suitable moderator of II, anger, hostility and competitiveness in relation to health outcomes in the future.

An important moderator of AS, II, anger, hostility and competitiveness in predicting health and organisational outcomes is the degree of social support available to the individual (Greenhaus & Beutell, 1985; Price, 1982a). Price (1982a) contends that the components of Type A behaviour are not compatible with the development of close interpersonal relationships. Specifically, deterrents such as interruption and ignoring the advice from others, impatience, competitiveness and hostility are believed to inhibit the development of close relationships (Matthews, 1982; Price, 1982a). A plethora of studies have documented the protective influences of social support against the health consequences of stress (e.g.,

Levenson & Gottman, 1985; Rodey & Salovey, 1989). As such, by being integrated into a network of social ties, individuals report greater positive affect, develop and feel more in control of the environment, and experience higher self-esteem (Thoits, 1983, 1985; Wethington & Kessler, 1986) that is conducive to positive well-being (Rodin & Salovey, 1989) Chapter 2 noted that the need to prove oneself is an essential function of the behavioural expression of AS, II, anger, hostility and competitiveness. Thus, drawing conclusions from Price's (1982a) model that self-esteem is tied almost exclusively to the opinion of others, and this feedback is meager, possible detrimental consequences may result (Price, 1982a).

Considerable confusion prevails in the literature regarding the exact meaning of social support and methods of operationalising the construct (Fletcher, 1991). Schaefer, Coyne and Lazarus (1981) distinguished between two forms of support, namely social network (i.e., the number of individuals that offer support mechanisms) and perceived support (i.e., the individual's perception of the value of the supportive relationships). Rereurch has shown these two forms of social support to have differential effects. On the one hand, perceived support has been found to be positively related to morale and health, while on the other, social network has been non-significantly related to well-being; possibly due to demands, constraints and disappointments that often arise through large social networks (Schaefer et al., 1981). In responding to this finding, and considering the importance of social support to health prediction, the degree of perceived support from one's social environment is proposed to be an important moderator between AS, II, anger, hostility and competitiveness and health outcomes for future investigation (Price, 1982a).

A major consideration in testing the relationship between AS and performance, is that the role of extrinsic incentives (e.g., affiliation, money) in relation to performance is not clearly understood (Short & Sorrentino, 1986). Pay is a powerful motivator that can satisfy subsistence as well as higher order needs (England & Harpaz, 1990). Indeed, money has been reported to have significant impacts on people's motivation and work related behaviour (Tang, 1992). For example, Lee (1988) reports that monetary incentives, used together with goal setting, increased performance by a median greater than forty percent. Adopting Locke and Latham's (1984) view of the goal setting literature, money may be important to AS because offering such incentives results in a greater incentive to expend effort to attain the given goal level than no incentive at all. Therefore, the role of money and prestige as a moderator of the AS-performance relationship, needs closer examination in future research.

To understand the effects of the components of Type A behaviour on physical health and work related consequences and behaviours, there is a need to move beyond cross-sectional and retrospective studies, towards prospective designs (Matthews, 1988). Therefore, in discussing the section below, it is important for future research to adopt longitudinal and prospective designs in examining the consequences of AS, II, anger, hostility and competitiveness (Stone, 1986).

Consequences of the Multidimensional Model

As demonstrated by the results in the present thesis, the components of the multidimensional model were differentially related to health and work related outcomes. These findings provided a more comprehensive understanding of the need to examine Type A behaviour as

a multifaceted construct in relation to health and work related outcomes. Therefore, given the informative nature of the findings; depression, physical health complaints, job satisfaction, job involvement, intention to leave and organisational commitment are included for future confirmation in the revised model (see Figure 9.1).

The central feature of the revised model is that a multifaceted conceptualisation of Type A specifies differential relations between AS, II, anger, hostility, competitiveness and work outcomes, physiological, psychological and physical health and behavioural outcomes. The adoption of this view offers clarity to previous inconsistency in findings in the Type A literature. As shown in Figure 9.1, differential relations between the components and work-related, health and behavioural outcomes are hypothesised. More specifically, AS is conceptualised to be positively related with work attitudes, while II, anger, hostility and competitiveness are negatively related to physical and psychological health outcomes. This offers clarity to previous inconsistent global Type A-performance, work-related and behavioural outcomes reported in the literature.

Organisational Consequences. A misconception within the literature is that Type A behaviour research applies solely to health related constructs (Dembroski & Costa, 1987; Dembroski & Williams, 1989; Williams, 1984). This can perhaps be attributed to the origin of Type A behaviour within the medical community (Matthews, 1982). Furthermore, progress in the organisational literature has been slow, because of the ambiguity in reported findings (Jamal, 1990). The inconsistency has been exacerbated by a divergence of opinion (Taylor & Cooper, 1988; Wright, 1988). For example, Friedman and Rosenman (1974) argue that Type A characteristics negatively affect the acuity and judgment required for the highest levels of

occupational advancement. Conversely, Mettlin (1976) states that Type A behaviour is an integral construct to progress within modern occupational careers.

The revised model offers some future implications to considering the inclusion of lateness, absenteeism and turnover models of predicting turnover. For example, Mobley (1977) outlined seven stages between thinking about quitting and actual turnover (Mobley, 1977). The potential of the revised model is to explore the validity of linking the behavioural expression of AS, II, anger, hostility and competitiveness to the stages of employee turnover within Mobley's (1977) model, and other relevant process models. The incorporation of the individual's perceived control over stages of quitting (Mobley, 1977), as a moderator of AS, II, anger, hostility and competitiveness, could be validly linked to turnover through the Mobley model (Ajzen & Madden, 1986). By demonstrating such a link, the revised model could provide some interesting rejoinders on the relationship between emotional expression and behaviour, job attitudes and employee turnover. Furthermore, longitudinal data could be collected to determine if AS, II, anger, hostility and competitiveness are related to long term job dissatisfaction and turnover. For example, post hoc analysis of the differences in AS, II, anger, hostility and competitiveness between those who leave and those that stay may provide explanations for the high turnover rate within sales organisations (Lucas et al., 1987). Accordingly, turnover may be reduced by understanding the cognitive and behavioural processes underlying the multidimensional model described. How researchers will address these issues is an important future consideration.

Psychological and Physical Health Outcomes. Suls and Marco (1990) suggest that the present results should be extended by adopting a prospective design in which the components

are assessed at a prior time and objective physical illness indicators and depression and anxiety levels sometime later. The rationale of this approach is to eliminate contamination through retrospective bias. Also, in Suls and Marco's (1990) estimation, the longitudinal time period should be extended over a number of months if a nominally healthy sample is to be examined. Given that illness reports and objective health indicators are only modestly correlated (Linn & Linn, 1980); access to medical records of diagnosed illnesses, and objective indicators such as physician rating (Suls & Marco, 1990) are recommended future strategies for examining the relationship between the components and physical illness. The inclusion of anxiety and nervous strain as potential outcomes of the multidimensional model are noted for future research. For example, drawing on Strube's (1985) model (see Figure 2.2), anxiety was presented as an important outcome for consideration in association with anger and hostility. Also, Booth-Kewley and Friedman (1987) note that future considerations on the predictive utility of psychological constructs in association with physical illness should include measures on cancer, asthma and stroke in addition to physical symptoms complaints.

Behavioural Consequences. A further area where the multidimensional model may apply is in the prediction of accident proneness (Suls & Sanders, 1988). For example, Evans, Palsane and Carrere (1987) reported for a sample of Type A bus drivers in India that they braked more often, hooted twice as frequently and passed other vehicles on the road more often than Type B bus drivers. Following this observation, the results of the study showed Type A's to report more accidents than Type B's. More direct evidence on the proposed relationship between the components and accident ratios is a study by Niemcryck, Jenkins, Rose and Hurst (1987) where it was found that speed and impatience (not job involvement and achievement striving) was significantly related to number of accidents reported. Niewmcryck et al. (1987)

concluded that impatience and irritability at being slowed down, as well as angry reactions, were the contributory components of Type A behaviour to accidental injuries. Thus, the differential effects of AS, II, anger, hostility and competitiveness in relation to accident proneness needs to be tested in the future.

A further consequence of the revised model in Figure 9.1 is the prediction of marital conflict (satisfaction) levels. Smith, Sanders and Alexander (1990) contend that marital interactions are an appropriate situation to examine the behavioural, affective and cognitive correlates of hostility. Indeed, anger and hostility are believed to negatively affect the communication levels within interpersonal relationships (Averill, 1982; Patterson, 1985). Houston and Kelly (1989) found that high hostility scores were significantly related to marital conflict and decreased marital satisfaction. Barling et al. (1990) reported husbands' levels of II to be associated with their own and their wives' marital dissatisfaction. Furthermore, high levels of angry and hostile behaviour, during marital interactions, have been significantly related to low levels of marital satisfaction (Gottman & Krokoff, 1989; Gottman & Levenson, 1986), which has been related to CHD (Baker, Haynes & Feinleib, 1983). Extending these findings to the revised model, marital satisfaction is included as a potential consequence of the components.

A further consideration is to examine alcohol and cigarette consumption in relation to the components. For example, anger and hostility have been reported to be positively ($p < 0,5$) related to alcohol consumption (Ritson, 1971). It has been suggested that high levels of alcohol consumption may have a stress-buffering role for hostile individuals and may as a result be reinforcing when consumed in situations that are distressing (Neff, 1984). Thus, future research needs to examine the differential relations of the components with smoking

and alcohol consumption. For example, a possible future research need is to examine whether individuals' characterised by high levels of II are more likely to resort to alcohol during time urgent and stressful events to reduce stress (Neff, 1984). Such a relationship may increase vulnerability to CHD (Rodney & Salovey, 1989).

CHD and the Physiological Mechanisms

The identification of the biological mechanisms linking the toxic components of Type A behaviour to CHD is in need of further research (Lacy, Robbins Kostis, 1988; Rodin & Salovey, 1989; Wright, 1988). Two features of these mechanisms are imminent, namely scientific and clinical appraisal. Scientifically, to establish any relationship between the components and CHD, the relationship must be biologically plausible (Harbin, 1989; Rodin & Salovey, 1989; Roskies, 1987). Clinically, the biological mechanisms can serve as indices to monitor the relative success of intervention programmes (Roskies, 1987).

Friedman and Rosenman (1974) began extensive work on the possibility of biological differences between Type A and Type B behaviour. Since then, a plethora of literature has attempted to expand on the physiological pathways (Glass & Contrada, 1984; Harbin, 1989; Smith & Anderson, 1986; Wright, 1988; Williams, 1989). A plausible hypothesis of the revised model, is that II, anger, hostility and competitiveness are accompanied by elevated cardiovascular reactivity that participates in accelerating the development of CHD (see Chapter 2; Dembroski et al., 1989; Engebretson et al., 1989; Glass et al., 1980; Glass & Contrada, 1984; Siegman & Anderson, 1990; Suarez & Williams, 1989). Support for this hypothesis derives from studies that have demonstrated elevated blood pressure with speed

and impatience (Dembroski et al., 1979), anger (Diamond, 1982; Goldstein et al., 1988; Harrell, 1980; Siegman, Anderson & Berger, 1990), hostility (Anderson et al., 1986; Dembroski et al., 1979; McCann & Matthews, 1988) and competitiveness (Dembroski et al., 1979; Glass et al., 1980; Van Egeren et al., 1982). Furthermore, both theoretical and empirical considerations suggest that sympathetic autonomic nervous system arousal has the potential to damage the cardiovascular system (Dienstbier, 1989; Jemmott & Lock, 1984).

If future research confirms the physiological pathways shown within the revised model, a vital lead may be uncovered in the pathogenic processes, through which the components of Type A behaviour translate into CHD (Williams, 1984, 1989). To achieve this end, a closer alliance between the psychological and medical literature is needed in the future (Price, 1982a). Furthermore, there has been a continual growth in work stress studies that have employed physiological measures in work situations (Caplan, Cobb & French, 1979; Ganster & Fusilier, 1989, Ganster, Mayes, Sime & Sharp, 1982; Jenner, Reynolds & Harrison, 1980; Johnasson & Aronsson, 1984; Kaufman & Beehr, 1986). Thus, the collection of data in work situations will assist towards a more thorough understanding of the mechanisms linking the components of Type A behaviour to the prediction of CHD.

Feedback Loops

Although causal analysis was not examined in the present thesis, it is important to consider the dynamic feedback process between the person and the environment (Fletcher, 1991). Viewing the revised model as a transactional process (rather than a trait or intrapsychic process) is consistent with the original definition of Type A behaviour as an interaction

between the individual and the environment (Friedman & Rosenman, 1974) and necessitates the inclusion of feedback loops (Smith & Anderson, 1986). For example, Chapter 2 demonstrated that Type A's have a greater desire to acquire social comparison information regarding their performance and abilities (Strube, 1985, 1987). This was clearly demonstrated in the self-appraisal model in suggesting a naturally occurring dynamic feedback loop to explaining the impact of the environment on the acquisition and maintenance of Type A behaviour.

The importance of feedback loops have been shown within a number of organisational stress models (Beehr & Newman, 1976; Fletcher, 1991; Ivancevich & Matteson, 1988; Strumpfer, 1983). As can be seen from Figure 9.1, two-way relations are proposed between the antecedents and AS, II, anger, hostility and competitiveness and the consequences that act as feedback loops to reinforcing the behavioural expression of AS, II, anger, antagonism/hostility and competitiveness. The main advantage of this approach is that continuous feedback facilitates changes within the responses of the individual over time (Fletcher, 1991): the acute effects of stressors may differ from chronic effects as the system adapts to changes. The important future consideration is to test these effects. Also, the literature points to uncertainty regarding whether the physiological concomitant precede, follow or emerge concurrently with the behavioural expression of the components (Krantz & Manuck, 1984; Wright, 1988). Within the revised model, physiological mechanisms are included as consequences, whereby they act as feedback loops to regulate the display of the components over time (Smith & Anderson, 1986). Future studies need to explain and confirm whether these relationships are plausible within the model.

Conclusion

Type A research has grown logarithmically in recent years to include a vast domain of topic areas (Evans, 1990). Yet, in spite of the plethora of Type A research studies, the comprehensiveness of this complex construct is not clearly understood from either a medical or a psychological perspective (Booth-Kewley, 1987a). In attempting to address this confusion, there is a need to examine the differential consequences of the components within a process model (Yuen & Kuiper, 1992). To achieve this end, a revised model has been proposed in the present chapter, with a view to obtaining an integrated perspective of the five dimensions of Type A behaviour, together with moderators (perceived control, social support), physiological (e.g., heart disease), psychological (e.g., depression, anxiety), behavioural (e.g. increased alcohol or smoking rates) and organisational (e.g., job dissatisfaction, absenteeism, labour turnover rates) consequences of the components.

A major criticism that Type A is restrictive when viewed as a global index, can be overcome through the adoption of such a strategy (Carver, 1989). Consequently, a greater understanding of the psychological mechanisms and definition of the construct can be obtained (Evans, 1991). But, it is also necessary for Type A researchers to be more innovative and adopt theoretical advances from other disciplines such as cognitive psychology. For example, Barling and Boswell (1991) developed a model to assist toward a possible explanation of the relationship between AS, II and work performance and health outcomes, by using cognitive factors (concentration) to explain mediating and indirect links. Therefore, the inclusion of motivational and cognitive factors, as underlying mechanisms of the components, are needed in the future (see Chapter 2).

The literature suggests that a model can serve to address the complexity of research problems within the domain of Type A behaviour research. The importance of the revised model is that it is impossible to determine whether all of the Type A components are important to the model, unless they are tested independently. Furthermore, researchers cannot ignore the mounting evidence that Type A behaviour is best conceptualised as a multifaceted construct (Bluen et al., 1990; Spence et al., 1987). Technical advances in psychology have made the study of behavioural constructs more refined and sophisticated in their meaning and operationalisation in recent years (Fletcher, 1991). Following these advances, it is necessary to ask whether the definition of a construct, made by cardiologist's over three decades ago, is worthy of psychological rigidity (Conduit, 1992; Ray, 1991).

The present study was restricted to five components in predicting health and work attitudes and behaviours. Indeed, other constructs (e.g., dominance and assertiveness) have proved worthy of consideration, but have been largely ignored because of the focus on the original definition of the pattern. In other words, Type A behaviour has remained consistent in its characterisation, despite advance within the psychological realm on the meaning and importance of other potential predictors of health and work related attitudes and behaviours (Conduit, 1992; Smith & Williams, 1992). This forms an area of future consideration (e.g., Spielberger's prominent work on the refining of the definition of the AHA syndrome). Clearly, the importance of physiological explanations is central to emotional arousal and health prediction (Dienstbier, 1989; Harbin, 1989). As such, it is suggested that medical literature concentrate on translating the importance and pathways of the psyiological mechanisms while psychological literature focuses on refining the behavioural constructs that contribute to health on the one hand and work outcomes on the other (Conduit, 1992).