THE EFFECTS OF ORGANIZATIONAL CHANGE
IN A PUBLIC SERVICE ORGANIZATION

by

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submitted in part fulfilment of the requirements

for the degree of

MASTER OF ARTS IN RESEARCH PSYCHOLOGY

in the

DEPARTMENT OF PSYCHOLOGY

at the

UNIVERSITY OF SOUTH AFRICA

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NOVEMBER 1997
When an organization embarks on a major change effort, employees at all levels find themselves floundering in a sea of stress and confusion.

(Iacovini, 1993, p. 65)

When it comes to significant change, anxiety and stress are added to feelings of coercion, particularly if employees feel that they are moving from competence to incompetence and from stability to confusion.

(Katz, 1994, p. 34)

After the era of management science and the arising importance of human resource issues, culture remains for management the most mysterious of all forces operating within an organization, even though it is potentially the most powerful in influencing business performance.

(Jackson, 1993, p. 31)
"I declare that THE EFFECTS OF CHANGE IN A PUBLIC SERVICE ORGANIZATION is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references".

(Jerome Dominic Kiley)
Summary

Organizations in South Africa have been going through a great deal of change in recent years. However, little is known about the effects on employees. This study aimed to ascertain the psychological impact of change on the employees of a large public service organization, the South African Police Service. The findings were contrary to what was expected with the only significant difference between the samples being for anxiety in black managers. Circumstances outside the work situation were the strongest predictors for stress, anxiety and depression. However, factors in the work situation played a more significant role in predicting the variance in stress and anxiety in the second sample. The within group differences were the opposite of what was expected with black managers having higher stress and depression levels than their white counterparts in both samples and higher anxiety levels than both their white and coloured counterparts in the second sample.

Key terms:

Organizational change; Organizational development; Stress; Anxiety; Depression; Racial differences
ACKNOWLEDGEMENTS

I wish to express my sincere gratitude to the following persons:

- The members of the South African Police Service who willingly participated in the research.

- Professor Vasi van Deventer for his valuable and knowledgeable input and guidance.

- Berra Kemp and Leonie Venter for their continued help and patience in processing and interpreting the statistics.

- Marina Puchert and Juliana van der Berg for their unselfish help in the processing of data and typing of this work.

- Most importantly, to my family and friends for their continued help, understanding and support.
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CHAPTER 1 INTRODUCTION AND ORIENTATION

1.1 Necessity of this study

Ivancevich and Matteson (1996) argue that five major forces are reshaping the nature of organizations, namely:

(i) *The power of human resources* - the realization that the ways in which people think, work and behave determine the success of an organization.

(ii) *Globalism* - global competition characterised by networks that bring people together, with institutions and countries beginning to dominate the global economy.

(iii) *A culturally diverse workforce* - racial, ethnic and gender diversity is growing in the workforce.

(iv) *The rapidity of change* - rapid technological and social changes sweeping the world.

(v) *The new worker-employer psychological contract* - employers no longer view employees as having lifetime jobs, guaranteed raises and promotions, or having fixed job roles. The employees expect employers to be open, honest and fair, and to give them a greater say in their jobs. Employees also expect employers to appreciate the humanness of workers paying more attention to their mental and physical health and to family situations.

South African society has not been immune to these changes experiencing a vast number of changes in recent years. The changes described by Ivancevich and Matteson (1996) were exacerbated by the election of a representative Government of National Unity on 27 April 1994. The Ministry for the Public Service and Administration (MPSA) (1995, p. 11) states:
On its accession to power the Government of National Unity inherited a society marked by deep social and economic inequalities, as well as by serious racial, political and social divisions. Guided by the principle of national reconciliation, the new South African Government adopted the Reconstruction and Development Programme (RDP) to reorient and reunite society towards a common purpose, that of a socially coherent and economically equitable society.

The Public Service in South Africa, against this backdrop of larger societal change, has been involved in a process of organizational transformation. In 1995 the MPSA published "The white paper on the transformation of the public service" (MPSA, 1995) in which the process of organizational transformation and administrative reform is outlined. In the opening statement the MPSA (1995, p. 11) states:

In forging ahead with the process of reconciliation, reconstruction and development, the South African public service will have a major role to play as the executive arm of government. To fulfill this role effectively, the service will need to be transformed into a coherent, representative, competent and democratic instrument for implementing government policies and meeting the needs of all South Africa.

The South African Police Service (SAPS), as a large public service organization, has been widely affected by the changes in South African society and the Public Service. This is reflected in the "Draft policy document" (Mufamadi, 1995, p. 3) which states:

The election of 27 April 1994 ushered in a democratic constitution which relied strongly on a bill of fundamental human rights. This new political and constitutional reality demands a fundamental reassessment of the nature of policing in South Africa. The practices and policies from the past which were problematic and in conflict with the new democracy, need to be discarded and those which have served the public well need to be built on.
To achieve these and other objectives will require adjustments and changes which will affect every member of the police (Mufamadi, 1995, p. 4). Despite this there has been no attempt to determine the effects that these changes have on the members of the organization.

The lack of research regarding the effects of organizational change on employees appears to be a deficiency in the field of organizational change and development as a whole. Cartwright and Cooper (1993, p. 327) support this notion stating that “the impact that such a major change has on employee health and well being, has been the subject of relatively little research attention”.

1.2 The aim of the study

The aim of this study is to address the following question:

How does organizational change impact on the psychological well being of the members of an organization?

More specifically the study aims to:

(i) provide information about the relationship between organisational change and the levels of stress, anxiety and depression among entry-level managers in the organization;

(ii) identify, within the context of organizational and societal change, specific stressors contributing to these emotions; and

(iii) determine if the consequences of organizational change differ between cultural groups that benefit from the change as opposed to those who do not.
1.3 Scope of the study

The study focuses on the effects of organizational change on the psychological well-being of entry-level managers in the SAPS, a large public service organization. The main elements examined, relating to psychological well-being, are stress, anxiety and depression. These elements, together with possible contributing factors in the environment, were examined on two occasions during the last six months of 1995 and 1996 respectively.

Availability samples were used in that entry-level managers attending management training at the Paarl SAPS college were requested to participate in the research. This group was chosen because of the unique challenges encountered at this level of management and because they were accessible to the researcher. Conducting the study on a more representative group in the organization was not feasible due to the size of the organization (approximately 132,000 persons), accessibility, costs and time restraints.

Due to the limited scope of the study, the results should be interpreted cautiously. The fact that the study is limited to a specific level of management within one organization limits the generalisation of the findings. However, it is expected that the findings of the study will provide an insight into and an indication of the effect of organizational change on entry-level managers in large public service organizations in general. The results should preferably be interpreted in conjunction with other studies of this kind. The intention is thus to stimulate further research rather than to provide conclusive evidence.
1.4 Overview of the study

The study includes a theoretical review of relevant concepts as well as an empirical investigation. Appendices and a list of literature references are provided.

Chapter two reviews the nature of organizational change, and relates this to the SAPS. This chapter is followed by a discussion of emotional constructs believed to be relevant in organizational change. The constructs reviewed are stress (Chapter 3), anxiety (Chapter 4) and depression (Chapter 5). Apart from theoretical overviews these chapters also examine the relationship between organizational change and the emotional construct in question.

The theoretical orientation is followed by an overview of the methodology used in the study. Chapter six explains the methodological framework used for the study, states the hypotheses tested and describes the instruments used to operationalize the variables in the study. The possible ethical implications of the research are also discussed.

An analysis of the empirical data is provided in Chapter seven. The study is concluded in Chapter eight with a discussion of the findings.
CHAPTER 2: ORGANIZATIONS AND CHANGE

2.1 Introduction

The notion of organizational culture was identified more than two thousand years ago by Pericles, the father of Athens' golden years. However, the concept was lost with time. In modern society viewing organizations as cultures is a relatively recent phenomenon. As little as fifteen years ago organizations were simply thought of as a rational means to coordinate and control a group of people (Robbins, 1990).

2.2 The modern notion of organizational culture

The basic philosophy, spirit and drive of an organization influence its success far more than technological or economic resources, organizational structure, innovation and timing (Rossiter, 1989).

In this regard Ivancevich and Matteson (1996, p. 81) speak of "a certain atmosphere, feeling, and style that is unique"; while Robbins (1990, p.300) refers to "a unique feeling and character that goes beyond its structural characteristics" that differs from one organization to the next and which is known as organizational culture. This influences the attitudes, behaviour and overall effectiveness of employees in a particular organization (Ivancevich & Matteson, 1996).

No two theorists define the concept of organizational culture in the same way (Ivancevich & Matteson, 1996). Definitions include:

The beliefs and values shared by people in an organization.

(Smit & Cronje, 1992, p. 383)

Symbols, language, ideologies, rituals and myths.

(Pettegrew, 1979, p. 579).
A pattern of basic assumptions - invented, discovered, or developed by a given group as it learns to cope with the problems of external adaption and internal integration - that has worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems.

(Schein, 1985, p. 9)

These common assumptions refer to beliefs or convictions about the world and the way it works, and values. Values refer to assumptions about what ideals are worth pursuing, personal experience and the influence of the members of the community on the individual (Sathe, 1985).

In summary organizational culture can be viewed as a set of basic assumptions that worked so well in the past that they are regarded as valid within the enterprise and upheld as the correct way to do things and understand problems (Smit & Cronje, 1992).

2.3 Components of organizational culture

Schein (1985) contends that an organization’s culture has three layers, namely (i) artifacts and creations that are visible, (ii) values and the things important to people; and (iii) peoples’ basic assumptions that guide their behaviour and involve perceptions of work, performance goals, human relationships and the performance of colleagues.

Robbinson (1993) suggests that ten primary characteristics capture the essence of an organizations’ culture:

(i) Member identity - the degree to which employees identify with the organization as a whole rather than with their particular type of job or field of expertise.

(ii) Group emphasis - the degree to which activities are organized around groups rather than individuals.
(iii) *People focus* - the degree to which management considers people in their decisions.

(iv) *Unit integration* - the degree to which individual units are dependant and coordinated.

(v) *Control* - the amount of rules, regulations and direct supervision.

(vi) *Risk tolerance* - the degree of risk-seeking, aggressiveness and innovation tolerated.

(vii) *Reward criteria* - the relationship of rewards to performance.

(viii) *Means-end orientation* - the focus on outcomes rather than the method of achieving these.

(ix) *Conflict tolerance* - the degree to which employees are encouraged to air conflicts and criticisms openly.

(x) *Open-system focus* - the degree of response to changes in the external environment.

Although organizational culture may be defined, communicated and created through interactions, it is not the interactions themselves, but rather the topics, meanings and content of the interactions that define organizational culture (Bolon & Bolon, 1994). Culture is manifested in organizations in several important ways (Smit & Cronje, 1992):
Table 2.1 The manifestations of culture in an organization

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<td>The architecture of buildings, arrangement of offices, name of the organization and departments, and the manner of dealing with outsiders.</td>
</tr>
<tr>
<td>2. Rituals</td>
<td>Practices and reactions that have significance and occur repeatedly within the organization that set boundaries and relationships.</td>
</tr>
<tr>
<td>3. Ideologies</td>
<td>The beliefs, moral principals and values that underlie decision making.</td>
</tr>
<tr>
<td>4. Language</td>
<td>The continual use of certain words and phrases.</td>
</tr>
<tr>
<td>5. Tales</td>
<td>Stories that circulate in an organization that depict certain unique qualities and characteristics of the organization.</td>
</tr>
<tr>
<td>6. Assumptions</td>
<td>The basic assumptions of how certain tasks should be performed</td>
</tr>
<tr>
<td>7. Relationships</td>
<td>The form that relationships take in the organization</td>
</tr>
<tr>
<td>8. Humour</td>
<td>Serves to convey certain messages about the organization’s culture and helps to define boundaries.</td>
</tr>
</tbody>
</table>
A different approach to organizational culture is the labelling system created by Jeffery Sonnenfeld (cited in Robinson, 1993, pp. 602-605) which is aimed at differentiating between different types of organizational cultures:

(i) *Academy* - a place for steady climbers who want to master each job they hold, where employees are carefully steered through a myriad of jobs within specialised functions.

(ii) *Club* - a high premium is placed on loyalty and commitment, seniority is dominant and managers are groomed as generalists.

(iii) *Baseball team* - entrepreneurially oriented havens for high risk takers and innovators, where rewards are based on performance.

(iv) *Fortress* - preoccupied with survival and offers little job security.

The traditional view of organizational culture has been criticised as presenting a limited and simplified picture of the dynamics and attributes of culture. While a single organizational culture can be identified, it generally represents only a small portion of the complex cultural environment present in an organization and can be dismantled to reflect the underlying group cultures (Bolon & Bolon, 1994).

A distinction can be made between the dominant culture in an organization, which are the core values shared by most of the members; and subcultures, which tend to develop in a large organization and are typically defined by departmental designations and geographical separation (Robbins, 1990).
2.4 The dimensions of organizational culture

The task of managers is to build strong cultures that are directly coupled to the organization's purpose and maintain competitive advantages (Jackson, 1993). Shared values that have been truly internalized are crucial as they provide a set of operating principals to guide behaviour and allow judgements to be made on a basis of shared or common understanding (Rossiter, 1989).

Eldridge and Crombie (1974) identified the following three dimensions in culture:

(i) *The vertical dimension (depth)* - the dimension where the reason for the existence of the organization is spelt out through the basic objectives and values. These are expressed in specific actions, such as the formulation and acceptance of policy, programmes and procedures. This dimension is strengthened by reinforcing the basic philosophy and ideals of the organization. Symptoms of unsuccessful integration on this level are manifested in employee resistance resulting in the lack of integration of philosophies and ideals with the accompanying failure of policies. This is reflected by the number of actions performed by employees that are not representative of the ideals of the organization.

(ii) *The lateral dimension (breadth)* - refers to the scope of the various activities carried out and the coordination of these actions. This is reflected in the extent to which the overall objectives of the organization are realised. It is achieved through record keeping systems, the convening of meetings and the appointing of committees. Problems in this dimension are reflected by individuals fighting for practices that are no longer relevant to organizational goals.

(iii) *The dimension of progression* - the degree of continuity and permanence that different plans of action that are in place at a certain time have. It is closely linked to the assurance that the different activities are linked to the objectives of the organization. This dimension is linked to the programming of work flow, formal job descriptions and formal planning. Failure in this dimension is illustrated by the impediment of progress in a certain direction with departments losing sight of ultimate objectives and becoming self serving.
Smit and Cronje (1992) emphasise three interrelated elements that are essential to the study of culture, namely:

Table 2.2  Elements of culture

<table>
<thead>
<tr>
<th>ELEMENT</th>
<th>EXPLANATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. The direction of influence</td>
<td>The actions towards which the culture leads the members of the organization, that is towards the realization of organizational objectives, or not.</td>
</tr>
<tr>
<td>2. The degree of penetration</td>
<td>The extent to which the culture is distributed and the depth of penetration thereof.</td>
</tr>
<tr>
<td>3. The strength of the influence</td>
<td>The degree of pressure that the culture exerts on members of the organization to emulate certain behaviour patterns.</td>
</tr>
</tbody>
</table>

A strong culture results in lower employee turnover and high agreement among members as to what the organization stands for. This in turn builds cohesiveness, loyalty and organizational commitment (Robbins, 1990).

2.5  The impact of organizational culture

McTague (1986) argues that organizational culture affects the implementation of certain actions:

(i)  The implementation of new strategies - assumptions, values and procedures are often required that differ from existing assumptions in the organization, but are resisted by employees.

(ii) Mergers, acquisitions and diversification - the organizations concerned may find each others philosophy, managerial style and control mechanisms unacceptable.
The integration of new technologies - certain practices and assumptions have been established around existing technologies and a relocation of status, power and practices may occur, creating resistance among some employees.

Intergroup conflict - where relevant groups have corresponding value systems conflict is easier to deal with.

Ineffective meetings and obstacles in communication - this is often because of actual differences in how people perceive and understand things due to their affiliation to different cultures.

The failure of socialization - an employee may not be able to adapt his or her basic assumptions and value system to those of the organization.

Theoretically based and empirically verified research about the impact of organizational culture is still sketchy, lacking connections between culture type and organizational effectiveness (Ivancevich & Matteson, 1996). An exception is a study by Jackson (1993) who found that South African organizations are not comfortable with risk, even though a riskier profile may strongly support the organization's strategy.

2.6 Societal value systems and organizational culture

Values are societies' ideas about what is right or wrong, and are passed on through generations by means of education, religion, families, communities, and organizations (Ivancevich and Matteson, 1996). Ivancevich and Matteson (1996, p. 14) note that “Organizations exist in societies and are created by societies”. Society's values thus have a strong impact on organizational values due to the interactive nature of work, leisure, family, and the community (Ronen & Shenkar, 1985).
Hofstede (1983) studied 116,000 people in fifty countries from which he proposed a four-value dimension framework as a basis to differentiate between national cultures:

(i) *Power distance* - the degree to which the unequal distribution of power is accepted in organizations, reflected in the nature of the relationship between superiors and subordinates.

(ii) *Uncertainty avoidance* - the extent to which members of a particular society are threatened by ambiguous situations, reflected in the amount of laws and procedures, the degree of risk decision making by managers, and the levels of aggression exhibited by employees.

(iii) *Individualism* - an emphasis on individualism expressed in the tendency of people to fend for themselves and their families, versus an emphasis on collectivism expressed through tight social frameworks and emotional dependence on belonging to the organization.

(iv) *Masculinity versus femininity* - the "masculine" values of assertiveness and materialism versus the "feminine" values of concern for relationships and quality of life.

Ronen and Shenkar (1985) note that the relationship between these dimensions is interdependent and complex.
2.7 Building and maintaining a culture

The actions of top management have a major impact on an organization's culture. Employees observe their behaviour and this serves to establish norms that filter down through the organization (Robbins, 1990). The common thread running through recommendations to organizational leaders is to play an active role with the group members in integrating goals and objectives (Ivancevich and Matteson, 1996).

New employees are integrated into an organization's culture through a process known as socialization. Values, assumptions and attributes are transmitted from established employees to newer employees in an attempt to make the "fit" between the new employee and the organization more comfortable (Ivancevich & Matteson, 1996).

Feldman and Brett (1993) describe the process of socialization. They claim that it comprises three stages, namely: (i) the anticipatory stage, comprising the activities undertaken before entering an organization or taking a new job; (ii) accommodation, where the organization and job are seen for what they actually are; and (iii) role management, involving conflict between work and home lives and between work groups.

Effective anticipatory socialization involves recruitment, selection and placement programmes that give recruits a feeling of congruence and realism (Ivancevich & Matteson, 1996). New employees should be subjected to a carefully orchestrated series of experiences aimed at making them question the organization's values and norms so that they can decide whether these are acceptable to them (Luthans, 1995).

Culture is also transmitted to employees on a less formal basis through stories, material symbols, rituals and language (Robbins, 1990). Effective accommodation socialization involves five major activities, namely: (i) orientation programmes that enable new employees to meet the other employees; (ii) training programmes that instruct new employees in techniques and skills required; (iii) performance evaluation that gives feedback how well an employee is getting on in the organization; (iv) the assigning of challenging work, to allow new employees to demonstrate
their full capabilities; and (v) the assignment of demanding bosses to get new employees off in the right direction by setting high expectations for performance (Ivancevich & Matteson, 1996). Operational results and individual performances should be measured and rewarded accordingly, focusing on elements that are most crucial to competitive success and corporate values (Luthans, 1995).

Effective role management socialization is achieved by organizations that show good faith and attempt to adapt to the problems of employees (Ivancevich & Matteson, 1996). Employees should be encouraged to identify with the organization’s most important values to reconcile personal sacrifices caused by membership to the organization (Luthans, 1995).

2.8 Changing organizational culture

Contradictory as it may seem, change is one of the few constants in the working environment today. Change is a constant in business that is caused by external or internal events, or a combination of these (Gonzales, 1996). Both the public and private sectors are altering their structures and procedures in a bid to become fitter and leaner (Litchfield, 1995).

2.8.1 Change and organizational culture

The majority of change within organizations involves changes in the organizational culture. Eneroth and Larson (1996, p. 5) define strategic change as “the realignment between the organization and its environment that affects the achievement of organizational goals”. Similarly Ivancevich and Matteson (1996, p. 19) note: “Organizational change and developments represent planned attempts to improve overall individual, group, and organizational performance”.

Strong arguments exist both for and against the possibility of changing an organization’s culture (Robbins, 1990). By changing factors such as socialization, the selection processes, the actions of top management, stories, rituals, material symbols and language, cultural change ought to be possible. On the other hand, the fact that organizations have stable characteristics would imply
that changing a culture is difficult. Culture is maintained by factors such as written statements about the organization’s purpose, physical characteristics, the dominant leadership pattern, past selection practices, entrenched rituals, popular stories, the historical evaluation of performance, and the formal structure of the organization (Robbins, 1990).

In this regard Rossiter (1989, p. 14) notes that "it is relatively easy to change structures and processes but enormously difficult to align the culture with the changes". The most important situational factors that may lead to a new culture in an organization appear to be a dramatic crisis and a turnover of the top management of an organization (Robbins, 1990).

De Carufel (1994) argues that changing the culture of an organization is time consuming and expensive and quite likely to fail. It is much easier in smaller organizations and those where employees are located together. For change to be successful a strong perception for the need to change must exist at all levels with major changes in organizational values often leading to staff turnover (Robbins, 1990).

Two key approaches to organizational change exist, namely organizational development and organizational transformation. Organizational development approaches change as a one-off internal intervention aimed at fixing a problem. Conversely, organizational transformation approaches change as a constant feature of reality that is both ordered and chaotic, evolutionary and revolutionary, and aimed at renewal (Veldsman, 1995).

2.8.2 Factors in organizational change and transformation

Organizational change and transformation is a complex process with a number of factors playing a role. Jackson (1993, p. 34) notes: "In order to build the most appropriate culture it is necessary to have developed a clear idea of both the purpose and competitive advantage of the organization".

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Galpin (1996) suggests that the dimensions of organizational culture can be used as a screen to help an organization identify what cultural components are relevant when bringing about change. Aligning organizational strategy with culture requires a process where overt symbols and visible artifacts, values underlying behaviours and the underlying assumptions of the members of the organization are examined (Rossiter, 1989, p. 15).

Rossiter (1989) argues that if an organization is serious about embarking on a strategy to build a winning work culture four characteristics need to be in place, or at least strived for: (1) authority control needs to be delegated to those doing the work; (2) an interdisciplinary team must be created to involve everyone in the design and delivery of the product; (3) empowerment must take place in that everyone must be allowed to contribute to the performance objectives of the organization; and (4) there must be a move away from people in service of technology to people controlling the technology.

Bergh (1995) emphasises the South African situation in his list of thirteen key factors that need to be addressed in any organizational transformation process:

(i) **Vision lacking or not understood** - the dream of what the organization wants to achieve must be made specific so that employees can understand how their daily activities contribute to this.

(ii) **Insufficient consensus or participation** - all the stake holders need to be engaged so that people do not move out on paths or agendas of their own.

(iii) **Inadequate union engagement** - the employee unions need to view the transformation process positively and understand their role in this.

(iv) **Inadequate understanding of the South African situation** - South Africa has a complex culture and environment which is not necessarily receptive to American and European methods and models of transformation.
(v) *Not creating a powerful enough change group* - the change group needs to represent all the stakeholders and have the necessary authority.

(vi) *Lack of management commitment* - management at all levels has to be fully involved in and back the process of transformation.

(vii) *Insufficient benefits* - employees need to receive both formal (e.g. bonuses and wealth sharing) and informal benefits (e.g. promotions, improvement in workplace conditions, multi skilling, participation) to motivate them to change.

(viii) *Not addressing fears* - addressing fears of the unknown and of job security is important in gaining support for the change process.

(ix) *Not understanding that transformation causes pain* - people at all levels of the organization are pulled from their comfort zones, the duration of which must be kept to a minimum.

(x) *Not establishing a great enough sense of urgency* - urgency is necessary to create the momentum to carry the process to its destination.

(xi) *Not planning for quick results* - early successes are essential in establishing the credibility of a transformation process.

(xii) *Poor communication and marketing* - the transformation process must be communicated and marketed throughout the organization.

Socialization is an important and powerful process in the transformation of organizational culture (Hebden, 1986). The socialization of new members of the organization into the desired culture and the removal of existing members who deviate from the culture is important. However, the removal of cultural misfits should be done carefully after weighing up the costs and benefits of removing talented performers who deviate from the value system (Ivancevich and Matteson, 1996).
2.9 The consequences of organizational change for the employees

While organizational change is aimed at the survival of the organization, it involves a great deal of adaption on the part of the employees of the organization. Sherman (1993, p. 123) notes that "The era of revolutionary corporate change - still just beginning - promises enormous economic improvements at an exceptionally high cost in human pain".

"All too often organizations give lip service to the human side and focus their attention on the business side of change because many managers find business issues more comfortable to deal with than people issues" (Iacovini, 1993, p. 66). Concurrently Arendt, Landis and Meister (1995) argue that most business changes are undertaken without an understanding how the human element influences the success or failure of a project.

Change involves feelings of anger, sadness, denial and fear as they let go of the old. "For many, the experience is like standing at the edge of a chasm and being challenged to jump to the other side - with nothing in between but fog" (Iacovini, 1993, p. 66). Employees are frightened of relinquishing old work habits, roles, attitudes and values that contributed to their self-esteem. Fears of losing integrity, credibility and reputation are significant for employees at all levels of the organization (Iacovini, 1993). Consequently organizations can cause incalculable stress to workers who fear losing their jobs, or cannot navigate new organization structures or handle new responsibilities (Sherman, 1993).

Resistance to change occurs when employees see no personal benefits in the implementation thereof. During significant change, anxiety and stress are added to feelings of coercion, particularly if employees feel that they are moving from competence to incompetence and from stability to confusion (Katz, 1994). Fritz Perls (cited in Iacovini, 1993, p. 67) used the term "impasse" to describe a psychological state patients experience before they cure themselves involving "holding on to their illness like an old friend, and being afraid of the desired, yet unknown state of wellness". Iacovini (1993) argues that without the proper guidance, employees can become psychologically stuck which will lead them to retreat into the past and become more entrenched in the old culture.
The members of public service organizations are just as susceptible as their counterparts in the private sector to the negative effects of organizational change. McHugh and Brennan (1994, p. 29) note: "It may be argued that, for public sector employees, demands for enhanced 'quality of service', 'value for money' and 'accountability' have assumed new meanings, creating additional job pressures". A study of the impact of job-related stress among managers concluded that "while the pace of change and restructuring continues, organizations seem to have failed in reassessing the nature and priority of managerial work" (cited in Anon., 1997, p. 8).

Thompson (cited in McHugh & Brennan, 1994, p. 29) suggested that externally imposed changes in the public service have placed several demands on managers, namely:

- a more consciously managerial approach;
- adjustment to new systems and processes;
- new relationships;
- new frameworks and remuneration;
- contraction of workers and consequent organizational restructuring;
- emphasis on quality of service provision;
- an increasing customer focus; and
- the explicit management of change and organizational culture shift.

Employees' behaviour can be changed by sweeping bureaucratic, political, or economic pressures, but these are also likely to change the spirit in which work is done and not necessarily for the better (Myerson, 1993). However, organizations can successfully make changes if they skilfully honour and acknowledge the human needs of their employees (Iacovini, 1993).
2.10 Organizational change in the SAPS

2.10.1 The organization

Policing in South Africa has a long and turbulent history that goes back as far as 1910. After the formation of the Union of South Africa attempts were made to amalgamate the different urban and rural police forces, culminating in the formation of a national force in 1913 (Mufamadi, 1995).

From 1948 onwards the government followed a policy that led to the formation of various self-governing territories which resulted in fragmented policing. The fragmentation of policing achieved new heights from 1976 onwards when the so-called “homelands” of Transkei, Ciskei, Venda and Bophuthatswana, as well as the six self-governing territories, established their own autonomous police forces (Mufamadi, 1995).

Mufamadi (1995, p. 3) notes that the various police agencies, and especially the South African Police (SAP) “were increasingly utilised to enforce unacceptable laws and to quell political opposition by force. They became a symbol of oppression for many communities”.

On 27 April 1994 multi-party elections were held that led to the implementation of a democratic constitution based on a bill of fundamental human rights. The policies, practices and structures of the past were problematic and in conflict with the new democracy (Mufamadi, 1995). Fivaz (1996, p. 1) summarises the situation:

It is common knowledge that the socio-political transformation the country has undergone, and is still undergoing since the election on 27 April 1994, together with the prevailing levels of crime and violence, necessitated a new vision for, and fundamental changes in policing in South Africa.

A major step in the change process was the adoption of the South African Police Service Act (Act 68 of 1995) which amalgamated the eleven former police agencies into a single organization, the SAPS.
2.10.2 Manifestations of organizational change in the SAPS

The change process in the SAPS can be viewed from two perspectives. The “White Paper on the Transformation of the Public Service” (1995, p. 11) makes a distinction between transformation and the process of administrative reform:

Transformation can be distinguished from the broad, long-term and ongoing process of administrative reform which will be required to ensure that the South African public service keeps in step with the changing needs and requirements of the domestic and international environments.

The process of administrative reform is ongoing and aimed at keeping pace with the demands of a changing world, while the transformation process is short term and aimed at achieving specific goals. These parallel the two processes of organizational change and development identified by Veldsman (1995), namely that of organizational development, which is a one off intervention, and organizational transformation, which is a constant feature of organizational reality. This distinction is reflected in the organizational change process in the SAPS with Fivaz (1996, p. 2) listing the “transformational priorities” of the SAPS as follows:

- developing/enhancing consultation and participation;
- education, development and training;
- developing a people oriented approach to personnel management;
- optimising of functions, methods and procedures;
- effective information management;
- optimising use of resources (cost-effective and priority directed);
- enhancing representivity and equal opportunity; and
- establishing effective communication.

The organizational change process in the SAPS is illustrated by means of Smit and Cronje’s (1992) classification of the manifestations of organizational culture:
Table 2.3 Manifestations of cultural change in the SAPS

<table>
<thead>
<tr>
<th>MANIFESTATION</th>
<th>DESCRIPTION</th>
</tr>
</thead>
</table>
| 1. Symbols    | - the amalgamation of the eleven former police agencies into a single organization  
|               | - new uniform and insignia  
|               | - new rank structure  
|               | - the renaming and restructuring of departments in many instances |
| 2. Rituals    | - demilitarisation of the organization  
|               | - ceremonies have been scrapped that are associated with the previous socio-political system |
| 3. Ideologies | - an emphasis on equality and affirmative action  
|               | - the belief, values and moral principals that underlie decision making are guided by the constitution  
|               | - an emphasis on service quality  
|               | - a new policy of consultation and “community policing”  
|               | - a move towards “professionalising” the service |
| 4. Language   | - the dominant language in the organization is no longer Afrikaans  
|               | - many words and phrases of the past are no longer acceptable (e.g. racist and derogatory terms) |
| 5. Tales      | - the stories that dominate in the organization are no longer linked to experiences under the previous socio-political system |
| 6. Assumptions| - wide spread debate about the issues of how policing should be conducted  
|               | - the use of force is only acceptable in extreme cases |
7. Relationships

- the new rank structure has altered the way in which persons communicate in the organization
- a move away from an "us and them" attitude and a move towards a closer relationship with the community
- the incorporation of members from forces that formerly opposed the SAP such as Apla and Mkonto weSizwe (the military wings of the African National Congress and Pan African Congress respectively)
- employer employee relationships have altered dramatically with the recognition of several trade unions

8. Humour

- many forms of humour are no longer openly tolerated, especially those relating to political and racial issues

The manifestations of change within the organization are both formal and informal in that many are reflections of the changes taking place in South African society as a whole. Due to the size of the organization (approximately 132,000 members) and because no culture survey has been conducted to date, it is practically impossible to estimate the degree of penetration that the change initiatives have had in the organization.

2.11 Concluding remarks

Organizational change and transformation represent huge disruptions for all those involved. Although it presents many opportunities, it holds even more dangers for the members of organizations in terms of mental health. Despite this, the emphasis of research in this field is on the study of the change process, rather than the effects on those involved (e.g. Veldsman 1995). South Africa as a country, and the SAPS as an organization, have been going through dramatic changes in recent years that have altered the very fabric of society. However, little attempt has been made to determine the effect of all these changes on the people involved.
3.1 Introduction

By 1980 there were more than 150,000 articles and books concerned with stress and stress management (Richman & Rosenfeld, 1987) and since then its study has become one of the most active research topics in the social sciences (Coyne & Downey, 1991). Despite this the precise nature of stress still eludes definition and there is no consensus as to what it encompasses (Pollock, 1988). A view even exists that stress is a manufactured concept that has become a "social fact" (Pollock, 1988), that is a self fulfilling prophecy. As Farnham (1991, p 107) puts it: "It's hip to be stressed".

3.2 What is stress?

The concept of stress is possibly derived from the Latin word *stringere*, which means to draw tight. The word was first used, in its present form, around the fourteenth century when the English poet Robert Manning wrote "(T)hat floure ys kalled aungleys mete that God (g)ate the folke to ete What (th)ey were yn wilderness Forty wyntyr, yn hard stress" (cited in Cox, 1978, p. 2). However, stress only achieved technical importance in the 17th century in the work of the physicist-biologist Robert Hook. He was concerned with how manmade structures ought to be designed to carry heavy loads to enable them to resist the forces of the environment (stress) that lead to strain on these structures (Lazarus, 1993).

Stress can be viewed in a number of ways. It is generally conceptualised by one of three approaches, namely a stimulus that is external to the individual, as a response or reaction elicited in an individual, or a dynamic interaction between the individual and the environment (Sergay, 1990).
3.2.1 Stress as a stimulus

The Concise Oxford Dictionary of Current English (Allen, 1990, p. 1206) includes the following in its definition of stress: "a pressure or tension exerted on a material object", "a demand on physical or mental energy", "distress caused by this (suffering from stress)", "Mech. force per unit area exerted between contiguous bodies, or parts of a body", and "subject to mechanical or physical or mental stress". Implicit in this definition is a model which views stress as a constraining force acting on a person attempting to cope. This is also a popular scientific formulation of the concept of stress, namely the stimulus approach or "engineering analogy" (Cox, 1978, p. 2).

Stress is viewed as an outside pressure, either physical or psychological (Fisher, 1986). It is regarded as some characteristic, event or situation in the environment that results in potentially damaging consequences for the individual (Ivancevich & Matteson, 1996). Various disturbing features in the environment (i.e. stressors) impinge on the individual and lead to change in that person (Bennett, 1989). This perspective views stress as an independent variable with a simple static model used to explain the concept (Cox, 1978).

Figure 3.1 Stimulus-based model of stress

-27-
The roots of this view can be traced back to the 14th century when the term stress was used to indicate hardship or adversity. The stimulus-based idea of stress came into prominence in the 20th century with the idea of "shell shock" in World War I which was attributed to brain damage caused by the sound of exploding shells (Cox, 1978). The conditions of "battle fatigue" or "war neuroses" were classified as the emotional breakdown experienced due to the stress of combat (Lazarus, 1993). Sir Charles Symonds (cited in Cox, 1978, p. 17) described the psychological disorders in RAF flying personnel during World War II as follows: "It should be understood once and for all that (flying) stress is that which happens to the man, not that which happens in him, it is a set of causes, not a set of symptoms".

A number of theories that attempt to classify stress fall into the realm of stimulus based approaches to stress:

3.2.1.1 The engineering analogy

Walter Connor (cited in Hobfoll, 1989, p. 91), was concerned with the effects of cold, lack of oxygen and other environmental stressors on organisms. He concluded that although initial or low levels of stress could be withstood, prolonged or severe stressors lead to a breakdown of biological systems.

This model is borrowed from the physical sciences (Ivancevich & Matteson, 1996). The engineering-type model draws a parallel with Hooke's Law of elasticity. This physical science law describes how loads deform metals, with the main factors being the load (or demand) which is placed on the metal, and strain, the deformation that results. The law states that if the strain resulting from a given stress falls within the "elastic limit" of the metal, no damage will occur and the metal will return to its original state. However, if the strain exceeds this limit some permanent damage will result (Cox, 1978).
The implication of this analogy is that just as physical matter has an elastic limit, people can resist stress up to a point, but if this is exceeded, some permanent physiological and psychological damage may result (Hobfoll, 1989). There appears to be a difference in the resistance to stress between individuals, and the levels of stress tolerable to one person, may be completely intolerable to another (Cox, 1978).

3.2.1.2 Welford: Performance and demand

Another theorist who falls into this school of thought is Welford. He proposed that stress arises when there is a departure from optimum conditions of demand that are difficult or impossible for the person to correct. According to this perspective sub-maximal performance is indicative of stress that exists due to either too high or too low levels of demand (Cox, 1978).

This model emphasises that both positive and negative departures from optimum are important. If an individual’s performance is less than maximal, it may be due to either too high or too low levels of demand. Man, like most organisms, appears to function best under conditions of moderate demand (Cox, 1978).

Figure 3.2 Possible relationships between performance and demand
3.2.2 Stress as a response

After World War II it became evident that situations in normal life could lead to effects comparable to those of combat. This was in line with the views of positivism and behaviouralism that dominated the American academic psychology of the day. As a result the view arose that stress was the result (dependant variable) of demands placed on the system (Lazarus, 1993).

This approach sees stress as a response to some stimulus called a stressor (Ivancevich & Matteson, 1996). Studies adopting this approach are concerned with the specification of the response, or pattern of responses (dependant variable), that can be regarded as evidence that a person has been under pressure from the environment (Cox, 1978).

The work of some of the most prominent theorists in the field of stress can be classified under this approach, including Selye, Holmes and Rahe.
3.2.2.1 Hans Selye

Hans Selye is regarded as "the father of stress research" (Bennett, 1989, p.22). His view of stress as a nonspecific response of the body to any demand made upon it was the main contributor to response-based approach to stress (Dubey & Kumar, 1986). Selye labelled the defence reaction to stress the General Adaption Syndrome (GAS) (Ivancevich & Matteson, 1996). This stress response consists of three phases: "In the first phase (alarm reaction), the organism exhibits an initial lowered resistance to stress or shock. If the stress persists, the organism shows a defensive reaction or resistance (resistance phase) in an attempt to adapt to stress. Following extensive exposure to stress, the energy necessary for adaptation may be exhausted, resulting in the final stage of the GAS - collapse of adaptation (collapse phase)" (Carson, Butcher & Coleman, 1988, p. 149).

Figure 3.4 The General Adaption Syndrome (GAS)
The GAS places extraordinary demands on the body, and the more frequent or prolonged the reaction, the more susceptible a person becomes to fatigue, disease, aging, and other negative consequences (Ivancevich & Matteson, 1996).

Selye places a critical emphasis on the nonspecificity of the stress response with three basic ideas built into his concept of stress (Carson et al., 1988):

(i) the physiological response to stress does not depend on the nature of the stressor, representing a universal pattern of defence reactions that serve to protect the person or animal;

(ii) the defence reaction, with continual or repeated exposure to stress, progresses through three identifiable stages known as the GAS; and

(iii) if the defence response is severe and prolonged it will result in disease states.

Selye's approach to stress has been criticised on several grounds:

- The idea that the reaction of humans to stress is uniform employs illogical deductive reasoning, i.e. that an organism is only under stress when a phase of the GAS occurs (Hobfoll, 1989);

- any condition that leads to physiological variation could be called "stressful", including happiness or exercise (Allman, 1985); and

- that the approach ignores the role of psychological processes (Cox, 1978).
The other important theorists influencing the response-based perspective are Holmes and Rahe who were interested in the relationship between "life events" and illness. They postulated that when an individual undergoes many changes, or a few more stressful changes, the person's health is likely to suffer at some point. This led to the development of the Schedule of Recent Life Events that was later revised and titled the Social Readjustment Rating Schedule (SRRS) (Ivancevich and Matteson, 1996).

They argued that the effects of stress are cumulative, that is the higher a person's score of "life change units" (LCU's) the greater the risk of becoming ill (cited in Pollock, 1988, p. 382). Life events are those events that create a demand for change in a person's life and that occur over a finite period of time.

Holmes and Rahe (cited in Ivancevich & Matteson, 1996, p. 655) found that subjects reporting LCU's totalling 150 points or less generally had good health during the following year. However, those reporting 150 to 300 points had approximately 50% chance of developing a serious illness, and for those with more than 300 points a 70% chance existed. However most studies have found relatively low correlations between total scores and major health problems during the following year (Ivancevich & Matteson, 1996).

Holmes and Rahe have been criticised by Pollock (1988) on the grounds that the claimed causal effect between life events and illness rests on association; the meaning of life events are not taken into account; and long-term chronic life difficulties are not taken into account. Wagner, Compas and Howell (1988) found that daily events mediate the effects of major life events. Major life events lead to an increase in daily life events, that in turn lead to an increase in psychological symptoms. The problems experienced by this approach are summarised by Cox (1978, p. 2) where he states "The lack of straightforward correlation between the various components of the response or situations is now infamous". All indications were that there must be some other variable intervening in the stress process.
### The Social Readjustment Rating Schedule

<table>
<thead>
<tr>
<th>RANK</th>
<th>LIFE EVENT</th>
<th>MEAN VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Death of spouse</td>
<td>100</td>
</tr>
<tr>
<td>2</td>
<td>Divorce</td>
<td>73</td>
</tr>
<tr>
<td>3</td>
<td>Marital separation</td>
<td>65</td>
</tr>
<tr>
<td>4</td>
<td>Jail term</td>
<td>63</td>
</tr>
<tr>
<td>5</td>
<td>Death of close family member</td>
<td>63</td>
</tr>
<tr>
<td>6</td>
<td>Personal injury or illness</td>
<td>53</td>
</tr>
<tr>
<td>7</td>
<td>Marriage</td>
<td>50</td>
</tr>
<tr>
<td>8</td>
<td>Fired at work</td>
<td>47</td>
</tr>
<tr>
<td>9</td>
<td>Marital reconciliation</td>
<td>45</td>
</tr>
<tr>
<td>10</td>
<td>Retirement</td>
<td>45</td>
</tr>
<tr>
<td>11</td>
<td>Change in health of family member</td>
<td>44</td>
</tr>
<tr>
<td>12</td>
<td>Pregnancy</td>
<td>40</td>
</tr>
<tr>
<td>13</td>
<td>Sex difficulties</td>
<td>39</td>
</tr>
<tr>
<td>14</td>
<td>Gain of new family member</td>
<td>39</td>
</tr>
<tr>
<td>15</td>
<td>Business readjustment</td>
<td>39</td>
</tr>
<tr>
<td>16</td>
<td>Change in financial state</td>
<td>38</td>
</tr>
<tr>
<td>17</td>
<td>Death of close friend</td>
<td>37</td>
</tr>
<tr>
<td>18</td>
<td>Change to different line of work</td>
<td>36</td>
</tr>
<tr>
<td>19</td>
<td>Change in number of arguments with spouse</td>
<td>35</td>
</tr>
<tr>
<td>20</td>
<td>Mortgage over $10,000</td>
<td>31</td>
</tr>
<tr>
<td>21</td>
<td>Foreclosure on mortgage loan</td>
<td>30</td>
</tr>
<tr>
<td>22</td>
<td>Change in responsibilities at work</td>
<td>29</td>
</tr>
<tr>
<td>23</td>
<td>Son or daughter leaving home</td>
<td>29</td>
</tr>
<tr>
<td>24</td>
<td>Trouble with in-laws</td>
<td>29</td>
</tr>
<tr>
<td>25</td>
<td>Outstanding personal achievement</td>
<td>28</td>
</tr>
<tr>
<td>26</td>
<td>Spouse beginning or stopping work</td>
<td>26</td>
</tr>
<tr>
<td>27</td>
<td>Beginning or ending school</td>
<td>26</td>
</tr>
<tr>
<td>28</td>
<td>Change in living conditions</td>
<td>25</td>
</tr>
<tr>
<td>29</td>
<td>Revision of personal habits</td>
<td>24</td>
</tr>
<tr>
<td>30</td>
<td>Trouble with boss</td>
<td>23</td>
</tr>
<tr>
<td>31</td>
<td>Change in work hours or conditions</td>
<td>20</td>
</tr>
<tr>
<td>32</td>
<td>Change in residence</td>
<td>20</td>
</tr>
<tr>
<td>33</td>
<td>Change in schools</td>
<td>20</td>
</tr>
<tr>
<td>34</td>
<td>Change in recreation</td>
<td>19</td>
</tr>
<tr>
<td>35</td>
<td>Change in church activities</td>
<td>19</td>
</tr>
<tr>
<td>36</td>
<td>Change in social activities</td>
<td>18</td>
</tr>
<tr>
<td>37</td>
<td>Mortgage loan less than $10,000</td>
<td>17</td>
</tr>
<tr>
<td>38</td>
<td>Change in sleeping habits</td>
<td>16</td>
</tr>
<tr>
<td>39</td>
<td>Change in number of family get-togethers</td>
<td>15</td>
</tr>
<tr>
<td>40</td>
<td>Change in eating habits</td>
<td>15</td>
</tr>
<tr>
<td>41</td>
<td>Vacation</td>
<td>13</td>
</tr>
<tr>
<td>42</td>
<td>Christmas</td>
<td>12</td>
</tr>
<tr>
<td>43</td>
<td>Minor violation of the law</td>
<td>11</td>
</tr>
</tbody>
</table>

The number of life change events that a person has experienced in a given period of time, say one year, is measured by the total number of life change units (LCU's). These units result from the addition of the values (shown in the right-hand column) associated with events that the person has experienced during the target period.
3.2.3 The transactional (cognitive) approach to stress

In the 1950's it became increasingly clear to researchers that stressful conditions did not lead to dependable results. This led to a greater focus on individual differences resulting in the inclusion of the element of subjective individual cognitive appraisal into the stress model (Lazarus, 1993).

Stress, defined cognitively, is the relationship between the individual and the environment where the environment is appraised as taxing or exceeding personal resources and therefore affecting the individuals' well-being (Kaplan, 1990). Stress is thus a psychological state derived from an individual's appraisal of his or her ability to cope with the demands of the environment (Cox, 1978).

The transactional approach takes account that any factor in the environment can affect those exposed (Freeman, 1988). This perspective implies a dynamic process involving environmental demands, the constitution of the individual, adequacy of defence mechanisms, and cognitive and perceptual appraisals of the situation (Allman, 1985).

At the one extreme are stressors easily definable by their physical attributes and relatively independent of an individual's evaluation. The other extreme comprises those stressors that are primarily created by an individual's cognitive activities, independent of any environmental input (Freeman, 1988).

Theorists whose ideas fall within this school of thought include Howarth, McGrath, Lazarus, Cox and McKay.
3.2.3.1 Howarth

Howarth (cited in Cox, 1978, p. 21) suggests that four theoretical views of stress exist that can be regarded as a further development of the transactional approach, namely:

(i) **Biological** - stress occurs when man’s lifestyle differs too much from that which primitive man adapted to through evolution.

(ii) **Developmental** - the person is not prepared by their upbringing and education for the demands placed on him by his style of life;

(iii) **Social** - the person is exposed to conflicting social pressures or forced to play inconsistent roles.

(iv) **Phenomenological** - the life style of the person fails to match his or her aspirations or ideals.

3.2.3.2 McGrath

McGrath regards stress as a consequence of changes in the relationship between an individual and the environment. Stress is not just an emotional state, but evolves from a particular reaction of the organism to environmental events. The potential for experiencing stress exists when a situation is perceived as presenting a demand that threatens to exceed a person’s capacities and resources for coping, and when it is important that a person meets that demand (cited in Van Staden, 1984, p. 3).

McGrath’s view of stress is illustrated by the following formula (Cox, 1978):

\[
S = Co(D - C)
\]
Stress experienced (S) is a function of the degree to which perceived demand (D) exceeds perceived capability (C) and the importance of coping (Co). The implication is that a small discrepancy between the perceived demand and perceived capability will not be perceived as very stressful unless coping is vital (Cox, 1978).

According to Van Staden (1984) McGrath's transactional view of stress can be seen as a series of four events:

(i) a demand is developed in the socio-physical environment;

(ii) the conscious or unconscious perception of the external demand;

(iii) the response of the individual on physiological, psychological, behavioural and socio-interactive levels, and

(iv) consequences for the individual and larger socio-physical environment.

3.2.3.3 Lazarus: Demand and adjustment

Lazarus (1993, p. 10) argues that because the two fields share ideas "psychological stress theory is fundamental to a theory of emotion" and that they could be joined to good effect as the field of "emotion theory". He states that the recognition of fifteen or so specific emotions, rather than several dimensions of stress, greatly increases what can be said about individual coping and adaptation.

Stress occurs when the demands on a person tax or exceed his or her resources (Lazarus, 1993). The emphasis is that stress depends not only on external conditions, but also on the constitutional vulnerability of the person including the adequacy of cognitive defence mechanisms (Cox, 1978).
Lazarus (1993, p. 12) proposes a "cognitive-motivational-relational theory of emotion". This is based on the idea that each emotion is brought about by an appraisal of the personal significance of an adaptional encounter. Particular emphasis is placed on an individual's appraisal of the situation, and on the role of frustration, conflict and threat. The achievement of relational meaning is obtained through appraisal and therefore the particular emotion experienced depends on an individual's thoughts (Lazarus, 1993).

Frustration is the thwarting or delaying of some important ongoing activity, or of the attainment of some important goal; conflict is the simultaneous presence of two or more incompatible action tendencies or goals; threat is the anticipation of harm occurring; and harm is "physical, psychological or social damage" (Cox, 1978, p. 23). The intensity of the threat relies on how well the person feels he can deal with danger or harm that may occur.

Lazarus's model distinguishes between three appraisal processes that occur at the different stages of a stress related experience (Van Staden, 1984):

(i) **Primary appraisal** - a person is exposed to potentially stressful situations and has to make judgements about the possible threats, challenges or harm that may be inherent in the situation.

(ii) **Secondary appraisal** - if the situation is judged to be stressful, the individual assesses different ways of coping with these perceived threats.

(iii) **Reappraisal** - as the situation develops or changes occur and information becomes available which may be relevant to the individual's relationship with the situation, reappraisal may take place.

Van Staden (1984) points out that coping involves changing the nature of the person-environment relationship, internally by changing perceptions or actions, or externally by changing the threatening aspects of the environment.
3.2.3.4 Cox and McKay: Person-environment transaction

Cox (1978, p. 18) argues that stress can be best described as "a complex and dynamic system of transactions between the person and his environment". Cox and McKay describe their approach to stress "transactional" to emphasise the active role played by the person with his environment and that the consequences of his actions are important (cited in Cox, 1978, p. vi).

Cox (1978) notes that the system has five recognisable stages:

**Stage one:** Represents the sources of demand, both internal and external, relating to the person and is part of the environment. "A person has psychological and physical needs, and the fulfilment of these is important in determining his behaviour" (Cox, 1978, p. 18).

**Stage two:** This stage constitutes the person's perception of these demands and of his ability to cope with them. Stress exists when an imbalance between perceived demand and the perceived ability to cope occurs. Cognitive appraisals are important, in that the imbalance is not between demand and actual capability, but between perceived demand and perceived capability.

**Stage three:** The person's response to stress, that is the methods of coping available to the person, are relevant here. The perceived imbalance is accompanied by the emotional (subjective) experience of stress. This in turn is accompanied by cognitive and behavioural attempts to reduce the stressful nature of the demand.

**Stage four:** Concerns the consequences of the coping response. Both the actual and perceived consequences are important. It is suggested that stress only occurs if failure to meet demand is important.

**Stage five:** Comprises the feedback that occurs throughout all other stages in the stress system that shapes the outcome of each of these stages.
Cox (1978) notes that one of the most important examples of feedback is that of the effectiveness of the stress response in coping. Inappropriate or ineffective coping responses will prolong or increase the experience of stress. "It is suggested that functional and structural damage can occur as a result of a prolonged or severe experience of stress" (Cox, 1978, p. 20).

The model is not without its faults. One of the authors of the model, Cox (1978, p. 23), notes a weakness when he states: "Perhaps it does not account for situations where action (perhaps coping) places such a severe demand on the body that physiological fatigue or damages are caused without the immediate involvement of other more psychological processes".
3.2.3.5 Overview of the stress models

Neither the stimulus nor response-based models appear to provide an adequate explanation of the stress process. Both these approaches are mechanistic in nature in that they assume that stress is a force in the environment or a reaction thereto respectively. If either of these models were valid, we could simply conduct a survey of the number of stressors in a particular environment to determine the levels of stress. However this is not possible as the predictor validity of these models has been notoriously bad (Cox, 1978).

The transactional approaches to viewing stress are more valid in that the role of human cognition is brought into play. These models view stress as an interaction between the individual and the environment involving appraisal implying that cognition plays an important role (Kaplan, 1990).

The question then arises whether stress can be measured for a group of individuals if individual cognition plays such an important role. If one accepts the notion of organizational culture as "beliefs and values shared by people in an organization" (Smit & Cronje, 1992, p. 383) or "a pattern of basic assumptions - invented, discovered, or developed by a given group as it learns to cope with the problems of external adaption and integration..." (Schein, 1985, p. 9) one must accept that being a member of a particular organization or group influences individual cognition.

The model this study uses is that of Cox and McKay that views stress as "a complex and dynamic system of transactions between the person and his environment" (Cox, 1978, p. 18). This is also the model that the "Experience of work and life circumstances questionnaire" (WLQ), used to measure stress in this study, is based on (discussed in Chapter six).
3.3 Stress and organizational change

Stress and change are intimately linked. All the models discussed thus far refer to some or other change or disruption in the environment of the individual, whether actual or perceived. Change involves demands placed on the individual by the environment, both external and internal, and the person's perceived ability to cope with these (Cox, 1978).

References relating organizational change to stress occur in the literature frequently. Rosch (1992, p. 14) who argues that "the accelerated pace of modern lifestyles has subjected us to frequent and intense stress". Similarly Arendt, Landis and Meister (1995) argue that change, both positive and negative, causes stress.

Numerous situations related to organizational change and transformation have been linked to stress. Rosch (1992) identifies the drastic changes in the way business is conducted as a possible source of stress. This is supported by LeCraw (1992) who argues that the impact of organizational downsizing and restructuring is considerable amounts of stress for the remaining employees. "Organizational changes such as redundancies, introduction of new technology and loss of key personnel place extra demands on managers and increase stress" (Anon., 1997, p. 8).

Public sector organizations are specifically referred to by McHugh and Brennan (1994, p. 245) where they state: "It may be argued that many individuals within public sector organizations perceive the traumatic changes which have taken place to be imposed upon them by external forces and to be a cause of deep uncertainty regarding the future. ..... Consequently, it would seem fair to suggest that the cumulative spiral of pressures placed on an organization’s members at this time will lead to wide spread employee stress".

Factors in the change process that can lead to increased stress include a poor understanding of the need for change, the absence of a shared future vision, inadequate leadership, lack of involvement in the planning of change, fear of personal redundancy or status loss, shortfalls in management skills, change overload and insufficient training (Litchfield, 1995).
The SAPS has been undergoing drastic changes as an organization (see table 2.3), experiencing the majority of scenarios discussed above. It follows logically that these changes have placed a great number of demands on the members of the organization in that they are required to adapt to these changes. Whether these have led to increased levels of stress is one of the questions this study aims to address. This cannot simply be assumed in the light of the emphasis that the transactional approach places on the role of cognition in the stress process.

3.4 Concluding remarks

The aim of this chapter was to give an overview of the field of stress and how it is related to organizational change. It would appear that both the stimulus and response-based approaches to stress have inadequacies. The alternative offered to these is the interactional approach in which cognition plays a strong role. Irrespective of the approach from which it is viewed, it appears that many believe stress to be strongly related to organizational change. This study is based, to a large extent, on the aforementioned statement. It is believed that the changes that the SAPS is undergoing are placing coping demands on the members of the organization and thereby contributing to an increase in stress levels.
CHAPTER 4: ANXIETY

4.1 Introduction

The term "anxiety neurosis" was coined by Freud nearly a century ago. He identified two forms of anxiety, namely that which results from dammed-up libido and secondly the diffuse sense of worry or dread that originates from a repressed thought or wish (Kaplan, Sadock & Grebb, 1994).

Anxiety is a term used to describe an emotional condition characterised by feelings of tension, nervousness, fear, concern, and uneasiness (Munsinger, 1983). This is accompanied by increased activity in the autonomic nervous system as well as certain behavioural and physiological changes (Sarason & Sarason, 1984).

Different types of anxiety have been distinguished. These vary between positive forms such as essential anxiety and creative anxiety; and negative forms that include basic anxiety, chronic anxiety, neurotic anxiety, acute anxiety and job anxiety (Rigby, 1989).

4.2 Theories of anxiety

Sweet, Giles and Young (1987, p. 39) note: "The construction of a valid conceptualization of anxiety has been a goal of psychiatric endeavour since the advent of Freud’s pioneering work". The result has been that a number of theoretical perspectives have attempted to describe and explain the concept. These perspectives include psychoanalytic, behavioural, cognitive and existential theories:
4.2.1 Psychoanalytic theories

Kaplan *et al.* (1994) note that within the psychoanalytic school of thought anxiety is seen as falling into four major categories that are dependant on the nature of the feared consequences, namely: (i) id or impulse anxiety, (ii) separation anxiety, (iii) castration anxiety and (iv) superego anxiety.

The father of the psychoanalytic school of thought was Sigmund Freud whose views on anxiety can be traced back to his 1895 paper “Obsessions and phobias” and book “Studies in hysteria”, through to his 1926 book “Inhibitions, symptoms, and anxiety” (Kaplan *et al.*, 1994, p. 575).

Initially, Freud conceptualised anxiety as “dammed-up libido” which lead to the condition of actual neurosis. However, in his 1926 book Freud argued that anxiety is a signal to the ego to take defensive actions against an unacceptable drive that is pressing for conscious representation and discharge. If this process is not successful neurosis is the result (Kaplan *et al.*, 1994).

Later he developed the structural model where he introduced the notion of a second type of anxiety, namely signal anxiety. This form of anxiety operates at an unconscious level and serves to mobilise the resources of the ego to avert danger, either internally or externally. Neurotic symptoms are the result of the partial failure of the ego to cope with distressing stimuli (Kaplan, *et al.*, 1994).

Several alternative viewpoints exist among theorists constituting the psychoanalytic school of thought:

Carl Jung regards anxiety as a fear of being dominated by the collective unconscious, in that the threat of irrational coming to the fore leads to anxiety (Sarason & Sarason, 1984).

Karen Horney saw anxiety as arising from basic anxiety experienced in the childhood years. This anxiety has its source in a negative parent-child relationship that affects the individual’s feeling of security (Horney, 1950).
Otto Rank traces all anxiety back to the trauma of birth (Kaplan et al., 1994). He theorised that anxiety arises from the individual's refusal to divorce him or herself from his or her immediate position of security (Sarason & Sarason, 1984).

Harry Stack Sullivan places the emphasis on the early mother child relationship with the transmission of the mother's anxiety to the infant (Kaplan et al., 1994). He regards anxiety as "the great disjunctive force in interpersonal relations" that has its source in the physical or psychological absence of the mother, the most important figure during the childhood years (cited in Oosthuizen, 1991, p. 66).

4.2.2 Behaviourist theories

The behaviourist school of thinking sees anxiety as a conditioned response to a specific environmental stimulus. Classical conditions, in the form of repeated negative experiences, and social learning, in the form of the imitation of parental anxiety responses, are applicable (Kaplan et al., 1994).

Dollard and Miller, for example, see anxiety as motivation or incentive. They distinguish between primary motivators such as hunger, thirst and sex, and secondary motivators such as anxiety learnt from the environment through conditioning (Peché, 1975).

4.2.3 Cognitive approaches

The cognitive school of thought sees anxiety as faulty, distorted, or counterproductive thinking patterns that accompany or precede maladaptive behaviours and emotional disorders (Kaplan et al., 1994).
4.2.4 Existential theories

The existentialists regard the individual as a living, existing, experiencing totality that simultaneously thinks and has a will. The emphasis is on the idea that the individual is always evolving and that a refusal to grow will lead to a rigid outlook on life and speed up the development of anxiety (Oosthuizen, 1991).

The central concept of the existential school of thinking is that people become aware of a profound nothingness in their lives. Anxiety is then the person's response to the vast void of existence and meaning in their lives (Kaplan et al., 1994).

Carl Rogers, an important theorist in this school, theorised that anxiety arises when an individual is unable to conduct him or herself in a social situation (Munsinger, 1983).

Another major theorist belonging to this school of thought, Victor Frankl, saw anxiety as closely linked to the freedom to consider alternatives and to carry out these choices. Anxiety is localised in the realization of the gap that exists between the possibilities that can be chosen from and the fact that this leads to realization. The confronting of alternatives is the source of conflict from which anxiety develops (Sarason & Sarason, 1984).

4.3 Associated concepts

Anxiety is not an isolated emotion (Peche, 1975). It is complexly intertwined with a variety of other aspects from which it can be distinguished but not separated (Du Plessis, 1982). Two of the concepts closely related to anxiety are fear and tension.
4.3.1 Fear

Edelman (1992, p. 2) notes: "Historically fear and anxiety were differentiated on the basis of the presence or absence of cues, although the terms are frequently equated in more recent psychological literature".

In 1956 Muckler and O' Kelly (cited in Oosthuizen, 1991, p. 53) differentiated between object-fear and fear that exists without an object, namely anxiety. Object-fear implies an objective fear situation where the body is stimulated by increased sympathetic nervous system activity. The individual can control the threat by means of either physical or psychological adaption. When the feared situation or object disappears so does the individual's fear reaction.

In contrast, anxiety cannot be coupled to a specific object or situation. A fearful experience is implied, but insight into the causal factors is lacking. It is objectless, vague and diffuse and is experienced over a long period (Oosthuizen, 1991). In line with this view McDougal and Brown (1984, p. 342) describe anxiety as "pervasive apprehension without obvious specific cause, vague expectations of impending disaster and specific fears of losing control of the self".

Both fear and anxiety are signals that alert the individual to impending danger. The difference is that fear is a response to an external definite threat that is known, while anxiety is a response to an external, vague unknown threat (Kaplan et al., 1994). Kaplan et al. (1994, p. 575) argue that "The main psychological difference between the two emotional responses is the acuteness of fear and the chronicity of anxiety". Anxiety differs from fear in that it is more chronic in duration and cannot be coupled to a definite object or situation (Plug, Meyer, Louw & Gouws, 1986).

Costello (1976) argues that the use of the term fear should be restricted to encompass specific reflexive behaviours found in animals and humans, while anxiety should be used to encompass the more complex emotional behaviours of humans.
4.3.2 Tension

Schafer (1996, p. 607) defines anxiety as “Mental and physical arousal in anticipation of perceived negative future experience. Usually includes fear and tension. May be chronic or acute”.

The basic tension in an individual is that state between the two extremes of concentration and exertion on the one hand and sleep on the other (Oosthuizen, 1991). It is the tension state when an individual is awake and resting but simultaneously is inactive cognitively, affectively and connotively (Van der Merwe, 1982).

Tension is regarded as an essential condition for the effective functioning of the individual as if it is too low conscious functioning is not effective. If it is too high, as with anxiety, effective functioning is also inhibited due to sensory overloading of the system (Oosthuizen, 1991).

4.4 The dualistic nature of anxiety

Several dichotomies come to the fore when examining the concept of anxiety. These include state and trait anxiety (Cattell & scheier, 1961); cognitive and somatic anxiety (Morris, Davis, & Hutchings, 1981); and normal and pathological anxiety (Kaplan et al., 1994).

4.4.1 State versus trait anxiety

The distinction between anxiety as an emotional state and that of a relatively stable personality trait is made by a number of authors (Edelmann, 1992). Each individual is thought to have a certain level of internal anxiety which is specific to his or her personality constellation and reflects a chronic disposition of traits (A-Trait). This is contrasted with a component of transitory emotional state (Cattell & Scheier, 1961; Spielberger, 1972). This dual-process of conceptualising anxiety has been referred to as Spielberger’s state-trait theory (Slogrove, 1989).
Trait anxiety is defined as "relatively stable individual differences in anxiety proneness" while state anxiety is "characterised by subjective consciously perceived feelings of tension and apprehension and heightened autonomic nervous system activity" (Spielberger, Gorusch & Luschene, 1970, p. 3). It is the predisposition to perceive certain situations as threatening (Slogrove, 1989). Conversely, state anxiety is situation specific denoting how anxious someone feels at a particular point in time. Intensity and direction are applicable in relation to the perception of danger, fear of failure and worry or threat to self-esteem relating to a particular situation (Slogrove, 1989). It is closely associated with the concept of "arousal" which refers to the intensity dimension of behaviour (Spielberger et al., 1970).

State anxiety can be divided into two further dimensions, cognitive and somatic anxiety. Cognitive anxiety (or worry) refers to the cognitive elements of anxiety, while somatic anxiety (or emotionality) refers to indications of autonomic arousal and unpleasant feeling states (Morris et al., 1981).

McReynolds (cited in McDougall & Brown, 1984, p. 342) summarises the ways in which anxiety has been seen throughout history offering two theoretical concepts, "cognitive orientation" and "conditioning orientation". Cognitive orientation stresses the experiences in which some conflict between internal stimuli exists, while conditioning orientation considers anxiety as the result of a fortuitous temporal association with events that are mentally traumatic.

4.4.2 Normal versus pathological anxiety

Another distinction, that between normal and pathological anxiety, is emphasised by Kaplan et al. (1994, p. 573) who state: "When evaluating a patient with anxiety, the clinician must still distinguish between normal and pathological types of anxiety".

Anxiety is normal in that the sensation of anxiety is experienced by virtually all humans. "Because it is clearly to one’s advantage to respond with anxiety in certain threatening situations, one can
speak of normal anxiety in contrast to abnormal or pathological anxiety" (Kaplan et al., 1994, p. 573). Individuals are susceptible to anxiety during any phase of their development (Mathew, 1980). "The feeling is characterised by a diffuse, unpleasant, vague sense of apprehension, often accompanied by autonomic systems, such as headache, perspiration, palpitations, tightness in the chest, and mild stomach discomfort" (Mathew, 1980, p. 12).

At the other end of the continuum is pathological anxiety. Suin (1975) regards anxiety as the corner stone of all psychopathology as it threatens the individual's security, self-assertion, welfare and psychological safety. Pathological anxiety is "an inappropriate response to a given stimulus by virtue of either its intensity or its duration" (Kaplan et al., 1994, p. 573).

The Diagnostic and Statistical Manual (fourth edition) (DSM-IV) of the American Psychiatric Association (APA), (1994), lists a number of anxiety-based disorders. These include panic attack, agoraphobia, panic disorder without agoraphobia, panic disorder with agoraphobia, agoraphobia without history of panic disorder, specific phobia, social phobia, obsessive-compulsive disorder, posttraumatic stress disorder, acute stress disorder, generalised anxiety disorder, anxiety disorder due to a medical condition, substance-induced anxiety disorder and anxiety disorder not otherwise specified.

The DSM-IV (APA, 1994, p. 435) offers the following diagnostic criteria for generalised anxiety disorder:

A. Excessive anxiety and worry (apprehensive expectation), occurring more days than not for at least 6 months, about a number of events or activities (such as work or school performance).

B. The person finds it difficult to control the worry.

C. The anxiety and worry are associated with three (or more) of the following six symptoms (with at least some symptoms present for more days than not for the past six months). Note: Only one item is required in children.
(1) restlessness or feelings of keyed up or on the edge
(2) being easily fatigued
(3) difficulty concentrating or mind going blank
(4) irritability
(5) muscle tension
(6) sleep disturbance (difficulty falling or staying asleep, or restless unsatisfying sleep)

D. The focus of anxiety and worry is not confined to features of an Axis I disorder, e.g. the anxiety or worry is not about having a Panic Attack (as in Panic Disorder), being embarrassed in public (as in Social Phobia), being contaminated (as in Obsessive-Compulsive Disorder), being away from home or close relatives (as in Separation Anxiety Disorder), gaining weight (as in Anorexia Nervosa), having multiple physical complaints (as in Somatization Disorder), or having a serious illness (as in Hypochondriasis), and the anxiety and worry do not occur exclusively during Post-traumatic Stress Disorder.

E. The anxiety, worry, or physical symptoms cause significant distress or impairment in social, occupational, or other important areas of functioning.

F. The disturbance is not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hyperthyroidism) and does not occur exclusively during a Mood Disorder, a Psychotic Disorder, or a Pervasive Developmental Disorder.
4.5 Symptoms of anxiety

Rigby (1989, p. 14) defines anxiety as: "A response of malaise and anguish. It is a feeling of impending doom and is associated with apprehension. Although anxiety may exist in pure form, it is frequently diverted through destructive and futile mechanisms of defence into somatic, mental, emotional and spiritual reactions".

The experience of anxiety involves two components, namely the awareness of the physiological sensation and the awareness of being frightened or nervous (Kaplan et al., 1994, p. 575). On a physiological level anxiety is associated with increased sympathetic nervous system activity with resultant increases in the heart rate, respiration, perspiration and muscle tone (Edelmann, 1992). Kaplan et al. (1994, p. 574) note that several physical symptoms are associated with anxiety:

Table 4.1 Peripheral manifestations of anxiety

<table>
<thead>
<tr>
<th>Symptom</th>
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<tbody>
<tr>
<td>Diarrhea</td>
</tr>
<tr>
<td>Dizziness, lightheadedness</td>
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<tr>
<td>Hyperidrosis</td>
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<tr>
<td>Hyperreflexia</td>
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<tr>
<td>Hypertension</td>
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<tr>
<td>Palpitations</td>
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<tr>
<td>Pupillary mydriasis</td>
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<tr>
<td>Restlessness (e.g. pacing)</td>
</tr>
<tr>
<td>Syncope</td>
</tr>
<tr>
<td>Tachycardia</td>
</tr>
<tr>
<td>Tingling in the extremities</td>
</tr>
<tr>
<td>Upset stomach (&quot;butterflies&quot;)</td>
</tr>
<tr>
<td>Urinary frequency, hesitancy, urgency</td>
</tr>
</tbody>
</table>
4.6 Anxiety and organizational change

Anxiety has been closely related to all forms of change as noted by Kaplan et al. (1994, p. 573) who states: “Anxiety is a normal accompaniment of growth, of change, of experiencing something new and untried, and of finding one’s own identity and meaning in life”. A few individuals thrive on change, but most find uncertainty discomforting. All transitions, even the good ones contain an element of danger with accompanying fear of the unknown, loss, failure and of losing control (Crimando, 1992).

Kaplan et al. (1994) argue that anxiety performs an adaptive function for the individual where it, among others, “warns of threats of bodily damage, pain, helplessness, possible punishment, or the frustration of social or bodily needs; of separation from loved ones; of a menace to one’s success or status; and ultimately of threats to one’s unity or wholeness”.

Anxiety and organizational change go hand in hand. Crimando (1992, p. 68) states: “If it is difficult to assimilate the changes we bring upon ourselves, what of the ones we can’t control - changes that affect something as fundamental as our jobs?” Businesses need to change to achieve healthy growth, but change creates chaos and chaos and its potential translate into transitional anxieties (Gonzalez, 1996). Kaplan et al. (1994) further note that anxiety prompts the individual to take the necessary steps to prevent the threat or lessen its consequences. “Thus, anxiety prevents damage by alerting the person to carry out certain acts that forestall the danger” (Kaplan et al., 1994, p. 575).

Rosch (1992, p. 14) summarises the relationship between organizational change and anxiety where he speaks of the “FUD factor” which is the fear, uncertainty and doubt associated with organizational change. The ambiguity surrounding organizational change provides fertile ground for rumours, negative attitudes and anxiety (Klein, 1994).
4.7 Concluding remarks

The concept of anxiety forms the central theme in neurosis. However, the concept is not as straightforward as it initially appears with a number of dichotomies involved. The distinction between normal and pathological anxiety is important as it emphasises that everyone experiences anxiety, but that extreme levels of anxiety are unhealthy. The dichotomy between state and trait anxiety is also important in that it relates to circumstances that the individual is experiencing. State anxiety is thus closely related to organizational change although trait anxiety is also relevant as it plays a role in the way in which situations are experienced. This study does not distinguish between normal and pathological anxiety. The emphasis rests on state anxiety in that organizational change is hypothesised to be a situation that leads to increased anxiety, pathological or otherwise.
CHAPTER 5: DEPRESSION

5.1 Introduction

Depression is the most pervasive of all psychological maladies (Gotlib & Hammen, 1992). It has been labelled the common cold of psychopathology with one fifth of the adult population having significant symptoms at any one time (Coyne, 1985). However, Coyne (1985, p. 2) notes that "there is a tremendous heterogeneity to what falls under the broad rubric of depression and that there is an arbitrariness to any boundaries that are drawn up on the phenomena"; and that in the light of this "one should probably be sceptical about any decisive statement about the nature of depression".

5.2 The nature of depression

As with anxiety, much controversy and debate exists regarding the nature of depression. The word depression is used to refer to both to a clinical condition and the brief, mild, downward mood swings that all people experience as part of daily living (Willner, 1985). Gotlib and Hammen (1992, p. 131) confirm this stating: "Depression is the same word that is applied to a brief negative mood, an interrelated set of symptoms and experiences, and a medically-defined syndrome".

Several opposing positions exist, of which the continuity hypothesis and the reactive versus endogenic debate are discussed below. These opposing positions demonstrate that definitional problems continue to plague the study of depression (Coyne, 1985).
5.2.1 Depression as a mood versus pathological depression

A significant distinction in the literature is the distinction between depression as a mood and a clinical syndrome. Coyne (1985, p. 3) argues: “As a reference to mood, depression identifies a universal human experience”. Depression, viewed as mood state, is a normal and usually temporary reaction to life’s difficulties such as minor failures, disappointments and disruptions. Conversely the syndrome of depression involves a depressed mood accompanied by a set of additional symptoms that persists over time and causes disruption and impairment of functioning (Gotlib & Hammen, 1992)

On the one hand depression is regarded as a normal part of life experienced by nearly everyone and is associated with losses, frustrations, failures and disappointments (Gotlib & Hammen, 1992). Pearlin (cited in Coyne, 1985, p. 132) states that depression is “intertwined with the values and aspirations that people acquire; within the nature of the situation within which they are performing major roles, such as occupation and family; with the location of people in broad social structures, such as age and class; and the coping devices that they use...”.

The other extreme involves the assertion that depression is one of the most serious mental-health problems, emphasising that it is primarily a biological disturbance or illness, or chemical or biological predisposition (Coyne, 1985). The syndrome of depression is distinguished from normal depression by Coyne (1985, p. 1) where he states: “While people may indeed react to their circumstances with happiness and unhappiness, this is of questionable relevance to the clinical phenomena of depression”.

Roesch (1991, p. ix) notes that “the clinical syndrome of depression as a disease distinct from normal, transient feelings of sadness or grief has been delineated carefully only relatively recently”. “In the clinical context, the term depression refers not simply to a state of depressed mood, but to a syndrome comprising mood disorder, psychomotor changes, and a variety of somatic and vegetative disturbances” (Willner, 1985, p. 35). Similarly Kaplan et al. (1994, p. 303) define depression as a “psychopathological feeling of sadness”.

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Depression is a state of helplessness characterised by passivity and an apparent lack of a capacity for purposeful action (Fisher, 1986). Coyne and Downey (1991, p.402) argue: "We now believe depression is best conceptualized as a recurrent, episodic condition with a heterogeneous cause associated with varying degrees of social impairment, recovery and susceptibility to relapse".

The presence of physical or vegetative symptoms is sometimes taken as the dividing line between the mood state and clinical depression (Coyne, 1985, p. 7). In line with this view Schafer (1996, p. 611) defines depression as: “A multi-facettted experience of lowered energy and motivation, flattened affect, loss of sleep and appetite, and other symptoms”.

Numerous symptoms are associated with depression and are believed to affect the individual on various levels of functioning. Kaplan et al. (1994) argue that psychomotor functions, mood, affect, speech, perceptions and thought are all affected by depression. Thematic contents of depressive cognitions include thoughts of hopelessness, self-criticism, dependancy, inefficacy, unfavourable stress appraisals and self-reports of cognitive failure (Fry, 1984). Similarly Coyne (1985) notes that subjective feelings associated with a depressed mood include being sad, unhappy, blue, low, discouraged, bored, hopeless, dejected and lonely.

Cognitive symptoms associated with depression include “a maladaptive thinking style, negative self-statements and increased self-focus” (Schwarzer, 1984, p. 14). Coyne (1985, p. 6) supports this contention where he states that “depressed persons characteristically view themselves, their situations, and their future possibilities in negative and pessimistic terms”. With the mildly depressed these are in line with reality (Schwarzer, 1984).

Motivation relates to depression in the difficulty that depressed persons have in mobilizing themselves to perform even the most simple tasks (Coyne, 1985). This is related to the social level where depressed persons tend to withdraw from social activities with their close relationships being strained and conflict ridden (Coyne, 1985).
Despite the increased understanding of mood disorders in the late 20th century wide disagreement still exists in defining a suitable classification system for depressive disorders (Beckham, Leber & Youll, 1995, p. 36). The problem of diagnosis is most critical in biomedical approaches with the assumption being that depression is a matter of one or more disease entities with specific etiologies and treatment (Coyne, 1985).

The DSM-IV (APA, 1994, p. 327) presents the following criteria for a major depressive episode:

A. Five (or more) of the symptoms have been presented during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2) loss of interest or pleasure.

Note: Do not include symptoms that are clearly due to a general medical condition, or mood-incongruent delusions or hallucinations.

(1) depressed mood most of the day, nearly every day, as indicated by either subjective report (e.g., feels sad or empty) or observation made by others (e.g., appears tearful). Note: In children and adolescents, can be irritable mood.

(2) markedly diminished interest or pleasure in all, or almost all, activities most of the day, nearly every day (as indicated by either subjective account or observation made by others)

(3) significant weight loss when not dieting or weight gain (e.g., a change of more than 5% of body weight in a month), or decrease or increase in appetite almost every day. Note: In children consider failure to make expected weight gains.

(4) insomnia or hypersomnia nearly every day

(5) psychomotor agitation or retardation nearly every day (observable by others, not merely subjective feelings of restlessness or being slowed down)

(6) fatigue or loss of energy nearly every day
(7) feelings of worthlessness or excessive or inappropriate guilt (which may be delusional) nearly every day (not merely self-reproach or guilt about being sick)

(8) diminished ability to think or concentrate, or indecisiveness, nearly every day (either by subjective account or observed by others)

(9) recurring thoughts of death (not just fear of dying), recurrent suicidal ideation without a specific plan, or a suicide attempt or a specific plan for committing suicide

B. The symptoms do not meet criteria for a Mixed Episode.

C. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning.

D. The symptoms are not due to the direct physiological effects of a substance (e.g., a drug of abuse, a medication) or a general medical condition (e.g., hypothyroidism).

E. The symptoms are not better accounted for by Bereavement, i.e., after the loss of a loved one, the symptoms persist longer than 2 months or are characterised by a marked fluctuational impairment, morbid preoccupation with worthlessness, suicidal ideation, psychotic symptoms, or psychomotor retardation.

As Willner (1985, p. 44) states: "There seems little point in attempting a comprehensive review of the classification of depression, because in addition to being unreliable, many aspects of classification have a very insubstantial empirical basis".
5.2.2 The continuity hypothesis

The question is posed is depression a continuous quantitative syndrome, or are there qualitative differences between mild depression and the more severe clinical syndromes (Gotlib & Hammen, 1992). Willner (1985) argues that it is possible that the word depression is being used to label similar states in its every day and clinical usage. However, he later notes that no reason exists to assume that this is so, as words frequently have different meanings. “It is therefore important to examine what we mean when we say someone is depressed” (Willner, 1985, p. 36).

The continuity hypothesis refers to the view that a depressed mood in otherwise normal persons is quantitatively but not qualitatively different from the depression found in hospitalised patients (Coyne, 1985). “Advocates of psychoanalytic, cognitive and behavioural, and interpersonal and social perspectives on depression have generally assumed a continuum between depressed mood and clinical depression” (Coyne, 1985, p. 4).

On the other hand, the biomedical approach assumes that a discontinuity exists between a normal depressed mood and clinical depression indicated by appropriate biological markers (Coyne, 1985). It is reflected in the fact that while the two groups may be similar in terms of subjective mood they differ concerning anxiety, loss of appetite, sleep disturbances and fatigue. This is because most people may show mild and transient symptoms of depression following stressful conditions, they do not become clinically depressed (Gotlib & Hammen, 1992). Similarly Coyne (1985, p. 9) notes: “Even if one assumes a continuity between normal depressed mood and clinical depression, it may still prove useful to make a distinction between the presence or absence of significant depression”.

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5.2.3 Reactive versus endogenous depression

Another dichotomy encountered in the study of depression is the distinction between endogenous and reactive depression. In this regard Willner (1985) notes that, based on etiology, a distinction can be made between endogenous and reactive depression.

Endogenous depression “has generally been assumed to have a biological etiology with an independence from precipitating life events”; while reactive depression “has generally denoted a depression that follows an environmental event that would be stressful for most persons, or an event that is particularly stressful for reasons idiosyncratic to that particular patient” (Beckham, Leber & Youll, 1995, p. 42).

5.3 Depression and change: The bereavement theories

The bereavement theories are grounded in the psychology of the individual focussing on the losses experienced in times of change (Johansen, 1991). The relationship between depression and grief has been solidly documented (Roesch, 1991). Bereavement and depression are closely related, for example the DSM-IV (APA, 1994) notes that the symptoms associated with major depressive disorder may, in some cases, be accounted for by bereavement. As Schwarzer (1984, p. 14) states: “Most depressions are reactive and are based on the experience of loss or harm”.

A number of losses are associated with organizational change and transformation. Bridges (1986) identifies six types, namely: (i) loss of turf, (ii) loss of attachments, (iii) loss of meaning, (iv) loss of a future, (v) loss of role, and (vi) loss of control.

These theories are helpful in understanding the feelings of loss and depression that accompany organizational change. They are not necessarily used as models of organizational change, but they may aid in the understanding of the dynamics of the organizational change process as it involves loss (Johansen, 1991).
5.3.1 Elisabeth Kubler-Ross

In 1969 Elisabeth Kubler-Ross published the book “On death and dying” (Kubler-Ross, 1969) that focussed on the experiences of terminally ill people, their families, and the people who took care of them. Based on thousands of interviews she developed a five-stage model that attempted to account for the psychological process of dying, both for the dying person and those left behind (Kubler-Ross, 1969):

(i) **Denial** - When the person learns that he or she is dying the initial reaction is one of denial with the typical response being one of “it can’t be”, but is soon followed by partial acceptance.

(ii) **Anger** - Here the person asks “Why me?” and displaces anger in all directions making it difficult for other persons to interact with the dying person.

(iii) **Bargaining** - In this stage the dying person attempts to postpone the inevitable by “striking a deal” with some higher authority.

(iv) **Depression** - The person can no longer deny the signs of approaching death and begins to experience feelings of great loss. These losses are actual losses due to illness and impending losses due to death and are experienced to varying degrees by different persons.

(v) **Acceptance** - If the person has successfully moved through the first four stages he or she will have had the opportunity to express anger and mourn the loss of attachments and friendships. This period is devoid of emotion as the person has accepted and resigned him or herself to death.
Johansen (1991, p. 106) criticises the use of Kubler-Ross’s model in relation to organizational change:

The Kubler-Ross model is a well developed and useful tool when used for its intended purpose, to understand and explain the extremely intimate experience of impending death. However, the difference between the personal experience of death and an organizational change are so great that attempting to use it as such is presumptuous and requires considerable forcing of data for even marginal fit.

However, Johansen (1991) also notes that Kubler-Ross’ theory forms the basis for later bereavement theories and set the trend in the field.

5.3.2 Peter Marris: Loss and change

The basis of Marris’s (1974) theory is that the attachment to others is deeply rooted in the human psyche. Attachments are fostered in childhood serving to create a sense of security and foster the ability to predict and make sense of the world. Changes that disrupt attachments reduce the person’s ability to experience life as meaningful with the response being grief. The impulse to maintain the predictability of life, called “conservatism” is a universal principal of human psychology (Marris, 1974).

Social changes disrupt attachments, decreasing a person’s sense of security resulting in grief. This grief may be manifested in many ways, including, but not limited to, somatic complaints, withdrawal, blaming others for the loss, and hostility towards others not experiencing the same sense of loss. Grief is viewed as an essential process to recover from loss.
In a summary of Marris’ theory Burke (1982) concluded that two types of loss exist, namely loss of the known and loss of control. An unpredictable future is caused by loss of the known where people are forced to exchange security for insecurity. Stress is generated by the need to cope with the new situation. Loss of control over the future is resisted in that when the feeling of freedom to choose is threatened people try to regain it. This need for control is so great that people will forgo any actual advantages of an imposed change in order to maintain a sense of control.

5.3.3 William Bridges: Transitions

Johansen (1991) notes that Bridges was strongly influenced by the work of Marris. Bridges (1980; 1986) distinguishes between the concepts of “change” and “transition” in that change is defined as an event that has a clear start and, while transition is a psychological process that cannot be as well planned and managed as change. Transition has three phases, namely (1) endings, (2) the neutral zone and (3) beginnings.

The ending phase requires that people let go of current beliefs and roles so that they can move to a new situation and is characterised by feelings of grief. Three aspects are involved in this phase, namely disengagement, disidentification and disenchantment. Disengagement involves the severing of relationships with others that result in feelings of grief seen as denial, anger, bargaining and despair. Disidentification involves the loss of role identity and personal meaning. Because of the change, life and events no longer seem to make sense and the meaning and value of how people have identified themselves and their work is questioned. The person can only pass through disenchantment by allowing confusion and pain to run its course (Bridges, 1980; 1986).

In the neutral zone roles, relationships and understandings of the past are gone with nothing to replace them, resulting in feelings of confusion and emptiness. This phase is marked by three components, namely disorientation, disintegration and discovery. Disorientation results from not having a distinct role upon which to base action and decision-making; disintegration from the breaking of relationships; and finally discovery occurs when people start to reorganise and create new structures (Bridges, 1980; 1986).
The final phase in the model is that of the start of new beginnings. The fact that the past is gone is recognised, the loss grieved, a new order found among that which appeared to be chaos. There is a move towards creating new roles and relationships (Bridges, 1980; 1986).

Johansen (1991, p. 103) notes that “Bridges’ theory is unique in that he makes a distinction between the external process of change and the internal psychological process of transition”.

5.4 Depression and organizational change

Marks (1993) argues that depression is one of the major unintended consequences of organizational change. Most people show mild and transient symptoms of depression following stressful conditions (Gotlib & Hammen, 1992). In this regard Roesch (1991) notes that life happenings such as situational changes, lost opportunities and expectations, lost self-esteem, status, reputation, faith and hope can cause depression (Roesch, 1991).

The bereavement theories, especially those of Marris (1974) and Bridges (1980, 1986) emphasise the important role that depression plays in change with the accompanying losses. Bridges (1980, 1986) speaks of change in the environment versus transitions, the psychological process that the individual who is going through change experiences.

The change that the SAPS is going through as an organization can also be viewed as a dual process. The organization is going through a major transformation process in the short term and a longer term reform process aimed at keeping pace with the changing environment (Fivaz, 1996). In Bridge’s (1980, 1986) terms this implies that the members of the organization are caught in a continuous process of transition. It could thus be argued that the members of the organization are in a continual state of flux and thus susceptible to depression.
5.5 Concluding remarks

Depression and organizational change are strongly linked, especially in the light of the bereavement theories. Although depression is used to refer to both a mood state and a clinical entity the distinction is not essential for this study. However, the important differentiation is that between reactive and endogenous depression. The context of organizational change relates most strongly to depression viewed as a reactive mood state, a reaction to changes in the environment that are difficult to adapt to. Thus, the view of depression as a reactive mood state is especially relevant to this study.
CHAPTER 6: RESEARCH METHODOLOGY

6.1 Introduction

The purpose of this chapter is to explain the data collection and analysis procedures used to test the research problem set out in Chapter one. Included are descriptions of the approach, hypotheses, selection of subjects, the data collection techniques and ethical implications.

6.2 Hypotheses

The research aimed to test the following hypotheses:

H1: Organizational change leads to increased stress, anxiety and depression.
H0: Organizational change does not lead to increased stress, anxiety and depression.

H2: Factors associated with organizational change will play a stronger role in the causation of stress, anxiety and depression after change.
H0: Factors associated with organizational change will not play a stronger role in the causation of stress, anxiety and depression after change.

H3: “White” respondents will experience the organizational change more negatively than their “black” and “coloured” counterparts.
H0: “White” respondents will not experience the organizational change more negatively than their “black” and “coloured” counterparts.

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1 The distinction between “white”, “black” and “coloured” respondents was on the basis of information provided by the respondents on the biographical questionnaires. “Indian” respondents were not included because of the small percentage they comprised of the samples.
The reviewed literature indicated that levels of stress (Chapter 3, p. 42), anxiety (Chapter 4, p. 53) and depression (Chapter 5, p. 64) should increase with organizational change and that the causes thereof should be strongly related to organizational change. The decision to include the third hypothesis was based on the fact that many changes instituted are aimed at addressing past inequalities both in the SAPS and in the broad context of South African society.

6.3 The approach

Survey research is a popular social research method (Babbie, 1995). This approach involves the administration of questionnaires to a sample of respondents selected from some population. It is a deductive approach where the researcher begins with a theoretical or applied research problem and ends with empirical measurement and data analysis (Neuman, 1997). Babbie (1995) notes that survey research has the advantages that it is economical in the sense that large amounts of data can be collected and the collected data can be standardised.

The approach followed in this study involved two surveys, one at the beginning of the change process in the organization and the second when the change process was at an advanced stage. The data obtained from the two independent samples was used to test the hypotheses (set out in section 6.2).

6.4 The samples

The sampling method used was an opportunity sample. This was because, as Rosnow and Rosenthal (1996) note, doing probability sampling in research is not always possible. In this study the researcher did not have access to the full population on which the study is based and was thus forced to use an opportunity sample.
The samples used for this study comprised two groups of entry-level managers, from all parts of the country, attending management development training at the Paarl SAPS College during the second halves of 1995 and 1996 respectively. The respondents were requested to fill in the questionnaires, discussed later in this chapter, during training sessions that the researcher facilitated. This resulted in a 100% response rate because the respondents were offered the incentive of time off in exchange for their cooperation.

It is important to note that the change process had already begun by the time the first sample was measured, in that the Minister of Safety and Security’s “Draft policy document” (Mufamadi, 1995) had been distributed in the organization. However, that was the sum total of the change at that stage. In the second half of 1996 the situation had altered drastically in that the majority of changes (discussed in Chapter two) had been, or were in the process of being implemented.

6.4.1 A description of the samples

Due to the availability of respondents, the first sample (n = 241) was larger than the second (n = 170). Various biographical characteristics are compared on the basis of the percentage they comprised of the respective samples:

Figure 6.1 A comparison of the biographical characteristics of the samples
6.5 Operationalizing the variables

Four sets of variables were applicable to this study, namely stress and its causes, anxiety, depression and biographical variables. A brief overview is given of the field of measurement as it relates to each of these constructs, followed by a description of the instrument used to operationalize the variables in this study.

6.5.1 Stress and its causes

6.5.1.1 Measuring stress

Pollock (1988) suggests that the term stress has become so vague that it represents an obstacle, rather than an aid, to research. To overcome such criticisms, theoretically based models of stress require measures of the explanatory constructs that are valid and unconfounded (Kaplan, 1990).

Naturally occurring stressors can be assessed in two ways, namely studies of subjects who have been through a major life event; and studies of all recordable events and difficulties that occur in the lives of the subjects being observed (Theorell, 1989). Stress can be measured by means of physiological measures, self-report data, reports by significant others, and behavioural observations. Nevertheless, "real life" is difficult to study, as it never allows itself to be standardized (Theorell, 1989).

Physiological measurements of stress involve the measurement of physiological or chemical changes in the body. Bassett, Marshall and Spillane (1987) found that salivary and urinary cortisol levels, heart rate and systolic blood pressure were affected by the stress of public speaking. A problem with the measurement of biological factors involved in the stress process is that many experiments conducted in this area are on animals (e.g. Parati, Casadei & Mancia, 1989; Smelik, Tilders & Berkenbosch, 1989; Ward & Ward, 1989), and it is thus questionable that the results obtained can be generalized to humans.
The logic behind self-report measures is that no one is better informed about their behaviour than the person himself (Maloney & Ward, 1976). However, the accuracy of self-report measures is dependant on the honesty and frankness of the subject, and the ability to perceive him or herself accurately (Kyriacou & Sutcliffe, 1977). Bacharach (cited in Bennett, 1989, p. 51) argues that it is precisely this concern that makes the self assessment of stress so important: “Stress should be seen as the actor’s definition of his or her reaction to a situation, not the results of an objective analysis performed by a third party”.

Self-report measures are criticized on the grounds that items on life-event checklists are ambiguous and inadequate descriptions of complex situations (Coyne & Downey, 1991) and do not provide an indication of personal meanings and contexts (Fisher, 1986). Despite these criticisms, Shrauger and Osberg (1981) ascertain that individuals can accurately observe their own behaviour and that self-appraisals are at least as accurate as other assessment procedures.

6.5.1.2 The Experience of Work and Life Circumstances Questionnaire (WLQ)

The Experience of Work and Life Circumstances Questionnaire (WLQ) was developed by the Human Science Research Council (HSRC) to meet the need for a stress questionnaire standardized for South African circumstances that attempts to provide indicators of both the level and causes of stress (Van Zyl & van der Walt, 1991).

The questionnaire is based on Van Graan’s definition of stress: "Stress is an energy-demanding negative emotional experience that usually follows a stimulus that is evaluated cognitively and interpreted as threatening, and that leads to a response aimed at terminating the experience" (cited in Van Zyl & van der Walt, 1991, p. 1). The model on which it is based is that of Cox and McKay (Cox, 1978, p. 14).
Information about the level and causes of stress can be applied for diagnostic purposes to learn whether the respondents' experiences are normal, high, or very high levels of stress and to establish the factors that contributed to these. The questionnaire provides a total stress score, and scores for circumstances inside and outside the work situation (Van Zyl & van der Walt, 1991):

(i) **Level of stress** - The questionnaire provides a score for the level of stress experienced by the individual that can be used to detect if the person is experiencing normal, high or very high levels of stress.

(ii) **Circumstances outside the work situation** - This section analyses circumstances outside the work situation. Factors included are family problems; financial circumstances; phase of life; general economic situation in the country; changing technology; facilities at home; social situations; status; health; background; effect of work on home life; transport facilities; religious life; political views; and the availability of accommodation and recreational facilities.

(iii) **Circumstances in the work situation** - The respondent's experiences of several circumstances in the work situation are analysed, namely:

   (a) **Expectations as to organizational functioning** - The extent to which the individual's expectations about the organization's functioning are met is examined. The section includes the respondent's expectations as to a share in the decision making; trust in supervisor(s); effective organisational structure; a positive management climate; recognition of work done well; and open communication channels with the supervisor.

   (b) **Expectations as to the characteristics of tasks to be performed** - Expectations regarding task characteristics are examined. These include expectations regarding getting work done in time; having sufficient knowledge and information available to do the job; taking full responsibility for a piece of work; applying new ideas; autonomous functioning within one's post; not receiving contradictory
instructions; not having to function under unnecessary pressure of time; having enough work to do to stay busy; and performing a variety of tasks as part of one's work are examined.

Other issues dealt with are the execution of tasks that will not by their nature create conflict or strain the respondent's relationship with other people; subject him or her to tough or uncontrollable physical demands; endanger the respondent's or other people's lives; negatively affect the respondent's quality of life; and demand continued intense concentration.

(c) *Expectations as to physical working conditions and job equipment* - Expectations as to the availability of sufficient equipment and being allowed to function in adequate physical working conditions are examined.

(d) *Expectations as to career opportunities* - Expectations regarding further training, the use of talents, progress in work, and job-security are examined.

(e) *Expectations as to social matters* - Expectations of enjoying a high status in one's job; maintaining positive relations with the manager or supervisor and colleagues; and the extent to which social demands are reasonable are examined.

(f) *Expectations as to remuneration, fringe benefits and personnel policy* - In the last section expectations of functioning under a just personnel policy, receiving adequate remuneration and fringe benefits are examined.

The WLQ can be administered to employees whose reading and writing skills are at a standard eight level. The WLQ was standardized on both white and black workers. Reliability coefficients of internal consistency range from 0.83 to 0.92 and test-retest coefficients between 0.62 and 0.80 were achieved for the different scales (Van Zyl & van der Walt, 1991).
6.5.2 Anxiety

6.5.2.1 Measuring anxiety

Anxiety can be measured in a number of ways with behavioural, physiological and psychological measures that can be used to determine anxiety levels.

Physiological or psycho-physiological measures include the measurement of electrical potential changes in the brain (EEG), galvanic skin response (GSR), heart rate (EEG), electro muscular potentials (EMG), blood pressure, respiration rate, palmar sweating and biochemical changes (Cox, 1985). The main criticism of these measures is that expensive and cumbersome equipment is required and the environmental contexts in which measurements can be obtained are limited (Slogrove, 1989).

Behavioural measures include the measurement of performance on some task and then inferring arousal states based on differential performance; the voicegram, which indicates the tenseness of the muscle in speech production; and the observation of body gestures such as twitching, fidgeting or pacing (Martens, 1982).

The psychological measures of anxiety primarily consist of self-report inventories in which the respondent describes his or her present state of activation. The primary advantage of this form of measurement is that these inventories can be administered and scored quickly and easily, large groups can be tested and they are less susceptible to environmental factors (Slogrove, 1989). Gotlib and Cane (1989, p. 142) note that the most common types of self-report scales measure what the DSM-III-R (now the DSM-IV) classifies as generalised anxiety disorder.
The IPAT Anxiety Scale (IPAT) is a South African version of Cattell's anxiety scale developed from research of the 16 Personality Factor questionnaire (Owen & Taljaard, 1989). The scale was compiled to obtain a fast, objective and standardized method according to which clinical information could be obtained about anxiety. The scale, according to Cattell, Scheier and Madge (1989) provides a reliable estimate of the level of free flowing anxiety, irrespective of whether it is caused by the environment or is relatively independent thereof.

The instrument consists of 40 questions that provide a total anxiety score that can be further divided into scores for covert (hidden) and overt anxiety respectively (Cattell et al, 1989). Owen and Taljaard (1989, p. 122) note: "These scales are intended to give an indication of the extent to which a person is aware of his own anxiety and perhaps also consciously wishes to emphasise it".

The total anxiety score can be further divided into five components (or factors) according to the contribution of each of these respectively (Cattell et al, 1989), namely:

- **Q3(-)** Lack of self-sentiment development,
- **C(-)** Ego weakness,
- **L** Suspiciousness or paranoid insecurity
- **O** Guilt proneness, and
- **Q4** Frustration tension, Id pressure.

These factors represent the most important components of the second-order anxiety factor of the 16 Personality Factor Questionnaire (Owen & Taljaard, 1989). Cattell et al. (1989) notes that these are not valid individually and that only the total stress score should be used unless validated by other means.
The test is suitable for persons 15 years and older (Cattell et al., 1989). In a study of Indian students Venkatramiah & Kumari (1975) found the reliability of the IPAT using split-half and test-retest coefficients as 0.625 and 0.628, respectively. In the South African version standardization reliability coefficients of between 0.76 and 0.87 were obtained (Cattell et al., 1989).

6.5.3 Depression

6.5.3.1 Measuring depression

The study of depression is a complex task as prospective studies that claim to examine the antecedents of depression may be identifying precipitants of its recurrence and/or residual effects of past occurrences. Attempts to disentangle these from social factors may prove difficult (Coyne & Downey, 1991).

Gotlib & Hammen (1992, p. 6) note: “Our psychometric achievements have made it possible to assess symptoms of depression on self-report or interviewer-administered scales. Scores on these scales then indicate severity of current symptomology, but they do not necessarily translate into diagnosis of depression in the DSM-III R (the predecessor to the DSM IV) usage” (Gotlib & Hammen, 1992, p. 6).

Gotlib & Hammen (1992, p. 6) note that “continuity between mild and severe levels of depressive symptomology differing only in degree may occur, but high and low scores on depression measures may differ on various other characteristics as well”. When research subjects are selected based on a score of measure of symptom levels, continuity between mild and severe depression is often assumed (Gotlib & Hammen, 1992).
Most depression scales are highly sensitive but not very specific for depression (Gotlib & Hammen, 1992). Moran and Lambert (1983) list more than thirty self-administered scales for the measurement of depression. In a comparison of different self-report measures of depression and anxiety, based on discriminant and content validity, Gotlib and Cane (1989) found the Beck Depression Inventory (BDI) to be one of the strongest measures of depression.

6.5.3.2 The Beck Depression Inventory (BDI)

The BDI was first introduced in 1961 and in 1971 a revised edition was developed. In its more than twenty five years of use the BDI has become one of the widely used instruments for assessing the intensity of depression in both psychiatrically diagnosed patients and in non-diagnosed populations (Roesch, 1991). Both Hammen and Morn, and Lambert (cited in Gotlib & Cane, 1989, p. 139) suggest that the BDI is one of the most effective self-rating instruments for assessing the severity of depression.

Beck studied the characteristic attitudes and syndrome of depressed people selecting a group that were specific to depressed people and consistent with descriptions of depression contained in the psychiatric literature. Based on this study beck constructed an inventory comprising 21 symptom-attitude categories (Roesch, 1991). The 21 categories are:

(1) Mood
(2) Pessimism
(3) Sense of failure
(4) Lack of satisfaction
(5) Guilty feeling
(6) Sense of punishment
(7) Self-hate
(8) Self-accusation
(9) Self-punitive wishes
(10) Crying spells
(11) Irritability
Each of the above is described by a specific behavioural manifestation of depression and consists of a graded series of four or five self-evaluative statements. These statements are ranked to indicate severity, from neutral to maximal severity with numerical values being assigned to each statement (Roesch, 1991). Beck and Beamesderfer (cited in Gotlib & Cane, 1989, p. 138) note that the BDI was "not intended to reflect any theory regarding the etiology of depression".

The totals of the scale reflect the following degrees of depression (Beck, 1972):

0 - 9  No depression
10 - 15 Light depression
16 - 23 Mild depression
24+ Serious depression

Subjects scoring nine or less fall into the non-depressive category, while those with scores of 10 or more fall into the depressive group. The cut off point of 10 for the presence of depression in the normal population was recommended in oral communication by Beck (cited in Rees & Lutkins, 1971).

The BDI correlates reasonably well with other self-report measures and clinician's ratings of the severity of depression (Gotlib & Cane, 1989). Hasama & Fuji (1985) compared patients with a major depressive disorder with normal healthy adults and obtained mean scores of 23.67 and 5.67
respectively, a difference that was statistically significant beyond an alpha level of 1%. Marton, Churchard, Kucher & Korenblum (1991) found that the BDI differentiated between adolescents with depressive disorders from adolescents with noneffective psychiatric disorders, however, the BDI by itself was inadequate to establish a diagnosis of depression.

Gotlib and Cane (1989, p. 138) note: "It is important to note that the BDI was not designed to yield a discrete diagnosis of depression; rather, it was constructed to measure depression as a single dimension of psychopathology that cuts across a wide variety of diagnostic categories". In their research, Welch, Hall and Walkey (1990) obtained results which supported the presence of a general factor, suggesting that the items of the BDI are tapping a general construct of depressive symptoms rather than a variety of more specific constructs.

The BDI has been proved to be applicable across a variety of cultures (Katz, Shaw, Vallis & Kaiser, 1995). Tashakkori, Barefoot & Mehryar (1983), in their study of college students, confirm the usefulness of the BDI as a measure of depression, even in non-Western cultures.

The BDI is not without criticism. Dahlstrom, Brooks & Peterson (1990) found that the lack of subtle content in item groups and the consistency in their ordering, from least to most pathological, makes the BDI susceptible to either defensive or malingering response sets. Criticisms have also been levelled that it is a measure of a social undesirability response set rather than depression (Langevin & Stancer cited in Katz et al., 1995, p. 71); and that it may be as highly related to anxiety measures as depression measures (Katz et al., 1995). Katz et al. (1995, p. 71) argue that "for patients in a current state of acute emotional distress, high BDI scores may not necessarily reflect clinical depression, but may be interpreted as general psychological distress".
6.5.4 Biographical data

The biographical variables selected have been proved to be important in previous research. Crowe & Stradling (1993) used factor analysis to study stress among police officers. Variations of factor were found for sex, rank, age and length of service, suggesting differential demographic susceptibility to different dimensions of stress. Pendergrass and Ostrove (1984) found that employee status, sex, minority status, response bias, and age competed as explanations for stress symptoms in all subjects.

6.5.4.1 Biographical Questionnaire

The biographical questionnaire (see Appendix A) was designed to obtain the following information:

- sex,
- age,
- marital status,
- race,
- highest educational qualification,
- years of service in the organization, and
- branch of the organization that the respondent is employed in.
6.6 Ethical considerations

Important ethical issues identified in the literature include voluntary participation, anonymity, confidentiality and the principal that no harm should befall the subjects (Babbie, 1995; Neuman, 1997; Rosnow & Rosenthal, 1996).

The subjects were requested to complete the questionnaires voluntarily while attending a training session facilitated by the researcher. Questionnaires were completed anonymously with the subjects being informed about the nature and purpose of the research. After the information was recorded from the questionnaires, they were destroyed to ensure absolute confidentiality.

After the research has been completed, all participants will have access to the findings as it is intended to publish these in the SAPS's magazine "Servamus" and a recognised scientific journal.

The aim of the study is to create awareness of the negative consequences that organizational change is having on the members of the organization. It is envisaged, in the worst possible scenario, that the study will have no effect on the lives of the population from which the sample was drawn. Other possible scenarios involve the use of the information provided by this research to channel resources more effectively in order to alleviate the plight of those affected by the change process.
CHAPTER 7 ANALYSIS OF DATA

7.1 Introduction

The analysis of data comprised three phases, which were in line with the three hypotheses set for the study (see section 6.2, p. 68). In the first instance the stress, anxiety and depression scores of the two samples (before and after the implementation of changes) were compared to ascertain if a significant increase in their means had occurred. This examination was conducted on the whole sample as well as various biographical subgroups within the samples. As only two samples were compared at any time, and the subgroups did not overlap, t-tests were used to carry out this comparison for the larger groups. The Wilcoxon-Mann-Whitney test was used to compare the means of the smaller groups as equal variances could not be assumed because of the small size of the samples.

The second phase of the analysis involved an examination of the factors contributing to stress, depression and anxiety to determine if they differed between the before and after samples. This was done by means of stepwise regression analysis. This could only be done on the samples as a whole and on the white and black subgroups respectively. The coloured and Indian subgroups were too small for regression analysis.

Finally, within the samples, the white, black and coloured subgroups were compared to determine if the means for stress, anxiety and depression differed significantly between these subgroups. This was done by comparing the variances of the scores using ANOVA’s and Bonferoni tests. The Indian respondents were once again omitted because there was only one respondent in the case of sample two.

The level of significance was set at $\alpha = 0.05$ for all statistical tests. Thus, whenever results are referred to as significant it is at this level of significance.
7.2 A comparison of the levels of stress, anxiety and depression in the two samples

The aim here was to test the first set of hypotheses, namely:

H₀: Organizational change does not lead to increased stress, anxiety and depression.
H₁: Organizational change leads to increased stress, anxiety and depression.

To determine if any of the variables differed significantly between the two samples, as hypothesised, Student's t-test for independent samples was used. The t-test examines the difference between two means against the background of the within-group variance (Rosnow & Rosenthal, 1996). The t-test for independent groups analysis helps the researcher to determine whether two sample means differ significantly from what would be expected on the basis of chance (Maleske, 1995). The two groups are presumed to be independent of one another if the results of the one group are not influenced by the results of the other group (Rosnow & Rosenthal, 1996). The two samples used in the present study were independent of one another as they were selected at different times and the selection of subjects for the first sample did not influence selection for the second sample.

In the case of all subjects, black subjects and white subjects a parametric test was chosen instead of a non-parametric test (e.g. Wilcoxon-Mann-Whitney test) since the samples were large enough. Student's t-test is the accepted parametric test to test for differences between the means of two samples. The subgroups did not overlap so there was no danger of interactive effects.

The assumptions for Student's t-test are:

(i) Normal distribution of scores of variables for both samples. Since the samples were large in the cases where the t-test was used, normality was assumed on the basis of the central limit theorem.

(ii) In the test for equal variances the F values exceeded the 0.05 critical value (see tables 7.1 to 7.9), therefore the null hypothesis, that the variances of the two samples where equal, could not be rejected.

(iii) Independent samples as discussed above.
In the case of the coloured subjects, due to the small size of the samples, a non-parametric test was selected in the form of the Wilcoxon-Mann-Whitney test because equal variances could not be assumed. The Indian subjects could not be examined as the second sample comprised only one Indian subject.

In all the tests the hypotheses are one directional, so \( \alpha = 0.05 \) will be compared with half the p-value. The groups examined were the entire sample, white subjects, black subjects and coloured subjects respectively.

### 7.2.1 Comparison of all subjects

Table 7.1  
\( \text{t-test for stress, all subjects} \)

<table>
<thead>
<tr>
<th></th>
<th>( n )</th>
<th>Mean</th>
<th>Std Dev.</th>
<th>Std Err</th>
<th>Min</th>
<th>Max</th>
<th>Variance</th>
<th>( t )</th>
<th>DF</th>
<th>Prob&gt;( t / )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 1</td>
<td>241</td>
<td>77.82</td>
<td>17.50</td>
<td>1.13</td>
<td>47</td>
<td>184</td>
<td>Equal</td>
<td>-1.12</td>
<td>409</td>
<td>0.26</td>
</tr>
<tr>
<td>Sample 2</td>
<td>170</td>
<td>79.85</td>
<td>18.91</td>
<td>1.45</td>
<td>47</td>
<td>137</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For \( H_0 \): Variances are equal, \( F' = 1.17 \)  \( DF = (169,240) \)  \( \text{Prob}>F' = 0.2717 \)

The \( t\)-test delivered a two-tailed p-value of 0.26 that was halved because the hypothesis is directional. The halved p-value of 0.13 is larger than \( \alpha = 0.05 \) with the result that \( H_0 \) cannot be rejected in favour of \( H_1 \). It must thus be concluded that the mean stress score for all subjects in sample two was not significantly higher than that of sample one.
Table 7.2  t-test for anxiety, all subjects

|     | n   | Mean | Std Dev | Std Err | Min | Max | Variance | t    | DF  | Prob>|t| |
|-----|-----|------|---------|---------|-----|-----|----------|------|-----|-------|
| Sample 1 | 241 | 31.48 | 10.41   | 0.67    | 9   | 61  | Equal    | -1.14| 409 | 0.26  |
| Sample 2 | 170 | 32.74 | 11.83   | 0.91    | 4   | 69  | Equal    |      |     |       |

For H₀: Variances are equal, F' = 1.29 DF = (169,240) Prob>F' = 0.0701

The t-test delivered a two-tailed p-value of 0.26 that was halved because the hypothesis is directional. The halved p-value of 0.13 is larger than α = 0.05 with the result that the H₀ cannot be rejected in favour of H₁. It must thus be concluded that the mean anxiety score for all subjects in sample two was not significantly higher than that of sample one.

Table 7.3  t-test for depression, all subjects

|     | n   | Mean | Std Dev | Std Err | Min | Max | Variance | t    | DF  | Prob>|t| |
|-----|-----|------|---------|---------|-----|-----|----------|------|-----|-------|
| Sample 1 | 241 | 8.44  | 6.38    | 0.41    | 0   | 44  | Equal    | 0.03 | 409 | 0.98  |
| Sample 2 | 170 | 8.42  | 6.44    | 0.49    | 0   | 39  | Equal    |      |     |       |

For H₀: Variances are equal, F' = 1.02 DF = (169,240) Prob>F' = 0.8922

H₀ that there was not a significant increase in the mean depression score, must automatically be accepted with the mean depression score for sample one being higher than that of sample two. The difference between the means of the depression scores was not significant as the p-value of 0.98 is much larger than α = 0.05.

In the light of the above results no H₀ could be rejected and it must thus be concluded that the mean stress, anxiety and depression scores for sample two were not significantly higher than those of sample one.
7.2.2 Comparison of white subjects

The white subjects were examined as a subgroup to determine if significant increases in the means of their stress, anxiety and depression scores had occurred in sample two, as compared to sample one.

Table 7.4 t-test for stress, white subjects

<table>
<thead>
<tr>
<th>n</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Std Err</th>
<th>Min</th>
<th>Max</th>
<th>Variance</th>
<th>t</th>
<th>DF</th>
<th>Prob&gt;t/</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>144</td>
<td>75.60</td>
<td>16.21</td>
<td>1.35</td>
<td>47</td>
<td>118</td>
<td>Equal</td>
<td>-1.01</td>
<td>254</td>
</tr>
<tr>
<td>2</td>
<td>112</td>
<td>77.79</td>
<td>18.43</td>
<td>1.74</td>
<td>49</td>
<td>133</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Ho: Variances are equal, F' = 1.29 DF = (111,143) Prob>F' = 0.1492

The t-test delivered a two-tailed p-value of 0.32 that was halved because the hypothesis is directional. The halved p-value of 0.16 is larger than α = 0.05 with the result that H₀ cannot be rejected in favour of H₁. Consequently it must be concluded that the mean stress score for white subjects in sample two was not significantly higher than that of sample one.

Table 7.5 t-test for anxiety, white subjects

<table>
<thead>
<tr>
<th>n</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Std Err</th>
<th>Min</th>
<th>Max</th>
<th>Variance</th>
<th>t</th>
<th>DF</th>
<th>Prob&gt;t/</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>144</td>
<td>31.51</td>
<td>11.01</td>
<td>0.92</td>
<td>9</td>
<td>91</td>
<td>Equal</td>
<td>-0.09</td>
<td>254</td>
</tr>
<tr>
<td>2</td>
<td>112</td>
<td>31.63</td>
<td>12.33</td>
<td>1.16</td>
<td>4</td>
<td>69</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Ho: Variances are equal, F' = 1.25 DF = (111,143) Prob>F' = 0.2047

The t-test delivered a two-tailed p-value of 0.93 that was halved because the hypothesis is directional. The halved p-value of 0.47 is larger than α = 0.05 with the result that H₀ cannot be rejected in favour of H₁. Consequently it must be concluded that the mean anxiety score for white subjects in sample two was not significantly higher than from that of sample one.
Table 7.6  t-test for depression, white subjects

|     | n  | Mean | Std Dev | Std Err | Min | Max | Variance | t   | DF  | Prob>|t/|
|-----|----|------|---------|---------|-----|-----|----------|-----|-----|-------|
| Sample 1 | 144 | 6.98 | 5.34    | 5.34    | 0.45| 0   | Equal    | -0.58| 254 | 0.56  |
| Sample 2 | 112 | 7.40 | 6.29    | 6.29    | 0.59| 0   | Equal    |    |     |       |

For H0: Variances are equal, $F' = 1.39$  DF = (111,143)  Prob>|F'| = 0.0658

The t-test delivered a two-tailed p-value of 0.56 that was halved because the hypothesis is directional. The halved p-value of 0.28 is larger than $\alpha = 0.05$ with the result that $H_0$ cannot be rejected in favour of $H_1$. It must thus be concluded that the mean depression score for white subjects in sample two was not significantly higher from that of sample one.

In the light of the above results no $H_0$ could be rejected and it must be concluded that the mean stress, anxiety and depression scores for white subjects in sample two were not significantly higher than those of sample one.

7.2.3  Comparison of black subjects

The black subjects were examined as a subgroup to determine if there had been significant increases in their stress, anxiety and depression scores from sample one to sample two.

Table 7.7  t-test for stress, black subjects

|     | n  | Mean | Std Dev. | Std Err | Min | Max | Variance | t   | DF  | Prob>|t/|
|-----|----|------|----------|---------|-----|-----|----------|-----|-----|-------|
| Sample 1 | 61  | 83.08 | 21.86    | 2.80    | 48  | 184 | Equal    | -1.29| 90  | 0.20  |
| Sample 2 | 31  | 89.13 | 19.73    | 3.54    | 47  | 137 | Equal    |    |     |       |

For H0: Variances are equal, $F' = 1.23$  DF = (60.30)  Prob>|F'| = 0.5478

-89-
The t-test delivered a two-tailed p-value of 0.20 that was halved because the hypothesis is directional. The halved p-value of 0.10 is larger than the $\alpha = 0.05$ with the result that $H_0$ cannot be rejected in favour of $H_1$. It must thus be concluded that the mean stress score for black subjects in sample two was not significantly higher than that for sample one.

Table 7.8  
<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Std Err</th>
<th>Min</th>
<th>Max</th>
<th>Variance</th>
<th>t</th>
<th>DF</th>
<th>Prob&gt;/t/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 1</td>
<td>61</td>
<td>31.67</td>
<td>10.01</td>
<td>1.28</td>
<td>10</td>
<td>54</td>
<td>Equal</td>
<td>-3.72</td>
<td>90</td>
<td>0.0003</td>
</tr>
<tr>
<td>Sample 2</td>
<td>31</td>
<td>39.65</td>
<td>9.10</td>
<td>1.63</td>
<td>12</td>
<td>59</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For $H_0$: Variances are equal, $F' = 1.21$  \( DF = (60.30) \)  \( Prob>F' = 0.5765 \)

The t-test delivered a two-tailed p-value of 0.0003 that was halved because the hypothesis is directional. The halved p-value of 0.00015 is much smaller than $\alpha = 0.05$ with the result that the $H_0$ must be rejected in favour of $H_1$. It must thus be concluded that the mean anxiety score for black subjects in sample two was significantly higher than that of sample one.

Table 7.9  
<table>
<thead>
<tr>
<th></th>
<th>n</th>
<th>Mean</th>
<th>Std Dev</th>
<th>Std Err</th>
<th>Min</th>
<th>Max</th>
<th>Variance</th>
<th>t</th>
<th>DF</th>
<th>Prob&gt;/t/</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample 1</td>
<td>61</td>
<td>11.10</td>
<td>8.30</td>
<td>1.06</td>
<td>0</td>
<td>44</td>
<td>Unequal</td>
<td>-0.35</td>
<td>82.3</td>
<td>0.69</td>
</tr>
<tr>
<td>Sample 2</td>
<td>31</td>
<td>11.68</td>
<td>5.66</td>
<td>1.02</td>
<td>0</td>
<td>23</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For $H_0$: Variances are equal, $F' = 2.15$  \( DF = (60.30) \)  \( Prob>F' = 0.0241 \)
The t-test delivered a two-tailed p-value of 0.69 that was halved because the hypothesis is directional. The halved p-value of 0.35 is larger than $\alpha = 0.05$ with the result that $H_0$ cannot be rejected in favour of $H_1$. Thus it must be concluded that the mean depression score for black subjects in sample two was not significantly higher than that of sample one.

In the light of the above results the null hypotheses could not be rejected for stress and depression for the black subjects. It must thus be concluded that the mean stress and depression scores for sample two were not significantly higher than those of sample one. However, in the case of anxiety $H_0$ must be rejected in favour of $H_1$, in that the mean anxiety score for sample two was significantly higher than that of sample one. In summary, the stress and depression scores for black subjects did not increase significantly, but there was a significant increase in the mean of the anxiety scores.

### 7.2.4 Comparison of coloured subjects

Due to the small sizes of the coloured samples the Wilcoxon-Mann-Whitney test was used to determine if a significant increase had occurred in the stress, anxiety and depression scores from sample one to sample two.

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>Sum of scores</th>
<th>Expected under $H_0$</th>
<th>Standard deviation under $H_0$</th>
<th>Mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>116.5</td>
<td>115.5</td>
<td>21.89</td>
<td>76.85</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>411.5</td>
<td>412.5</td>
<td>21.89</td>
<td>77.48</td>
</tr>
</tbody>
</table>

$Z = 0.02284$ \hspace{1cm} Prob $> |Z| = 0.9818$

The probability of $Z$ is much greater than $\alpha = 0.05$ indicating that the difference between the means of the stress scores is not significant.
Table 7.11  Wilcoxon-Mann-Whitney test for anxiety, coloured subjects

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>Sum of scores</th>
<th>Expected under H₀</th>
<th>Standard deviation under H₀</th>
<th>Mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>143.5</td>
<td>115.5</td>
<td>21.90</td>
<td>34.28</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>384.5</td>
<td>412.5</td>
<td>21.90</td>
<td>29.44</td>
</tr>
</tbody>
</table>

\[ Z = 1.25552 \quad \text{Prob} > |Z| = 0.2093 \]

The mean score for anxiety showed a decrease in sample two with the result that H₀, that there was not a significant increase in anxiety, must be accepted. The fact that the probability of \( Z \) is greater than \( \alpha = 0.05 \) also implies that the difference between the scores is not significant.

Table 7.12  Wilcoxon-Mann-Whitney test for depression, coloured subjects

<table>
<thead>
<tr>
<th>Sample</th>
<th>N</th>
<th>Sum of scores</th>
<th>Expected under H₀</th>
<th>Standard deviation under H₀</th>
<th>Mean score</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7</td>
<td>140.5</td>
<td>115.5</td>
<td>21.88</td>
<td>10.86</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
<td>387.5</td>
<td>412.5</td>
<td>21.88</td>
<td>8.60</td>
</tr>
</tbody>
</table>

\[ Z = 1.11969 \quad \text{Prob} > |Z| = 0.2628 \]

The mean score for depression showed a decrease in sample two with the result that H₀, that there was not a significant increase in depression, must be accepted automatically. The fact that the probability of \( Z \) is greater than \( \alpha = 0.05 \) also implies that the difference between the scores is not significant.

7.2.5  A synopsis of the differences between stress, anxiety and depression

The comparison of the mean scores of all the subjects in sample one and two did not indicate any significant increases in stress, anxiety or depression scores respectively. Thus H₀ that there was not a significant increase for stress, anxiety and depression scores, cannot be rejected. In fact the depression scores showed a decrease, although not significant. The white and coloured subgroups
did not experience significant increases in any of the variables measured either. With the white subjects there was an increase in the scores for each of the variables, but this was not significant. The coloured subjects showed a decrease in the mean anxiety and depression scores, although this was not significant.

The results for the black subjects were similar in that their stress and depression scores showed an increase, but this was not significant. However, their anxiety scores increased significantly in sample two.

7.3 The causes of stress, anxiety and depression compared

Multiple regression analysis was used to determine how each of the dependant variables (stress, anxiety and depression respectively) were affected by the independent variables (the seven circumstances in- and outside the worksituation measured by the WLQ). Kerlinger (1986, p. 527) defines multiple regression analysis as "a method for studying the effects and magnitudes of the effects of more than one independent variable on one dependant variable using principles of correlation and regression".

The specific procedure used was stepwise regression analysis. Chatterjee and Price (1977, p. 202) note: "The stepwise method is essentially a forward selection procedure, but with the added proviso that at each stage the possibility of deleting a variable, as in backward elimination, is considered". Bowerman, O'Connell and Dickey (1986, p. 336) note: "Stepwise regression uses $t_0$ statistics (and related prob-values) to determine the importance (or significance) of the independent variables in various regression models". The $t_0$ statistic indicates that the independent variable $x_j$ is significant at the $\alpha$ level if, and only if, the related probability value is less than $\alpha$. This implies that $H_0: \beta_j = 0$ is rejected in favour of $H_1: \beta_j \neq 0$ by allowing the probability of a Type 1 error being equal to $\alpha$ (Bowerman et al., 1986).
The seven circumstances in- and outside the work situation measured by the WLQ were related to stress, anxiety and depression respectively. This was done to test the second set of hypotheses, namely:

H₀: Factors relating to the organization will not play a stronger role in the causation of stress, anxiety and depression after change.

H₂: Factors relating to the organization will play a stronger role in the causation of stress, anxiety and depression after change.

The regression analyses were obtained by comparing the dependant variables (Y) with the independent variables (X) for each sample as follows:

Y  (Stress, anxiety and depression respectively)
X₁  Circumstances outside the work situation
X₂  Expectations as to organizational functioning
X₃  Expectations as to the characteristics of tasks to be performed
X₄  Expectations as to physical working conditions and job equipment
X₅  Expectations as to career opportunities
X₆  Expectations as to social matters
X₇  Expectations as to remuneration, fringe benefits and personnel policy

The nature of the stepwise regression is such that certain predictors (independent variables), although they correlate strongly with the dependant variable, may be excluded from the model because their effect has already been accounted for by predictors that have entered the model before them. These predictors are then mentioned in the discussion of the results.
Pearson correlation coefficients are also provided so that the possibility of collinearity between predictors entered in the various models, can be examined. In this regard it must be noted that the whole sample and the white subgroup constituted large samples, all with \( n > 100 \), so that significant correlations between predictors were obtained fairly easily. The converse is true, for the black subgroups which were fairly small, both with \( n < 100 \).

From the Pearson tables it is clear that stress, anxiety and depression correlate strongly indicating that there are interactions between these variables. However, this is a well documented phenomenon in the literature (discussed in Chapter eight). As it is known that stress, anxiety and depression impact on one another, it was decided not to include these as independent variables in the various models as, because of the high correlations, they would have precluded the inclusion of other predictors that are of greater importance for this study.
### 7.3.1 All subjects

Table 7.13 Pearson correlation coefficients, all subjects, sample one (n = 241)

<table>
<thead>
<tr>
<th></th>
<th>Stress</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Circumstances outside the work situation</th>
<th>Circumstances in the work situation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Stress</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stress</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.54</td>
<td>1.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Depression</td>
<td>0.42</td>
<td>0.49</td>
<td>1.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circumstances outside the work situation</td>
<td>0.63</td>
<td>0.42</td>
<td>0.42</td>
<td>1.0</td>
<td>0.54</td>
</tr>
<tr>
<td>Organizational functioning</td>
<td>0.25</td>
<td>0.27</td>
<td>0.21</td>
<td>1.0</td>
<td>0.54</td>
</tr>
<tr>
<td>Task characteristics</td>
<td>0.33</td>
<td>0.35</td>
<td>0.21</td>
<td>0.20</td>
<td></td>
</tr>
<tr>
<td>Physical working conditions</td>
<td>0.27</td>
<td>0.19</td>
<td>0.17</td>
<td>0.30</td>
<td>0.53</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>0.37</td>
<td>0.31</td>
<td>0.29</td>
<td>0.29</td>
<td></td>
</tr>
<tr>
<td>Social matters</td>
<td>0.25</td>
<td>0.39</td>
<td>0.25</td>
<td>0.26</td>
<td></td>
</tr>
<tr>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.24</td>
<td>0.17</td>
<td>0.18</td>
<td>0.34</td>
<td>0.60</td>
</tr>
</tbody>
</table>

(p-value in small print below r value)

---

"-96-"
Table 7.14 Pearson correlation coefficients, all subjects, sample two (n = 170)

<table>
<thead>
<tr>
<th>Stress</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Circumstances outside the work situation</th>
<th>Organizational functioning</th>
<th>Task characteristics</th>
<th>Physical working conditions</th>
<th>Career opportunities</th>
<th>Social matters</th>
<th>Remuneration, fringe benefits and personnel policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>1.0</td>
<td>0.60</td>
<td>0.51</td>
<td>0.60</td>
<td>0.33</td>
<td>0.33</td>
<td>0.25</td>
<td>0.31</td>
<td>0.42</td>
</tr>
<tr>
<td></td>
<td>0.0</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.60</td>
<td>1.0</td>
<td>0.56</td>
<td>0.56</td>
<td>0.73</td>
<td>0.20</td>
<td>0.17</td>
<td>0.10</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Depression</td>
<td>0.51</td>
<td>0.56</td>
<td>1.0</td>
<td>0.51</td>
<td>0.17</td>
<td>0.14</td>
<td>0.17</td>
<td>0.17</td>
<td>0.17</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Circumstances outside the work situation</td>
<td>0.60</td>
<td>0.53</td>
<td>0.51</td>
<td>1.0</td>
<td>0.21</td>
<td>0.27</td>
<td>0.24</td>
<td>0.29</td>
<td>0.24</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Organizational functioning</td>
<td>0.33</td>
<td>0.73</td>
<td>0.18</td>
<td>0.21</td>
<td>1.0</td>
<td>0.53</td>
<td>0.64</td>
<td>0.76</td>
<td>0.65</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Task characteristics</td>
<td>0.33</td>
<td>0.20</td>
<td>0.14</td>
<td>0.27</td>
<td>0.53</td>
<td>1.0</td>
<td>0.44</td>
<td>0.57</td>
<td>0.54</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Physical working conditions</td>
<td>0.25</td>
<td>0.05</td>
<td>0.10</td>
<td>0.24</td>
<td>0.64</td>
<td>0.44</td>
<td>1.0</td>
<td>0.60</td>
<td>0.47</td>
</tr>
<tr>
<td></td>
<td>0.0010</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>0.31</td>
<td>0.08</td>
<td>0.15</td>
<td>0.29</td>
<td>0.76</td>
<td>0.57</td>
<td>0.60</td>
<td>1.0</td>
<td>0.61</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Social matters</td>
<td>0.42</td>
<td>0.21</td>
<td>0.19</td>
<td>0.24</td>
<td>0.65</td>
<td>0.54</td>
<td>0.47</td>
<td>0.61</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.13</td>
<td>0.03</td>
<td>0.11</td>
<td>0.29</td>
<td>0.71</td>
<td>0.51</td>
<td>0.66</td>
<td>0.68</td>
<td>0.45</td>
</tr>
<tr>
<td></td>
<td>0.0867</td>
<td>0.0812</td>
<td>0.1528</td>
<td>0.0002</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

(p-value in small print below r value)
7.3.1.1 Stress

Table 7.15  Stepwise regression for stress in sample one, all subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.40</td>
<td>0.40</td>
<td>156.64</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Task characteristics</td>
<td>0.04</td>
<td>0.44</td>
<td>17.56</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

The main factors contributing to the variance of the stress scores of all subjects in sample one at \( \alpha = 0.05 \) were circumstances outside the work situation and task characteristics. Together, these two predictors accounted for 44% of the variance in the scores.

Looking at table 7.13, we see that these predictors, besides anxiety and depression that were not included in the model, had high significant correlations with stress and were thus expected to enter the model. The correlation between these predictors was not numerically high (\( r = 0.20 \)) precluding the possibility of collinearity between predictors. However, career opportunities (\( r = 0.37 \)) and social matters (\( r = 0.31 \)) which correlated strongly with stress were not included in the model.

Table 7.16  Stepwise regression for stress in sample two, all subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.36</td>
<td>0.36</td>
<td>93.76</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Social matters</td>
<td>0.08</td>
<td>0.44</td>
<td>24.91</td>
<td>0.0001</td>
</tr>
<tr>
<td>3</td>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.03</td>
<td>0.47</td>
<td>9.53</td>
<td>0.0024</td>
</tr>
<tr>
<td>4</td>
<td>Organizational functioning</td>
<td>0.03</td>
<td>0.50</td>
<td>10.16</td>
<td>0.0017</td>
</tr>
</tbody>
</table>
Circumstances outside the work situation still accounted for the majority of the variance in the stress scores, namely 36%. However, several factors in the work situation were significant contributors at $\alpha = 0.05$, including social matters, remuneration fringe benefits and personnel policy, and organizational functioning, accounting for 50% of the variance in the stress scores.

In table 7.14 see that the predictors that entered the model were expected to do so as they correlated highly with stress in most instances. In examining the correlation between predictors we see that there were high correlations between social matters and remuneration, fringe benefits and personnel policy ($r = 0.45$); and social matters and organizational functioning ($r = 0.65$). There was thus collinearity between these predictors. It is also noteworthy that organizational functioning ($r = 0.33$) and career opportunities ($r = 0.31$) which correlated strongly with stress were not included in the model.

In conclusion, factors in the work situation played a more significant role in accounting for the variance of stress scores for sample two. The stepwise regression for sample two also provided a better model with the causes examined being able to account for 50% of the stress score as compared with 44% for sample one.

### 7.3.1.2 Anxiety

Table 7.17 Stepwise regression for anxiety in sample one, all subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.17</td>
<td>0.17</td>
<td>50.04</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Social matters</td>
<td>0.08</td>
<td>0.26</td>
<td>26.51</td>
<td>0.0001</td>
</tr>
<tr>
<td>3</td>
<td>Task characteristics</td>
<td>0.01</td>
<td>0.27</td>
<td>3.19</td>
<td>0.0755</td>
</tr>
<tr>
<td>4</td>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.01</td>
<td>0.28</td>
<td>4.31</td>
<td>0.0390</td>
</tr>
</tbody>
</table>
The main factors contributing to the variance of the anxiety scores of all subjects in sample one at \( \alpha = 0.05 \) were circumstances outside the work situation, social matters, task characteristics and remuneration, fringe benefits and personnel policy accounting for 28% of the variance.

Table 7.13 indicates that there were high significant correlations between social matters and task characteristics \((r = 0.69)\) and remuneration, fringe benefits and personnel policy \((r = 0.39)\); and between task characteristics and remuneration, fringe benefits and personnel policy \((r = 0.48)\) suggesting that there was collinearity between these predictors. It must also be noted that career opportunities correlated strongly with anxiety \((r = 0.31)\) but was not included in the model.

Table 7.18 Stepwise regression for anxiety in sample two, all subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial (R^2)</th>
<th>Model (R^2)</th>
<th>(F)</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.28</td>
<td>0.28</td>
<td>65.31</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.02</td>
<td>0.30</td>
<td>3.68</td>
<td>0.0568</td>
</tr>
<tr>
<td>3</td>
<td>Social matters</td>
<td>0.02</td>
<td>0.32</td>
<td>5.55</td>
<td>0.0196</td>
</tr>
</tbody>
</table>

In the second sample the main predictors were circumstances outside the work situation, remuneration, fringe benefits and personnel policy and social matters accounting for 32% of the variance.

In table 7.14, we see that there is a high correlation between remuneration, fringe benefits and personnel policy and social matters \((r = 0.45)\) which indicates collinearity between these predictors. It is also important to note that organizational functioning, which correlated strongly with anxiety \((r = 0.73)\) was not included in the model.
In conclusion, the two models attempting to explain the variance in anxiety scores for the two samples were similar in terms of the amount of variance explained (28% and 32% respectively) and in terms of the predictors included. The only difference was that task characteristics was a significant predictor in the first sample while this was not the case with for the second.

7.3.1.3 Depression

Table 7.19 Stepwise regression for depression in sample one, all subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial $R^2$</th>
<th>Model $R^2$</th>
<th>$F$</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.17</td>
<td>0.17</td>
<td>50.24</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Career opportunities</td>
<td>0.03</td>
<td>0.20</td>
<td>8.98</td>
<td>0.0030</td>
</tr>
</tbody>
</table>

The main predictors contributing to the variance of the depression scores for all subjects in sample one were causes outside the work situation and career opportunities. However, these predictors only accounted for 20% of the variance in the depression scores.

If we look at table 7.19 we see that there was correlation between circumstances outside the work situation and career opportunities ($r = 0.29$), implying a degree of collinearity between these predictors.
Table 7.20  Stepwise regression for depression sample two, all subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial $R^2$</th>
<th>Model $R^2$</th>
<th>$F$</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.18</td>
<td>0.18</td>
<td>25.56</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

The only predictor that contributed significantly to the variance in depression scores at the $\alpha = 0.05$ was causes outside the work situation, accounting for 18% of the variance.

Both models were poor explanations for the variance in the depression scores, accounting for 20% and 18% respectively. The models were practically identical with the only difference being that career opportunities was included as a predictor in sample one while this was not the case with sample two.
### 7.3.2 White subjects

<table>
<thead>
<tr>
<th></th>
<th>Stress</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Circumstances outside the work situation</th>
<th>Organizational functioning</th>
<th>Task characteristics</th>
<th>Physical working conditions</th>
<th>Career opportunities</th>
<th>Social matters</th>
<th>Remuneration, fringe benefits and personnel policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>0.70</td>
<td>0.62</td>
<td>0.52</td>
<td>0.70</td>
<td>0.44</td>
<td>0.43</td>
<td>0.31</td>
<td>0.38</td>
<td>0.39</td>
<td>0.27</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.62</td>
<td>0.10</td>
<td>0.48</td>
<td>0.51</td>
<td>0.37</td>
<td>0.36</td>
<td>0.24</td>
<td>0.27</td>
<td>0.39</td>
<td>0.15</td>
</tr>
<tr>
<td>Depression</td>
<td>0.52</td>
<td>0.48</td>
<td>1.0</td>
<td>0.40</td>
<td>0.30</td>
<td>0.22</td>
<td>0.14</td>
<td>0.33</td>
<td>0.35</td>
<td>0.10</td>
</tr>
<tr>
<td>Circumstances outside the work situation</td>
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<td>0.32</td>
<td>0.39</td>
<td>0.34</td>
</tr>
<tr>
<td>Organizational functioning</td>
<td>0.44</td>
<td>0.37</td>
<td>0.30</td>
<td>0.37</td>
<td>1.0</td>
<td>0.62</td>
<td>0.56</td>
<td>0.70</td>
<td>0.64</td>
<td>0.64</td>
</tr>
<tr>
<td>Task characteristics</td>
<td>0.43</td>
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<td>0.22</td>
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<td>0.62</td>
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<td>0.67</td>
<td>0.72</td>
<td>0.51</td>
</tr>
<tr>
<td>Physical working conditions</td>
<td>0.31</td>
<td>0.24</td>
<td>0.14</td>
<td>0.37</td>
<td>0.56</td>
<td>0.62</td>
<td>0.66</td>
<td>0.39</td>
<td>0.58</td>
<td>0.58</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>0.38</td>
<td>0.27</td>
<td>0.33</td>
<td>0.32</td>
<td>0.70</td>
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<td>0.66</td>
<td>1.0</td>
<td>0.58</td>
<td>0.57</td>
</tr>
<tr>
<td>Social matters</td>
<td>0.39</td>
<td>0.39</td>
<td>0.35</td>
<td>0.39</td>
<td>0.64</td>
<td>0.72</td>
<td>0.39</td>
<td>0.58</td>
<td>1.0</td>
<td>0.42</td>
</tr>
<tr>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.27</td>
<td>0.15</td>
<td>0.10</td>
<td>0.34</td>
<td>0.64</td>
<td>0.51</td>
<td>0.58</td>
<td>0.57</td>
<td>0.42</td>
<td>1.0</td>
</tr>
</tbody>
</table>

(p-value in small print below r value)
<table>
<thead>
<tr>
<th></th>
<th>Stress</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Circumstances outside the work situation</th>
<th>Organizational functioning</th>
<th>Task characteristics</th>
<th>Physical working conditions</th>
<th>Career opportunities</th>
<th>Social matters</th>
<th>Remuneration, fringe benefits and personnel policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>1.0</td>
<td>0.61</td>
<td>0.53</td>
<td>0.46</td>
<td>0.40</td>
<td>0.36</td>
<td>0.29</td>
<td>0.31</td>
<td>0.47</td>
<td>0.13</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.61</td>
<td>1.0</td>
<td>0.59</td>
<td>0.47</td>
<td>0.14</td>
<td>0.20</td>
<td>0.07</td>
<td>0.13</td>
<td>0.21</td>
<td>0.02</td>
</tr>
<tr>
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<td>0.12</td>
<td>0.19</td>
<td>0.22</td>
<td>0.10</td>
</tr>
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<td>0.43</td>
<td>1.0</td>
<td>0.39</td>
<td>0.35</td>
<td>0.34</td>
<td>0.43</td>
<td>0.32</td>
<td>0.40</td>
</tr>
<tr>
<td>Organizational functioning</td>
<td>0.40</td>
<td>0.14</td>
<td>0.17</td>
<td>0.39</td>
<td>1.0</td>
<td>0.52</td>
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<td>0.73</td>
<td>0.70</td>
</tr>
<tr>
<td>Task characteristics</td>
<td>0.36</td>
<td>0.20</td>
<td>0.10</td>
<td>0.35</td>
<td>0.52</td>
<td>1.0</td>
<td>0.45</td>
<td>0.58</td>
<td>0.50</td>
<td>0.51</td>
</tr>
<tr>
<td>Physical working conditions</td>
<td>0.29</td>
<td>0.07</td>
<td>0.12</td>
<td>0.34</td>
<td>0.65</td>
<td>0.45</td>
<td>1.0</td>
<td>0.62</td>
<td>0.54</td>
<td>0.66</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>0.31</td>
<td>0.13</td>
<td>0.19</td>
<td>0.43</td>
<td>0.74</td>
<td>0.58</td>
<td>0.62</td>
<td>1.0</td>
<td>0.63</td>
<td>0.71</td>
</tr>
<tr>
<td>Social matters</td>
<td>0.47</td>
<td>0.21</td>
<td>0.22</td>
<td>0.32</td>
<td>0.73</td>
<td>0.50</td>
<td>0.54</td>
<td>0.63</td>
<td>1.0</td>
<td>0.53</td>
</tr>
<tr>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.13</td>
<td>0.020</td>
<td>0.10</td>
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<td>0.70</td>
<td>0.51</td>
<td>0.66</td>
<td>0.71</td>
<td>0.53</td>
<td>1.0</td>
</tr>
</tbody>
</table>

(p-value in small print below r value)

Table 7.22 Pearson correlation coefficients, white subjects, sample two (n = 112)
7.3.2.1 Stress

Table 7.23 Stepwise regression for stress in sample one, white subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial $R^2$</th>
<th>Model $R^2$</th>
<th>$F$</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.49</td>
<td>0.49</td>
<td>134.59</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Organizational functioning</td>
<td>0.04</td>
<td>0.52</td>
<td>11.27</td>
<td>0.0010</td>
</tr>
<tr>
<td>3</td>
<td>Task characteristics</td>
<td>0.02</td>
<td>0.54</td>
<td>3.96</td>
<td>0.0486</td>
</tr>
</tbody>
</table>

The main predictors contributing to the variance of the stress scores for white subjects in sample one were circumstances outside the work situation, organizational functioning and task characteristics. Together these predictors accounted for 54% of the variance.

If we look at table 7.21, we see that these three predictors correlated strongly with stress. Besides anxiety and depression, which were not included in the model, circumstances outside the work situation ($r = 0.70$), organizational functioning ($r = 0.44$) and task characteristics ($r = 0.43$) had the strongest correlations with stress. However, there was a degree of collinearity between the predictors with circumstances outside the work situation correlating with organizational functioning ($r = 0.37$) and task characteristic ($r = 0.36$) respectively. There was also a high correlation between organizational functioning and task characteristics ($r = 0.62$).

It is also important to note that several predictors not included in the model correlated strongly with stress. These included social matters ($r = 0.39$), career opportunities ($r = 0.38$) and physical working conditions ($r = 0.31$).
Table 7.24  Stepwise regression for stress in sample two, white subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Social matters</td>
<td>0.22</td>
<td>0.22</td>
<td>31.35</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Circumstances outside the work situation</td>
<td>0.11</td>
<td>0.33</td>
<td>17.67</td>
<td>0.0001</td>
</tr>
<tr>
<td>3</td>
<td>Remuneration, fringe benefits and</td>
<td>0.06</td>
<td>0.39</td>
<td>10.40</td>
<td>0.0017</td>
</tr>
<tr>
<td></td>
<td>personnel policy</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Task characteristics</td>
<td>0.02</td>
<td>0.41</td>
<td>4.23</td>
<td>0.0422</td>
</tr>
</tbody>
</table>

The picture in sample two was drastically different with social matters now the strongest predictor of the variance in the stress scores. Circumstances outside the work situation, remuneration, fringe benefits and personnel policy, and task characteristics also contributed significantly to the variance in the stress scores, together with social matters accounting for 44% of the variance.

If we look at table 7.22 we see, of the predictors included in the model, social matters (r = 0.47) and causes outside the work situation (r = 0.46) correlated most strongly with stress. However, this was not the case with remuneration, fringe benefits and personnel policy (r = 0.13), and task characteristics (r = 0.36) which did not correlate as strongly as some of the other predictors.

Social matters correlated highly with remuneration, fringe benefits and personnel policy (r = 0.53) and task characteristics (r = 0.50), raising the possibility of collinearity between these predictors.

Several predictors that correlated strongly with stress were also not included in the model. In this regard social matters (r = 0.39), career opportunities (r = 0.38) and physical working conditions (r = 0.31) all correlated strongly but were not included in the model.
7.3.2.2 Anxiety

Table 7.25 Stepwise regression for anxiety in sample one, white subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.26</td>
<td>0.26</td>
<td>49.21</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Social matters</td>
<td>0.04</td>
<td>0.30</td>
<td>8.91</td>
<td>0.0033</td>
</tr>
</tbody>
</table>

The predictors that accounted for the variance in the anxiety scores for white subjects in sample two were circumstances outside the work situation and social matters. However, these did not provide a particularly good explanation as they only accounted for 30% of the variance in the anxiety scores.

In table 7.21, we see that there was a fairly high correlation between circumstances outside the work situation and social matters ($r = 0.39$). This raises the issue of collinearity between these predictors. Of further note is that organizational functioning ($r = 0.37$) and task characteristics ($r = 0.36$) both correlated strongly with anxiety, but were not included in the model.

Table 7.26 Stepwise regression for anxiety in sample two, white subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.22</td>
<td>0.22</td>
<td>31.18</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.03</td>
<td>0.25</td>
<td>4.94</td>
<td>0.0283</td>
</tr>
<tr>
<td>3</td>
<td>Social matters</td>
<td>0.03</td>
<td>0.28</td>
<td>3.84</td>
<td>0.0527</td>
</tr>
</tbody>
</table>

The picture for anxiety in the white subjects in sample two was similar to that for sample one. The only difference was that remuneration, fringe benefits and personnel policy was included in the model. However the inclusion of this extra predictor did not serve to improve the power of the model as it only explained 28% of the variance in the anxiety scores.
If we refer to table 7.22, we see that the predictors entered in the model correlated the most strongly with the anxiety scores. Circumstances outside the work situation ($r = 0.47$), social matters ($r = 0.21$) and remuneration, fringe benefits and personnel policy ($r = 0.20$) all correlated strongly with anxiety. However, the issue of collinearity comes to the fore with circumstances outside the work situation correlating strongly with remuneration, fringe benefits and personnel policy ($r = 0.40$) and to a lesser degree with social matters ($r = 0.32$). Remuneration, fringe benefits and personnel policy also correlated strongly with social matters ($r = 0.53$).

In summary, neither of the models did a particularly good job of accounting for the variance in anxiety scores (accounting for 30% and 28% respectively). These models were fairly similar, with the only difference being that remuneration, fringe benefits and personnel policy was included in the model for sample two.

### 7.3.2.3 Depression

Table 7.27 Stepwise regression for depression in sample one, white subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial $R^2$</th>
<th>Model $R^2$</th>
<th>$F$</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
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<td>0.16</td>
<td>27.66</td>
<td>0.0001</td>
</tr>
<tr>
<td>2</td>
<td>Social matters</td>
<td>0.05</td>
<td>0.21</td>
<td>8.04</td>
<td>0.0052</td>
</tr>
</tbody>
</table>

The predictors included in the model provided a poor explanation (21%) of the variance in depression scores for the white subjects in sample one. In this regard both circumstances outside the work situation and social matters were significant predictors of the variance in the depression scores.

If we look at table 7.21 we see that circumstances outside the work situation ($r = 0.40$) and social matters ($r = 0.35$) correlated the most strongly with the depression. However, circumstances outside the work situation and social matters correlated strongly ($r = 0.39$) raising the possibility of collinearity.
Table 7.28 Stepwise regression for depression in sample two, white subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.19</td>
<td>0.19</td>
<td>25.56</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

The only variable to be included in the model attempting to explain the variance of the depression scores for the white subjects in sample two was circumstances outside the work situation. In table 7.22 we also see that this predictor correlated the most strongly with depression (r = 0.43). However, it provided a rather poor model as it only accounted for 19% of the variance in the depression scores.

In summary, the two models did not succeed in providing a particularly powerful model for the explanation of the variance in depression scores, explaining 21% and 19% respectively. The only difference between the models was that the predictor social matters was entered into the model for sample one.
### 7.3.3 Black subjects

#### Table 7.29 Pearson correlation coefficients, black subjects, sample one (n = 61)

<table>
<thead>
<tr>
<th></th>
<th>Stress</th>
<th>Anxiety</th>
<th>Depression</th>
<th>Circumstances outside the work situation</th>
<th>Organizational functioning</th>
<th>Task characteristics</th>
<th>Physical working conditions</th>
<th>Career opportunities</th>
<th>Social matters</th>
<th>Remuneration, fringe benefits and personnel policy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stress</td>
<td>1.0</td>
<td>0.47</td>
<td>0.25</td>
<td>0.54</td>
<td>0.03</td>
<td>0.25</td>
<td>0.27</td>
<td>0.40</td>
<td>0.25</td>
<td>0.19</td>
</tr>
<tr>
<td>Anxiety</td>
<td>0.47</td>
<td>1.0</td>
<td>0.66</td>
<td>0.38</td>
<td>0.22</td>
<td>0.31</td>
<td>0.18</td>
<td>0.46</td>
<td>0.38</td>
<td>0.21</td>
</tr>
<tr>
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<td>0.25</td>
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<td>0.27</td>
<td>0.17</td>
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</tr>
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<td>0.10</td>
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<td>0.29</td>
<td>0.16</td>
<td>0.33</td>
</tr>
<tr>
<td>Organizational functioning</td>
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<td>1.0</td>
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<td>0.40</td>
<td>0.65</td>
<td>0.70</td>
<td>0.63</td>
</tr>
<tr>
<td>Task characteristics</td>
<td>0.25</td>
<td>0.31</td>
<td>0.26</td>
<td>0.06</td>
<td>0.49</td>
<td>1.0</td>
<td>0.54</td>
<td>0.71</td>
<td>0.68</td>
<td>0.56</td>
</tr>
<tr>
<td>Physical working conditions</td>
<td>0.27</td>
<td>0.0522</td>
<td>0.06</td>
<td>0.001</td>
<td>0.051</td>
<td>0.001</td>
<td>0.051</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>0.40</td>
<td>0.0014</td>
<td>0.27</td>
<td>0.29</td>
<td>0.65</td>
<td>0.71</td>
<td>0.51</td>
<td>1.0</td>
<td>0.67</td>
<td>0.64</td>
</tr>
<tr>
<td>Social matters</td>
<td>0.25</td>
<td>0.0529</td>
<td>0.17</td>
<td>0.16</td>
<td>0.70</td>
<td>0.68</td>
<td>0.41</td>
<td>0.67</td>
<td>1.0</td>
<td>0.51</td>
</tr>
<tr>
<td>Remuneration, fringe benefits and personnel policy</td>
<td>0.19</td>
<td>0.1444</td>
<td>0.20</td>
<td>0.33</td>
<td>0.63</td>
<td>0.56</td>
<td>0.57</td>
<td>0.64</td>
<td>0.51</td>
<td>1.0</td>
</tr>
</tbody>
</table>

(p-value in small print below r value)
It should be noted that the results achieved in respect of black subjects in sample two should be treated with circumspect due to the small size of the sample (n = 31).
7.3.3.1 Stress

Table 7.31  Stepwise regression for stress: sample one, black subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial $R^2$</th>
<th>Model $R^2$</th>
<th>$F$</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
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<td>1</td>
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</tr>
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<td>2</td>
<td>Career opportunities</td>
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<td>0.35</td>
<td>5.78</td>
<td>0.0195</td>
</tr>
<tr>
<td>3</td>
<td>Organizational functioning</td>
<td>0.07</td>
<td>0.42</td>
<td>6.87</td>
<td>0.0112</td>
</tr>
</tbody>
</table>

The predictors contributing significantly to the variance of the stress scores in black subjects in sample one were circumstances outside the work situation, career opportunities and organizational functioning, which jointly accounted for 42% of the variance.

In table 7.29, we see that circumstances outside the work situation ($r = 0.54$) and career opportunities ($r = 0.40$) correlated strongly with stress. However, this was not the case with organizational functioning which did not correlate significantly ($r = 0.03$). It is also important to note that there was a high correlation between organizational functioning and career opportunities ($r = 0.65$), raising the possibility of collinearity between these predictors. It is also interesting to note that social matters ($r = 0.38$) and task characteristics ($r = 0.31$) both correlated strongly with stress, but were not included in the model.

Table 7.32  Stepwise regression for stress in sample two, black subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial $R^2$</th>
<th>Model $R^2$</th>
<th>$F$</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.38</td>
<td>0.38</td>
<td>17.91</td>
<td>0.0002</td>
</tr>
<tr>
<td>2</td>
<td>Social matters</td>
<td>0.10</td>
<td>0.48</td>
<td>5.15</td>
<td>0.0311</td>
</tr>
</tbody>
</table>

Circumstances outside the work situation and social matters were significant predictors of the variance in the stress scores of the black subjects in sample two. These predictors provided a fairly good model accounting for 48% of the variance in the stress scores.
In table 7.30 we see that circumstances outside the work situation ($r = 0.62$) and social matters ($r = 0.34$) correlated strongly with stress. Collinearity was not a problem as the predictors included in the model did not correlate strongly with one another. However, career opportunities ($r = 0.39$) and task characteristics ($r = 0.33$) both correlated strongly with stress, but were not included in the model.

In summary, both models provided a fairly good explanation for the variance in stress scores for black subjects (42% and 48% respectively). Although circumstances outside the work situation played the strongest role in both instances, career opportunities and organizational functioning were included in the model for sample one, while social matters was included in the model for sample two.

### 7.3.3.2 Anxiety

Table 7.33 Stepwise regression for anxiety in sample one, black subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial $R^2$</th>
<th>Model $R^2$</th>
<th>$F$</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Career opportunities</td>
<td>0.22</td>
<td>0.22</td>
<td>16.20</td>
<td>0.0002</td>
</tr>
<tr>
<td>2</td>
<td>Circumstances outside the work situation</td>
<td>0.07</td>
<td>0.28</td>
<td>5.32</td>
<td>0.0247</td>
</tr>
</tbody>
</table>

The predictors that entered the model attempting to explain the variance in the anxiety scores for black subjects in sample one were career matters and circumstances outside the work situation. However, these did not provide a particularly good explanation, only accounting for 28% of the variance in the anxiety scores.

If one looks at table 7.29 we see that anxiety correlated strongly with career opportunities ($r = 0.46$) and circumstances outside the work situation ($r = 0.38$). These two predictors also correlated with one another ($r = 0.29$) raising the possibility of collinearity. However, social matters ($r = 0.38$) and task characteristics ($r = 0.31$) correlated strongly with anxiety but were not included in the model.
Table 7.34  Stepwise regression for anxiety in sample two, black subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.30</td>
<td>0.30</td>
<td>12.19</td>
<td>0.0016</td>
</tr>
<tr>
<td>2</td>
<td>Physical working conditions</td>
<td>0.11</td>
<td>0.41</td>
<td>5.39</td>
<td>0.0278</td>
</tr>
</tbody>
</table>

Circumstances outside the work situation and physical working conditions accounted for 41% of the variance in anxiety for the black subjects in sample two.

In table 7.30 we see that although circumstances outside the work situation correlate strongly with anxiety ($r = 0.54$), this was not the case with physical working conditions. Physical working conditions had a negative correlation with anxiety ($r = -0.18$) which was not significant at $\alpha = 0.05$. However, no other predictors, that were not included in the model, correlated strongly with anxiety.

In conclusion, the models attempting to explain the variance in anxiety scores differed somewhat between sample one and sample two. This was both with regard to effectiveness and the predictors included in the models. In the case of sample one, the model was not a particularly good one as it only managed to account for 28% of the variance, while the model for sample two accounted for 41% of the variance. As for the predictors, career opportunities, which was the main predictor in the model for sample one did not feature in the model for sample two. A similar situation occurred for the variable physical working conditions that played a significant role in the model for sample two, while it did not feature in sample one.
7.3.3.3 Depression

Table 7.35 Stepwise regression for depression: sample one, black subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.08</td>
<td>0.08</td>
<td>5.18</td>
<td>0.0265</td>
</tr>
</tbody>
</table>

The only variable contributing significantly at $\alpha = 0.05$ to the variance in depression scores for black subjects in sample one was circumstances outside the work situation. However, this was a poor model as it only contributed to 8% of the variance. If we look at table 7.29 we see that, of the variables included in the model, this was the variable that had the strongest correlation with depression ($r = 0.28$).

Table 7.36 Stepwise regression for depression in sample two, black subjects

<table>
<thead>
<tr>
<th>Step</th>
<th>Variable entered</th>
<th>Partial R²</th>
<th>Model R²</th>
<th>F</th>
<th>Prob&gt;F</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Circumstances outside the work situation</td>
<td>0.17</td>
<td>0.17</td>
<td>5.90</td>
<td>0.0216</td>
</tr>
</tbody>
</table>

The situation for depression in black subjects in sample two was similar, the only difference now being that circumstances outside the work situation accounted for 17% of the variance in scores. Again, if we look at table 7.30 we see that, of the variables included in the model, this had the strongest correlation with depression ($r = 0.41$).

In summary, the models attempting to explain the variance in depression scores were practically identical for the two samples, both including the same predictor and providing poor explanations for the variance (8% and 17% respectively). 

-115-
7.4 **Within sample differences**

7.4.1 **Sample one**

Table 7.37 ANOVA for the analysis of variance, dependant variable stress, sample one

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F value</th>
<th>Probability &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>2402.4</td>
<td>1201.2</td>
<td>3.71</td>
<td>0.0260</td>
</tr>
<tr>
<td>Error</td>
<td>209</td>
<td>67611.9</td>
<td>323.5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>211</td>
<td>70014.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The probability of F is 0.026 which is smaller than \( \alpha = 0.05 \) indicating that there is a significant difference between the means of stress scores.

Table 7.38 Bonferoni test for stress, sample one

<table>
<thead>
<tr>
<th>Race comparison (Mean in brackets below)</th>
<th>Difference between means</th>
<th>Comparisons significant at ( \alpha = 0.05 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (83.08)</td>
<td>7.48</td>
<td>Yes</td>
</tr>
<tr>
<td>White (75.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coloured (76.85)</td>
<td>1.25</td>
<td>No</td>
</tr>
<tr>
<td>White (75.6)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (83.08)</td>
<td>6.23</td>
<td>No</td>
</tr>
<tr>
<td>Coloured (76.85)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The Bonferoni test indicates that there were significant differences between means of the stress scores of the black and white subjects in sample one. The black subjects had a significantly higher mean stress score at \( \alpha = 0.05 \). However, there were no significant differences between the black and coloured, and coloured and white subgroups respectively.

-116-
Table 7.39 ANOVA for the analysis of variance, dependant variable anxiety, sample one

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F value</th>
<th>Probability &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>51.05</td>
<td>25.53</td>
<td>0.22</td>
<td>0.7988</td>
</tr>
<tr>
<td>Error</td>
<td>209</td>
<td>23724.8</td>
<td>113.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>211</td>
<td>23775.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The probability of $F$ is 0.7988 which is bigger than $\alpha = 0.05$ indicating that there was not a significant difference between the means of anxiety scores.

Table 7.40 Bonferoni test for anxiety, sample one

<table>
<thead>
<tr>
<th>Race comparison (Mean in brackets below)</th>
<th>Difference between means</th>
<th>Comparisons significant at $\alpha = 0.05$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (31.67)</td>
<td>White (31.51)</td>
<td>0.15</td>
</tr>
<tr>
<td>Coloured (34.28)</td>
<td>White (31.51)</td>
<td>2.77</td>
</tr>
<tr>
<td>Black (31.67)</td>
<td>Coloured (34.28)</td>
<td>-2.61</td>
</tr>
</tbody>
</table>

The results of the ANOVA are supported when examining the Bonferoni test where we see that there were no significant differences between means of anxiety scores for any of the subgroups.
Table 7.41 ANOVA analysis of variance, dependant variable depression, sample one

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F value</th>
<th>Probability &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>774.7</td>
<td>387.33</td>
<td>9.66</td>
<td>0.0001</td>
</tr>
<tr>
<td>Error</td>
<td>209</td>
<td>8377.2</td>
<td>40.08</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>211</td>
<td>9151.9</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The probability > F is 0.0001 which is smaller than \( \alpha = 0.05 \) indicating that there is a significant difference between mean depression scores.

Table 7.42 Bonferoni test for depression, sample one

<table>
<thead>
<tr>
<th>Race comparison (Mean in brackets below)</th>
<th>Difference between means</th>
<th>Comparisons significant at ( \alpha = 0.05 )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (11.10)</td>
<td>White (6.98)</td>
<td>4.12</td>
</tr>
<tr>
<td>Coloured (10.86)</td>
<td>White (6.98)</td>
<td>3.88</td>
</tr>
<tr>
<td>Black (11.10)</td>
<td>Coloured (10.86)</td>
<td>0.24</td>
</tr>
</tbody>
</table>

In examining the Bonferoni test we see that there was a significant difference between the mean depression scores of the black and white subjects. This was manifested in the black subjects having a significantly higher mean depression score at \( \alpha = 0.05 \). However, there were no significant differences between the black and coloured, and the coloured and white subgroups respectively.

In summary, there were significant differences in the means scores at \( \alpha = 0.05 \) between the black and white subgroups with regard to stress and depression, but not for anxiety. In both instances the black subgroup had a significantly higher mean score. However, there were no differences between the means of the black and coloured subgroups, or between the coloured and white subgroups respectively.
7.4.2 Sample two

Table 7.43 ANOVA for the analysis of variance, dependant variable stress, sample two

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F value</th>
<th>Probability &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>3286.8</td>
<td>1643.4</td>
<td>4.76</td>
<td>0.0097</td>
</tr>
<tr>
<td>Error</td>
<td>165</td>
<td>56924.6</td>
<td>345.0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>167</td>
<td>60211.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The probability of $F$ is 0.0097 which is smaller than $\alpha = 0.05$ indicating that there is a significant difference between the mean stress scores.

Table 7.44 Bonferoni test for stress, sample two

<table>
<thead>
<tr>
<th>Race comparison (Mean in brackets below)</th>
<th>Difference between means</th>
<th>Comparisons significant at $\alpha = 0.05$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (89.13)</td>
<td>11.34</td>
<td>Yes</td>
</tr>
<tr>
<td>White (77.79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coloured (77.48)</td>
<td>-0.31</td>
<td>No</td>
</tr>
<tr>
<td>White (77.79)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Black (89.13)</td>
<td>11.64</td>
<td>No</td>
</tr>
<tr>
<td>Coloured (77.48)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In examining the Bonferoni test we see that the significant difference between means was between black and white subjects in that the black subjects had a significantly higher mean stress score at $\alpha = 0.05$. However, there were no significant differences in the mean scores for stress between the black and coloured, and coloured and white subgroups respectively.
Table 7.45 ANOVA for the analysis of variance, dependant variable anxiety, sample two

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F value</th>
<th>Probability &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>1887.0</td>
<td>943.52</td>
<td>7.29</td>
<td>0.0009</td>
</tr>
<tr>
<td>Error</td>
<td>165</td>
<td>21353.2</td>
<td>129.41</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>167</td>
<td>23240.3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The probability of F is 0.0009 which is smaller than $\alpha = 0.05$ indicating that there is a significant difference in the mean anxiety scores.

Table 7.46 Bonferoni test for anxiety, sample two

<table>
<thead>
<tr>
<th>Race comparison (Mean in brackets below)</th>
<th>Difference between means</th>
<th>Comparisons significant at $\alpha = 0.05$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (39.65) White (31.63)</td>
<td>8.01</td>
<td>Yes</td>
</tr>
<tr>
<td>Coloured (29.44) White (31.63)</td>
<td>-2.19</td>
<td>No</td>
</tr>
<tr>
<td>Black (39.65) Coloured (29.44)</td>
<td>10.21</td>
<td>Yes</td>
</tr>
</tbody>
</table>

In examining the Bonferoni test we see that the significant difference between mean anxiety scores was between the black and white, and black and coloured subgroups respectively. In both instances the black subgroup had the significantly higher mean anxiety scores at $\alpha = 0.05$. However, there was not a significant difference between the mean scores of the white and coloured subgroups.
Table 7.47 ANOVA for the analysis of variance, dependant variable depression, sample two

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of freedom</th>
<th>Sum of squares</th>
<th>Mean squares</th>
<th>F value</th>
<th>Probability &gt; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>2</td>
<td>445.4</td>
<td>222.7</td>
<td>5.67</td>
<td>0.0042</td>
</tr>
<tr>
<td>Error</td>
<td>165</td>
<td>6483.7</td>
<td>39.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corrected total</td>
<td>167</td>
<td>6929.1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The probability of F is 0.042 which is smaller than $\alpha = 0.05$ indicating that there is a significant difference between the mean depression scores.

Table 7.48 Bonferoni test for depression, sample two

<table>
<thead>
<tr>
<th>Race comparison (Mean in brackets below)</th>
<th>Difference between means</th>
<th>Comparisons significant at $\alpha = 0.05$</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (11.68) White (7.40)</td>
<td>4.28</td>
<td>Yes</td>
</tr>
<tr>
<td>Coloured (8.60) White (7.40)</td>
<td>1.20</td>
<td>No</td>
</tr>
<tr>
<td>Black (11.68) Coloured (8.60)</td>
<td>3.08</td>
<td>No</td>
</tr>
</tbody>
</table>

In examining the Bonferoni test we see that the significant difference between the means was between the black and white subgroups. The black subjects had the significantly higher mean depression score at $\alpha = 0.05$. However, there were no significant differences between the black and coloured, and coloured and white subgroups respectively.

In conclusion, the black subgroup had significantly higher mean scores for all three the variables measured when compared to the white subgroup. The black subgroup also had a significantly higher mean anxiety score than the coloured subgroup. These results were similar to those of sample one, except for the significant differences in terms of anxiety.
CHAPTER 8: DISCUSSION OF RESULTS

8.1 Introduction

A discussion of the results obtained in the study is presented in this chapter. The chapter is structured according to the separate groups analysed, in that the results obtained for each group are discussed in terms of the hypotheses set for the study.

The regression analyses are summarised in table form. The percentage each predictor contributed to the model ($R^2$) is shown with its correlation ($r$) with the dependant variable. Indicated, in a shaded block, are predictors that correlated strongly with the dependant variable, but were not included in the model. Although the predictors included in the models explained most of the variance, it does not mean that the variables in the shaded blocks did not contribute to the variance of the dependant variable. The argument is that the predictors included in the model have already explained the variance that those not included may have contributed.

8.2 Collinearity between the measures in the study

In several instances the questionnaires, and their sub-scales, used to operationalize the variables in this study correlated significantly with one another in several instances and these correlations have implications for the interpretation of the results.

The Experience of Work and Life Circumstances Questionnaire (WLQ) was used to operationalize the independent variables in the regression analysis models for stress, anxiety and depression. Van Zyl & van der Walt (1991) argue that there is "a fairly significant relation between the different fields/scales of the WLQ, which supports the construct validity of the questionnaire". This assertion was supported in the present study as the predictors measured by the WLQ correlated highly in most instances.
Table 7.13 shows that all the correlations between the predictors for sample one were significant at \( \alpha = 0.05 \), ranging from 0.20 to 0.69. The same phenomenon occurred in sample two (see table 7.14) with significant correlations ranging from 0.21 to 0.71. However, the degree of collinearity between predictors is higher between the scales that measure circumstances in the work situation. Correlations ranging between 0.34 and 0.69 (table 7.13) and between 0.44 and 0.76 (table 7.14) occurred in samples one and two respectively. This is in contrast to the scale for circumstances outside the work situation which did not have such high correlations with the other predictors. Correlations of between 0.20 and 0.34 in sample one (see table 7.13), and between 0.21 and 0.29 in sample two (table 7.14) were obtained.

Although collinearity between the scales of the WLQ may support the construct validity of the questionnaire, it has the effect that regression analysis models in which these scales are used as predictors are unstable.

Similarly, although the Beck Depression Inventory (Beck), the IPAT Anxiety Scale (IPAT) and the total stress score for the WLQ are independently standardised and validated questionnaires, there were high correlations between these scales.

Table 8.1 A summary of Pearson correlation coefficients for stress, anxiety and depression, sample one

<table>
<thead>
<tr>
<th></th>
<th>Stress and anxiety</th>
<th>Stress and depression</th>
<th>Anxiety and depression</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>All managers</strong></td>
<td>0.54</td>
<td>0.42</td>
<td>0.49</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>White managers</strong></td>
<td>0.62</td>
<td>0.52</td>
<td>0.48</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td><strong>Black managers</strong></td>
<td>0.47</td>
<td>0.25</td>
<td>0.66</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0479</td>
<td>0.0001</td>
</tr>
</tbody>
</table>

(p-values in small print below r-values)
The correlations for stress, anxiety and depression were high for sample one, both among the
group as a whole and between the white and black entry-level managers. A possible exception
was the relatively low correlation \( r = 0.25 \) between stress and depression for black entry-level
managers. However, the other two correlations for black managers were high with stress and
anxiety \( r = 0.47 \), and anxiety and depression \( r = 0.66 \).

Table 8.2  A summary of Pearson correlation coefficients for stress, anxiety and depression,
sample two

<table>
<thead>
<tr>
<th></th>
<th>Stress and anxiety</th>
<th>Stress and depression</th>
<th>Anxiety and depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>All managers</td>
<td>0.60</td>
<td>0.51</td>
<td>0.56</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>White managers</td>
<td>0.61</td>
<td>0.53</td>
<td>0.59</td>
</tr>
<tr>
<td></td>
<td>0.0001</td>
<td>0.0001</td>
<td>0.0001</td>
</tr>
<tr>
<td>Black managers</td>
<td>0.52</td>
<td>0.29</td>
<td>0.45</td>
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<td></td>
<td>0.0029</td>
<td>0.1121</td>
<td>0.0113</td>
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</table>

(p-values in small print below r-values)

The pattern for sample two was practically identical to sample one with high correlations in all
aspects. However, a possible exception was the correlation between stress and depression \( r =
0.29 \) for black entry-level managers. The interaction between these constructs is complex with
it not being possible to determine the direction or strength of specific relationships.

These findings are not surprising as the high correlation between stress, anxiety and depression
measures is well documented in the literature. Gotlib and Cane (1989) found that existing self-
report measures of anxiety and depression do not discriminate between these syndromes. The
correlation between self-report anxiety and depression scales is typically between 0.50 and 0.80.
These correlations are obtained irrespective of the specific measures used, or the population
studied; and is not an artefact of self-report measures (Watson & Kendall, 1989b).
Stress and anxiety are related in that both involve the ego and anxiety is related to depression in that it forms a component of depressive disorders. Significant symptoms of anxiety can and often do co-exist with depression (Kaplan et al., 1994; Watson & Kendall, 1989a; Roesch, 1991).

Although anxiety, stress and depression are clearly correlated, the specific nature of the relationship is not clear at all. Rigby (1989) argues that stress is a necessary accompaniment of anxiety and the more frequent and lengthy the occurrence, the more evident it will be through its functional disorders (Rigby, 1989). Anxiety is thus regarded as a consequence of events perceived as stressful (Parkes, 1991; Russler, 1991). Depression is closely related to the concept of stress. On the one hand it would appear that depression affects the experience of stress, in that the mildly depressed seem to be more vulnerable to life events (Fisher, 1989), and life change stress is significantly related with depression (Berndt, 1985). On the other hand, depression is viewed as a consequence of stress. Endressen, Ellersten, Endersen, Hjelman, Matre and Urisin (1991) identified various stressors in Norwegian female bank employees and showed that depressive symptoms presented the most frequent emotional problem. Similarly Smith and Allred (1989) found that negative life events were associated with an increase in both anxiety and depression levels.

Because the complexities of the correlations between stress, anxiety and depression are not well understood the constructs were treated separately in the analysis. Thus, anxiety and depression were not included in the regression analysis as possible predictors for stress. By the same token stress and depression were not included in the model for anxiety, and anxiety and stress were not included in the model for depression.

In conclusion, the high correlations between the instruments used in this study had several implications both in terms of the approach to the data and interpretation of results. The collinearity between the predictor scales of the WLQ made for rather unstable regression analyses with the result that the models should be interpreted with circumspect. The high correlation
between stress, anxiety and depression, although expected, had implications for the way in which the data were interpreted. In the light of the high correlation between these variables, the distinction between them is somewhat artificial. However, this distinction was maintained to get greater clarity on the predictors involved in each construct.

8.3 Entry-level managers as a group

It was hypothesised that the organizational change process, as it had progressed in the year between the two measurements, would have impacted significantly on the stress, anxiety and depression levels of entry-level managers in the organization. However, there were no significant increases in any of the scores. Possible predictors of the variance of these variables where then examined to determine if these differed between the two samples and if so, whether these could be related to the organizational change process.
In both samples the environmental predictors accounted for much more of the variance in stress scores (44% and 50% respectively), than for anxiety (27% and 32% respectively) and for depression (20% and 18% respectively). This reflects the theoretical bases of the constructs, namely that stress, although mediated by cognition, is a function of the environment (see p. 42), while anxiety is both state and trait (see p. 49), and depression has both a reactive and endogenous elements (see p. 60). However, one would expect environmental factors to be a better predictor of depression than of anxiety as depression is strongly related to environmental factors (see p. 55). Thus the poor correlation with the measured predictors may be a function of the problems noted in relation to the BDI (see p.79).
The most powerful predictor for stress, anxiety and depression in both samples was circumstances outside the work situation. Whether these can be related to the change process is debateable and this study provides no evidence in this regard. It is noteworthy that the first sample was measured approximately one and a half years after the election of the Government of National Unity in April 1994 that ushered in major changes in all aspects of SA society. However, the scale measuring circumstances outside the work situation in the WLQ measures a broad range of factors related to all aspects of life outside the work situation (see p. 72). This would suggest that the main contributor to stress, anxiety and depression for both samples relate to general life difficulties, rather than to changes taking place on organizational or national level.

It was hypothesised that predictors relating to the work situation would play a stronger role in sample two. This hypothesis was only really supported for stress. The model for sample two accounted for more of the variance in the stress scores (50% as opposed to 44%) and predictors related to the work situation played a stronger role. In sample one task characteristics was the major work related predictor of stress. In sample two social matters now entered the model second, indicating that social relationships in the organization were now contributing significantly to stress. Remuneration, fringe benefits and personnel policy and organizational functioning were now also included in the model. These three variables are strongly related to the change process within the organization in that the process of restructuring and the amalgamation of the eleven former independent police agencies into the SAPS directly affects each of these.

It is questionable that the hypothesis was supported for anxiety. The models were similar for the two samples. The main differences were that task characteristics and career opportunities correlated strongly in sample one and not in sample two. However, as with stress organizational functioning, although not included in the model, correlated strongly in sample two, while it did not figure for sample one. Organizational functioning, as already mentioned, is strongly related to the organizational change process.
The hypothesis was definitely not supported for depression. No work related predictors featured in the model for sample two, while, career opportunities, featured in the model for sample one. The opposite of what was expected thus occurred for depression. This would suggest that entry-level managers were not as depressed about their future career prospects as they were at the beginning of the change process. This could be explained by the possibility that there is now less uncertainty about these aspects. However, this finding is surprising in the view of the high correlation depression has with stress and anxiety, coupled with the high collinearity between the predictors.

In conclusion, the hypothesis that factors relating to organizational change would play a stronger role after change than before was partly supported. It appears that several predictors of stress and anxiety are related to general difficulties in the organization as they correlate significantly with stress and anxiety in both samples. However, social matters, organizational functioning, and remuneration, fringe benefits and personnel policy, which are strongly related to the change process in the organization, played a more significant role in predicting stress and, to a lesser extent, anxiety in sample two. Depression was the exception, with no factors relating to circumstances in the organization playing a role in sample two.
8.4 White entry-level managers

Table 8.4 Summary of regression analyses for white subjects

<table>
<thead>
<tr>
<th>SAMPLE ONE</th>
<th>STRESS</th>
<th>R²</th>
<th>r</th>
<th>ANXIETY</th>
<th>R²</th>
<th>r</th>
<th>DEPRESSION</th>
<th>R²</th>
<th>r</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Circumstances outside the work situation</td>
<td>49</td>
<td>.70</td>
<td>Circumstances outside the work situation</td>
<td>26</td>
<td>.37</td>
<td>Circumstances outside the work situation</td>
<td>16</td>
<td>.40</td>
</tr>
<tr>
<td></td>
<td>Organizational functioning</td>
<td>4</td>
<td>.44</td>
<td>Social matters</td>
<td>4</td>
<td>.39</td>
<td>Social matters</td>
<td>5</td>
<td>.35</td>
</tr>
<tr>
<td></td>
<td>Task characteristics</td>
<td>2</td>
<td>.43</td>
<td>Organizational functioning</td>
<td>.37</td>
<td></td>
<td>Career opportunities</td>
<td>.33</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Task characteristics</td>
<td>.36</td>
<td></td>
<td>Organizational functioning</td>
<td>.30</td>
<td></td>
</tr>
<tr>
<td>Social matters</td>
<td>.39</td>
<td></td>
<td></td>
<td>Social matters</td>
<td>4</td>
<td>.39</td>
<td>Social matters</td>
<td>5</td>
<td>.35</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>.38</td>
<td></td>
<td></td>
<td>Social matters</td>
<td>4</td>
<td>.39</td>
<td>Social matters</td>
<td>5</td>
<td>.35</td>
</tr>
<tr>
<td>Physical working conditions</td>
<td>.31</td>
<td></td>
<td></td>
<td>Social matters</td>
<td>4</td>
<td>.39</td>
<td>Social matters</td>
<td>5</td>
<td>.35</td>
</tr>
</tbody>
</table>

| SAMPLE TWO         | Social matters                   | 22 | .47  | Circumstances outside the work situation | 22 | .47  | Circumstances outside the work situation | 19 | .43  |
|                    | Circumstances outside the work situation | 11 | .46  | Remuneration, fringe benefits and personnel policy | 3  | .20  | Remuneration, fringe benefits and personnel policy |
|                    | Remuneration, fringe benefits and personnel policy | 6  | .13  | Social matters                   | 3  | .21  | Social matters                   | 5  | .35  |
|                    | Task characteristics            | 2  | .36  | Remuneration, fringe benefits and personnel policy | 3  | .21  | Social matters                   | 5  | .35  |
|                    | Organizational functioning      | .40 |      | Social matters                   | 4  | .39  | Social matters                   | 5  | .35  |
|                    | Career opportunities            | .31 |      | Social matters                   | 4  | .39  | Social matters                   | 5  | .35  |
|                    | Physical working conditions     | .29 |      | Social matters                   | 4  | .39  | Social matters                   | 5  | .35  |

Although there were increases in the stress, anxiety and depression scores of sample two compared to sample one, none of these were significant for white entry-level managers. Again, circumstances outside the work situation played the strongest role in predicting the variance in the stress, anxiety and depression scores in all instances, except stress in sample two.
The model for stress differed quite drastically between the white entry-level managers in sample one as opposed to that for sample two. While circumstances outside the work situation was the strongest predictor in sample one, it was replaced by social matters. Remuneration, fringe benefits and personnel policy was also included in the model for sample two, which was not the case with sample one. Thus, the change process in the organization appeared to be affecting the white entry-level managers in terms of social functioning and the lack of clear guidelines as to personnel matters. However, it must be noted that all of the predictors related to the work situation correlated strongly in sample two, except for the predictor remuneration, fringe benefits and personnel policy.

The picture for anxiety also differed between sample one and sample two in that remuneration, fringe benefits and personnel policy, which also played a significant role in the model for stress, was now included in the model for anxiety in sample two. Organizational functioning and task characteristics, which correlated strongly with anxiety in sample one, did not feature in sample two. Thus, the lack of a clear personnel policy within the organization was a significant contributor to the variance in anxiety.

Once again the model for depression was the opposite of what was expected. Only factors outside the work situation contributed significantly to the variance in scores for sample two where several factors in the work situation correlated strongly with depression in sample one.

In conclusion the hypothesis, that more predictors related to the work situation would be included as predictors for sample two, was supported to some extent. This was witnessed to the greatest extent in stress where social matters and remuneration, fringe benefits and personnel policy, not included in sample one, were included in the model for sample two. The model for anxiety also supported the hypothesis, although only in that remuneration, fringe benefits and personnel policy was included in the model for sample two, which was not the case in sample one. Once again the model for depression performed in exactly the opposite direction of what was expected. Several factors relating to circumstances in the organization, correlated strongly with depression in sample one, while none did so in the model for sample two.
8.5 Black entry-level managers

The black subjects, while not showing significant increases for stress and depression, did show a significant increase in the mean anxiety score from sample one to sample two. This increase can perhaps be explained by examining the stepwise regression models for anxiety in sample one and two respectively.

Table 8.5 Summary of regression analyses for black subjects

<table>
<thead>
<tr>
<th></th>
<th>SAMPLE ONE</th>
<th></th>
<th>SAMPLE TWO</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>R²</td>
<td>r</td>
<td></td>
<td>R²</td>
</tr>
<tr>
<td>Stress</td>
<td></td>
<td></td>
<td>Anxiety</td>
<td></td>
</tr>
<tr>
<td>Circumstances outside the work situation</td>
<td>29</td>
<td>.54</td>
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<td>22</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>6</td>
<td>.40</td>
<td>Circumstances outside the work situation</td>
<td>7</td>
</tr>
<tr>
<td>Organizational functioning</td>
<td>7</td>
<td>.30</td>
<td>Social matters</td>
<td>.38</td>
</tr>
<tr>
<td>Physical working conditions</td>
<td>.27</td>
<td></td>
<td>Task characteristics</td>
<td>.31</td>
</tr>
<tr>
<td>Social matters</td>
<td>.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task characteristics</td>
<td>.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Circumstances outside the work situation</td>
<td>38</td>
<td>.62</td>
<td>Circumstances outside the work situation</td>
<td>30</td>
</tr>
<tr>
<td>Social matters</td>
<td>10</td>
<td>.34</td>
<td>Physical working conditions</td>
<td>11</td>
</tr>
<tr>
<td>Career opportunities</td>
<td>.39</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Task characteristics</td>
<td>.33</td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>
It is again noteworthy that circumstances outside the work situation played the strongest role in predicting the variance in stress, anxiety and depression scores, except for anxiety in sample one.

If we examine the model for sample one, we see that career opportunities and circumstances outside the work situation were the most significant predictors in explaining the variance in anxiety scores, although only accounting for 22% of the variance. Although not entering the model, task characteristics and social matters also correlated strongly with anxiety. In sample two the main predictors of anxiety were now circumstances outside the work situation and physical working conditions, accounting for 41% of the variance, while career opportunities did not feature. Thus it would appear that black entry-level managers perceived the organizational change to have led to deteriorating physical working conditions and that this has contributed to the higher levels of anxiety. However, the role of circumstances outside the work situation is unclear.

The model for stress differed in several aspects between sample one and two. Although circumstances outside the work situation was the strongest predictor of variance in both models, concerns about career opportunities and the functioning of the organization, which played a significant role in sample one, did not feature in sample two. However, the second variable to enter the model in sample two was perceptions about social matters in the organization, which did not figure as strongly in sample one. Thus, although more predictors related to the work situation correlated strongly with stress in sample one, social matters played a major role in predicting the variance in stress scores in sample two.

The model for depression remained constant between the two samples, with only circumstances outside the work situation entering either model. Compared with the models for stress and anxiety, these predictors did a poor job of explaining the variance in the depression scores, only accounting for 8% and 17% respectively.

In summary, the only significant increase occurred in anxiety levels of black entry-level managers. With respect to the predictors of anxiety the difference between sample one and two was that fewer variables in the work situation correlated strongly with anxiety. However, the main
circumstance in the work situation that correlated strongly in sample two was task characteristics, while as in sample one, circumstances outside the work situation still played a strong role. This would indicate that black entry-level managers were now experiencing anxiety in relation to the tasks which they had to perform and that the change process had altered the nature of these tasks. This could possibly suggest higher levels of responsibility. The main change regarding stress was that social matters now featured strongly, indicating that the black managers experienced the change process as affecting the nature of their social relationships in the organization. The model for depression remained constant between sample one and two with no circumstances in the work situation correlating significantly.

8.6 Intergroup relations

The exact opposite of what was hypothesised, namely that white entry-level managers would have higher levels of stress, anxiety and depression than their black or coloured counterparts, occurred. In sample one, the black entry-level managers had significantly higher stress and depression, but not anxiety scores, than their white counterparts. However, there were not significant differences between the white and coloured, and black and coloured subgroups respectively.

With sample two, this pattern was repeated with the black entry-level managers showing significantly higher stress and depression scores than their white counterparts. However, accompanying the significant increase in the anxiety scores of the black respondents were significant intergroup differences between black and white and black and coloured entry-level managers respectively. Thus, the black entry-level managers reported significantly higher anxiety scores than did both the white and coloured respondents.

Thus it would appear that the change process in the SAPS, and indeed the work situation in general, is placing much greater demands on black entry-level managers than on their white counterparts. The fact that the significant differences in stress and depression scores already
existed in sample one suggests that these are more likely to be related to the work situation in general. However, the interaction for anxiety would appear to be related to the organizational change process as it only manifested itself in sample two. This was also the only score that showed a significant increase and was strongly related to the predictor task characteristics.

It could thus be argued that the change process is placing significant demands on the black entry-level managers regarding the nature of the tasks that they have to perform which in turn leads to high levels of anxiety. These demands were also much more prominent for the black subjects than for their white or coloured counterparts.

8.7 Conclusion

Three key emotional constructs related to organizational change, stress, anxiety and depression, were examined to determine the effects thereof on entry-level managers in the SAPS. Key aspects relating to the change process were also examined to determine possible causal factors for any variations in scores. This process examined in relationship to various cultural groups in the organization with the findings, in some instances, being the opposite of what was hypothesised.

The main finding of the study was that black entry-level managers are experiencing the change process, and indeed the work situation in general, much more negatively than their white or coloured counterparts. This is reflected in levels of anxiety that are significantly higher than both their white and coloured counterparts. This finding was the exact opposite of what was expected as the black managers are seen to benefit the most from the organizational change process. With respect to the causes of stress, anxiety and depression the hypothesis was only partly supported that circumstances in the work situation would play a more significant role. With all three groups the models for stress and anxiety changed, with circumstances in the organization now playing a stronger role in the models. However, this phenomenon was not observed with depression, which in some instances showed the opposite effect. Despite this, the complex relationship between
stress, anxiety and depression cannot be ignored. This implies that these constructs, with the various predictors that accounted for their variance, have a complex and interactive relationship. This was emphasised by the fact that no characteristic models with specific predictors came to the fore for any of these constructs.

This study has raised certain pertinent questions about the effects of organizational change. The main application of this study is the stimulation of further research into the effects of organizational change on the members of organizations in South Africa. This issue is important within the context of ongoing organizational transformation processes, especially because of the emphasis being placed on human resources and the new worker-employer psychological contract. It is envisioned that a secondary application will be that the information provided by this study will enable managers, organization development specialists, trainers and change agents to develop more effective training programs and interventions to aid organizational change.
REFERENCES


-148-


### BIOGRAPHICAL QUESTIONNAIRE

**TICK THE BLOCKS WHICH APPLY TO YOU**

1. **SEX**
   - MALE
   - FEMALE

2. **AGE**
   - 18 - 20
   - 21 - 25
   - 26 - 30
   - 31 - 35
   - 36 - 40
   - 41 - 45
   - 46 - 50
   - 51 - 55
   - 56 - 60

3. **MARITAL STATUS**
   - SINGLE
   - MARRIED/LIVING TOGETHER
   - DIVORCED
   - WIDOWER

4. **RACE**
   - BLACK
   - WHITE
   - COLOURED
   - INDIAN

-150-
5. HIGHEST EDUCATIONAL QUALIFICATION COMPLETED

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6. YEARS OF SERVICE

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<tr>
<td>41 - 45</td>
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</tbody>
</table>

7. WHAT IS YOUR CURRENT POSITION?

___________________________________________________________