

# CHAPTER 1

## SCIENTIFIC REVIEW OF THE RESEARCH

This research focuses on *job and family stress amongst firefighters*. Chapter 1 provides a broad overview of the research. It examines the background of the research and the problem statement and outlines the general aims of the research, the research model, as well as the paradigm perspectives utilised. The research design and method are then described. Finally the chapter divisions are delineated.

### 1.1 RESEARCH BACKGROUND

The impact of traumatic experiences on individuals has been a research topic for many years. References to such research were made as early as in the 1600s. Samual Pepys expressed, through his writings, the intense emotional reaction experienced as a result of the trauma of witnessing the Great Fire of London in 1666 (Daley, 1983; Figley, 1985). Pepys states that six months after the fire, “it is strange to think how this very day I cannot sleep a night without great terrors of the fire” (Daley, 1983; Hanneman, 1994).

A number of researchers have noted the potential harmfully effects of exposure to unusually traumatic, tragic misadventure as an element of working in hazardous-duty occupations. Studies of police (Davidson, 1979), fire and emergency medical services (Graham, 1981; Mitchell, 1983; Mitchell, 1991; Raphael & Singh, 1983; Robinson, 1988), hospital-based health-care personnel, and child protective service workers have raised the possibility that involvement in helping in unusually tragic events may produce symptoms of stress (Willis, 1993).

There is a general agreement that persons who play a rescue role at times experience “stress response” symptoms following rescue efforts that they perceive as difficult or unusual. However, opinions differ regarding the magnitude of the stress responses and the insults that provoke them, and finding effective methods of intervention into the stress syndrome that meet the requirements of scientific rigour (Hartsough, 1988; Solomon, 1989; Willis, 1993).

The twenty-four-hour availability of firefighters often makes the difference between life and death. Firefighters who provide these emergency services to the public try to intervene with some of the most tragic aspects of the boundary between life and death, often in a context over which they have little control (Willis, 1993).

The following abstracts of the disastrous September 11 events in New York and Washington illustrate the above-mentioned aspects:

After the drama of the explosion, the fireballs, the unbelievable sight of collapsing skyscrapers and mushrooming clouds of smoke and ash, firefighters and rescue workers sift through rubble in lower Manhattan. Into the early hours of Wednesday, emergency rescuers using bulldozers and other heavy equipment began digging through twisted steel, broken glass and other debris. The dark night was lit by generators powered from a nearby building (<http://www.cnn.com>).

The damaged buildings, along with some still-standing beams of the destroyed World Trade Centre towers that could fall at any time, forced firefighters and rescue workers to go slowly in their desperate search for more survivors. On the 75-foot-high wreckage of those twin towers – still smoking in places from smoldering fires – more than 1,500 workers climb and dig, hoping to find more survivors. Above them loom 12 buildings with huge holes in them, threatening to collapse. One 20-story building seems as if it would tumble in a heavy wind.

As the firefighters and rescue workers make their way through the rubble, they carry dishes. It is in those dishes they put the body parts they find. The macabre scene in lower Manhattan proved disheartening to firefighters and rescue workers (<http://www.cnn.com>; <http://www.beeld.com>).

New York's Fire Department, which rushed to the scene after the planes slammed into the buildings, suffered horrendous losses when the buildings collapsed. Among those presumed dead was the department's chief, Pete Ganci, and 300 firefighters, most engulfed by the collapsing hulks of the twin towers of the World Trade Centre, as they attempted to help victims out of the burning buildings. Others reported killed were Deputy Fire Commissioner William Feehan, a 40-year veteran and Special Operations chief Ray Downey, who led a team New York firefighters sent to help after the 1995 Oklahoma City bombing (<http://www.cnn.com>).

Firefighters were still battling a fire on the west side of the 29-acre, 6 million-square-foot Pentagon building late Tuesday, more than 12 hours after the crash, describing it as contained but not yet under control. The intense heat and smoke blaze that resulted from the fully fueled jetliner crashing into the building has convinced Pentagon officials that anyone who might have survived the initial impact could not have survived the fire. The attack penetrated three of the Pentagon's five rings, and the fire spread through the wooden roof. The United States president circulated among the police officers, firefighters and soldiers, offering handshakes and words of encouragement. Many seemed grateful, given the grim spectacle before them and the magnitude of the cleanup task (<http://www.cnn.com>).

A number of authors have noted that such situations may produce untoward stress responses in firefighters which may play a negative role in their performance effectiveness, or even cause them to prematurely resign (Graham, 1981; Hartsough, 1985; Mitchell, 1983; Mitchell & Bray, 1990;

Willis, 1993).

Stress also contributes to psychological symptoms, for example cognitive, affective and behaviour symptoms. Cox (1978) indicated that the characteristics of excessive tension are a lack of concentration and limited memory. These contribute to a decrease in productivity, which may increase the level of stress experienced. A person's perception of him/herself may be negatively influenced by stress caused by the feeling that his/her contribution at work, at home, and in the community is not significant (Oosthuizen, 1994).

Apart from the intrapsychological impact of stress, it also impacts on interpersonal relationships. Family stress is defined as pressure or tension in the family system. It is a disturbance in the steady state of the family. This is normal and even desirable at times. Stress is inevitable, because people (and therefore families) develop and change over time. With change comes disturbance, pressure - what we call stress. Family routines change, patterns of interaction change, people are born and people die (Boss, 1988). Family stress occurs when feedback indicates that the system does not have the requisite variety of rules to comfortably transform inputs into outputs that meet desirable standards. In other words, the process of stress occurs when the usual transformation processes are not sufficient for families to handle a change or new input in the system. Rather than engaging in their usual and preferred activities, families find themselves asking "What are we going to do?" and "How are we going to deal with this situation?" (Burr & Klein, 1994).

The outcome of this may be that stress at work and at home are without doubt the reason that highly qualified and loyal firefighters give themselves over to alcohol -or drug abuse, extramarital relationships and suicide thoughts, which play a role in family disintegration, depression, aggression and frustration (Fullerton, Ursano & Wang, 2004).

The urgent need for Industrial Psychologists to investigate job and family stress amongst firefighters

by means of scientifically based research can be motivated in terms of the above-mentioned discussion as follows:

- The harsh realities firefighters are confronted with daily in their jobs have a definite spill-over effect on their family life. In other words, the job stress experienced by firefighters affect their family life and causes family stress. The reciprocal effects of job stress and family stress also play a significant role.
- Although extensive research has been conducted on job stress amongst firefighters, the effect of job and family stress and the interplay of forces need to be researched specifically.
- Industrial Psychology can make an immense contribution in this field through research on the subject, and by providing insight into job and family stress, proposing support programmes and offering counselling, which could assist firefighters to develop a balance between job and family stress that could lessen the impact on the family.

## 1.2 PROBLEM STATEMENT

Firstly, job stress and family stress amongst firefighters will be investigated. The strength of job and family stress, and whether there is a correlation or cause and effect, need to be investigated. The nature of the link between job and family stress has been largely unclear, and has potential for research. The research will be undertaken to address this problem, from both a *theoretical viewpoint* and *empirical approach* within a specific organisational context.

The following four research problems can be identified from a theoretical viewpoint:

- The *first* research problem is that job stress amongst firefighters has not yet been theoretically described and analysed in the South African context.

- The *second* research problem is that family stress amongst firefighters has not yet been theoretically described and analysed in the South African context.
- The *third* research problem is that the relationship between job and family stress amongst firefighters has not yet been theoretically described and analysed in the South African context.
- The *fourth* research problem is that an integrated developmental/counselling job and family stress programme for firefighters and their families does not exist.

The following four research problems can be identified in terms of an empirical approach:

- The *first* research problem is that job stress amongst firefighters has not yet been empirically evaluated in the South African context.
- The *second* research problem is that family stress amongst firefighters has not yet been empirically evaluated in the South African context.
- The *third* research problem is that the relationship between job and family stress amongst firefighters has not yet been empirically evaluated in the South African context.
- The *fourth* research problem is that an integrated developmental/counselling job and family stress programme for firefighters and their families does not exist in the South African context.

From a theoretical viewpoint, the following four research questions arise on the strength of the

above-mentioned research problems:

- Can job stress amongst firefighters be theoretically described and analysed in the South African context?
- Can family stress amongst firefighters be theoretically described and analysed in the South African context?
- Can a relationship between job and family stress amongst firefighters be theoretically described and analysed in the South African context?
- Can an integrated developmental/counselling job and family stress programme for firefighters and their families be developed in the South African context?

From an empirical approach, the following four research questions arise on the strength of the above-mentioned research problems:

- Can job stress amongst firefighters be empirically evaluated in the South African context?
- Can family stress amongst firefighters be empirically evaluated in the South African context?
- Can a relationship between job and family stress amongst firefighters be empirically evaluated in the South African context?
- Can an integrated developmental/counselling job and family stress programme for firefighters and their families be developed in the South African context?

### **1.3 AIMS OF THE RESEARCH**

From the above-mentioned problem statement, the following general and specific aims are formulated:

#### **1.3.1 General aim of the research**

- The general aim of the research is to evaluate job and family stress amongst firefighters in the South African context, to evaluate and analyse the relationship between job and family stress, and to use the results in developing a developmental/counselling programme for firefighters and their families.

#### **1.3.2 Specific aims of the research**

The following four specific aims of the research can be identified in terms of the theoretical viewpoint:

- To theoretically describe and analyse job stress amongst firefighters in the South African context.
- To theoretically describe and analyse family stress amongst firefighters in the South African context.
- To theoretically describe and analyse the relationship between job and family stress amongst firefighters in the South African context.

The following three specific aims of the research can be identified in terms of an empirical approach:

- To empirically, quantitatively evaluate job stress amongst firefighters in the South African context.
- To empirically, qualitatively evaluate family stress amongst firefighters in the South African context.
- To empirically, quantitatively and qualitatively evaluate the relationship between job and family stress amongst firefighters in the South African context.
- To use the results of the study to formulate an integrated developmental/counselling job and family stress programme for firefighters and their families in the South African context.

#### **1.4 RESEARCH MODEL**

The research will be conducted in terms of the model of Mouton and Marais (1992), as depicted in Figure 1.1 on page 10.

#### **1.5 PARADIGM PERSPECTIVES OF THE RESEARCH**

The purpose of the paradigm perspective of the research is to define the research in the niche of the relevant research context. Paradigms refer to collections of meta-theoretical, theoretical and methodological beliefs selected from the intellectual climate and the market of intellectual resources of a particular discipline. The research will therefore be conducted within the framework of a multi-paradigmatic approach (Mouton & Marais, 1992).

The paradigm perspective will be discussed in terms of the intellectual climate, market of intellectual resources, disciplinary framework and the theories and models.

### **1.5.1 Intellectual climate**

Mental health depicts the intellectual climate of this research. Mental health is characterised by the ability to love and create, by the emergence from incestuous ties to clan and soil, by a sense of identity based on one's experience of self as the subject and agent of one's powers, by the grasp of reality inside and outside ourselves, that is, by the development of objectivity and reason (Fromm, 1956).

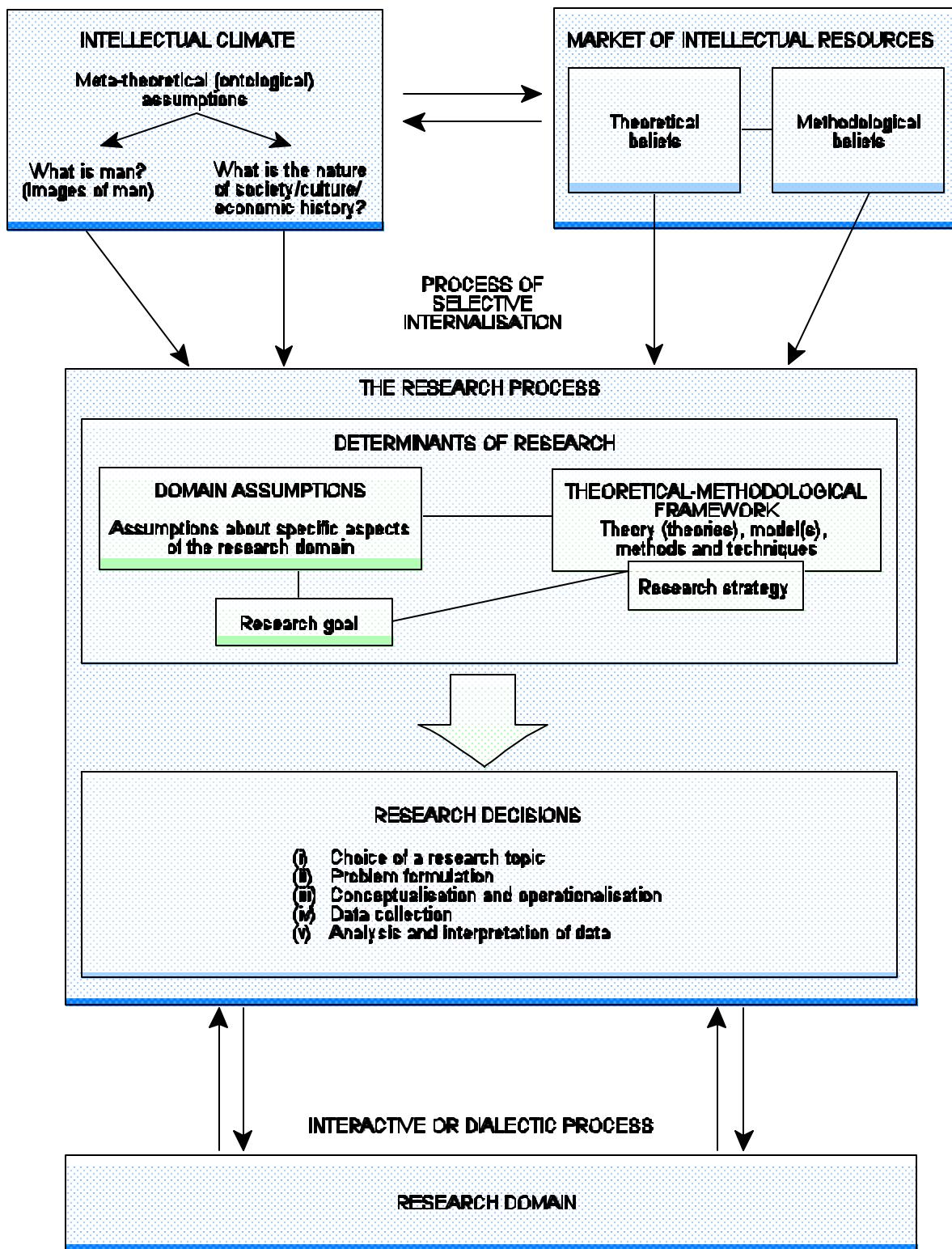


Figure 1.1: Research model (Merton & Marais, 1992)

### 1.5.2 Market of intellectual resources

Thematically the literature review concerns job and family stress. These two concepts will be presented within the biopsychosocial perspective. The perspective consider how biological, psychological, and social factors are linked in the development of abnormal behaviour patterns. The causes may be primarily or even exclusively biological in nature for some disorders. Other disorders may arise directly from learning experiences. But in most psychological disorders, multiple causes, representing biological, psychological and sociocultural domains, are involved. The contributions of multiple causes must not only be considered, but also the interactions among them (Nevid, Rathus & Greene, 2003).

The diathesis-stress model examines how the interaction of multiple causes may be involved in the development of psychological disorders. In most versions of the model, the diathesis is conceptualised as a biological vulnerability, generally genetic in nature, which increases the risks of developing a particular disorder. Yet whether the disorder actually develops depends on the type and severity of stressors the person experiences. People with a diathesis for a particular disorder may remain free of the disorder or develop a milder form of the disorder if the level of stress in their lives remains low or if they develop effective coping responses for handling the stress they encounter. Psychological diathesis may also be involved, such as dysfunctional thinking patterns or personality traits that increase the risk of developing a particular disorder in the face of life stress (Nevid, et al, 2003).

The perspective from which job and family stress has been described is very extensive, as well as conclusive, and may be summarised in seven concepts: (1) Stress is a by-product of any change. (2) Since there are different types of changes that we experience, there are different types of stress: loosely defined as good stress (*eustress*) and bad stress (*distress*). (3) Not all stress is harmful. We need stress in our lives in order to feel fulfilled, excited, challenged, and ultimately satisfied. (4)

Different individuals have varying degrees of tolerance for different types of stress and may perceive the same event(s) with differing amounts of stress.**(5)** Long-term distress is damaging to one's emotional and physical well-being.**(6)** Some professions have more stress than others and may therefore be considered more hazardous.**(7)** We have much control over the impact of stress in our daily lives; however, we generally choose not to exercise this control (Lewis, 1994).

Thematically the empirical study focuses on measuring job stress. The empirical study will be presented within a functionalistic paradigm (quantitative approach). The functionalistic perspective is primarily regulative and pragmatic in its basic orientation. It is concerned with understanding society (organisation) in a way that generates useful, empirical knowledge. Society has a concrete, real existence and a systematic character, which is orientated to producing an ordered and regulated state of affairs. It encourages an approach to social theory that focuses upon understanding the role of human beings in society. Behaviour is always seen as contextually bound in a real world of concrete and tangible social relationships (Morgan, 1980; Van Rooyen, 2000).

The empirical analysis will focus on both quantitative measuring instruments and qualitative interviews. The quantitative measuring instruments are positioned in the domain of the positivism which states that all known events have different characteristics, and that it stand in different realities in relation to each other. The qualitative interviews are positioned in the domain of phenomenology. The basic assumption is that objects exist for people only through the meaning attached to them. It is therefore possible to understand people if their immediate and subjective experiences are known, hence the foundation of knowledge is based in the subjective experiences and perceptions of the phenomenon under investigation.(Bless & Higson-Smith, 2000; DeRobertis, 1996):

### **1.5.3 Theoretical framework**

The research will focus, primarily from a discipline perspective, on *industrial psychology*, which

is imbedded in other disciplines, especially in the behavioural sciences (psychology, anthropology, sociology) and the economical and physical sciences. Raubenheimer (1985) defines industrial psychology as follows: “Industrial psychology involves the *scientific observation* (studying, research), *evaluation* (assessment, measurement, diagnosis), *optimal utilisation* (selection, placement, management), and *influencing* (change, training, development, motivation), of *normal* and (in a lesser sense) *abnormal behaviour* in interaction with the *environment* (physical, psychical, social, organisational) as it manifests in the professional-and business world”.

The focus within the field of industrial psychology will be on *occupational mental health*. Occupational mental health refers to the psychological well-being (mental health) of the individual, who continuously interacts with different and changing environments. It concerns the relationship between work behaviour and psychopathology or other psychological problems. These include specific work dysfunctions related to anxiety, stress, personality problems, and certain work attitudes, while problems such as absenteeism and accidents may also be related to emotional problems or the interaction between employees and the work environment. In this field the emphasis is also on the nature, casual factors and management (treatment, utilising human relations and health promotion) of work maladjustment (Nevid Rathus & Greene, 2000).

#### **1.5.4 Theories and models**

The thematic focus of the research is job and family stress amongst firefighters. The theories and models which will be used in this research include the following:

- The stressors, stress and strain model (Barling, 1990; Hepburn, Loughlin & Barling, 1997)
- Cox and McKay’s job stress model (Cox, 1978)
- A systems model of family stress (Boss, 1988).

### **1.5.5 Constructs**

The relationship between the constructs job and family stress will be evaluated in the research. Job stress can be described as the way people experience and cope with job stressors. Job stress is thus not the actual experience, but the person's reaction to the experience. Job stress is a systemic or physical syndrome which follows certain patterns and influences specific organs. Family stress, on the other hand places pressure on the family. It is a disturbance of the family's state, that is, the system is upset, pressured, disturbed, and not at rest. Family stress is *a change* in the family's equilibrium (Friedman, 2003).

## **1.6 RESEARCH DESIGN**

The purpose of the research design is to structure the research so as to maximise the internal and external validity of the research results. Research design is, therefore, synonymous with rational decision making during the research process. Irrespective of how structured or unstructured a research project is likely to be, it is the duty of the researcher to ascertain which general nuisance variables may render the results invalid, and to take every possible step to ensure that these factors are either minimised or eliminated (Bless & Higson-Smith, 2000).

The research design will be discussed in terms of the sample and the operationalisation of the objectives.

### **1.6.1 Sample**

The unit of analysis, as depicted in the problem statement on page five of this chapter, refers to the investigation of job and family stress amongst firefighters. The unit of analysis chosen in this research

is the individual firefighter. The individuals that will participate in the research will be firefighters of Fire Brigades of a Metropolitan Municipality. The available sample will consist of single, married and divorced males and females from different population, language and age groups. The following ranks of firefighters will be distinguished. Learner firefighter Gr 1 - 11, Junior firefighter, Senior firefighter; Leading firefighter, Station Officer and Divisional Officer.

### **1.6.2 Operationalisation of the objectives**

This research is descriptive and explorative by nature and its purpose is to describe job and family stress amongst firefighters from a theoretical viewpoint, following an empirical approach (Huysamen, 1993). The research will be conducted in two phases. The **first phase** will be conducted to theoretically describe and analyse job and family stress amongst firefighters in the South African context; to theoretically describe and analyse the relationship between job and family stress amongst firefighters in the South African context and to describe an integrated developmental/counselling job and family stress programme for firefighters and their families in the South African context.

The purpose of the **second phase** of the research, the empirical approach is to empirically evaluate job stress amongst firefighters in the South African context; to empirically evaluate family stress amongst firefighters in the South African context; to empirically evaluate the relationship between job and family stress amongst firefighters in the South African context, and to formulate an integrated developmental/counselling job and family stress programme for firefighters and their families in the South African context. The research will be quantitative and qualitative by nature, and will include a survey design and a phenomenology design (Huysamen, 1993). The advantage of qualitative research in this regard is that the focus will be on job and family stress amongst firefighters.

The process of data collection will be commenced by obtaining approval for the research from the council of the metropolitan municipality and establishing contact with the respondents. The

respondents will be welcomed and put at ease with the commencement of the administration of the questionnaires. They will be asked to answer the questions truthfully and accurately. Respondents will be given verbal instructions regarding the completion of the questionnaires and will be assured of the confidentiality of the research. It will be explained to the respondents that different questionnaires will be administered to measure the effect of stress, and that the completion of the questionnaires will depend on their individual response rate. Data will be collected over a period of a week, on different occasions. The results will be discussed with the respondents where such a need is expressed.

Although qualitative research has been criticised, especially by practitioners of the exact sciences, the validity is one of the advantages of qualitative research. Data is constantly analysed and compared to ensure that there is a correlation between the scientific categories and the respondent's experience of the reality. This research method will succeed more than other research designs to reflect the reality of the respondent, because the interview is conducted in the empirical reality of the respondent and observation takes place in the natural environment of the respondent. Lastly, qualitative research focuses more on the nature of the phenomenon than on the quantity thereof. The research is qualitative by nature, which means that a explorative and descriptive contextual design will be selected, for which interviewing, based on the phenomenological paradigm, will be utilised (Huysamen, 1993).

## **1.7 RESEARCH METHOD**

In order to remain scientific and objective, the research method will follow certain distinct and separate phases.

### **1.7.1 Phase 1 Literature review**

**(a) Step 1 Job stress**

A definition of job stress and a model will be provided. In particular, the job stress amongst firefighters in the South African context will be analysed and described.

**(b) Step 2 Family stress**

Family stress amongst firefighters in the South African context will be investigated, including a definition, and a systems model of family stress. An empirical link between job and family stress amongst firefighters in the South African context will be outlined, and possible theoretical relations between the two constructs will be explored.

### **1.7.2 Phase 2 Empirical study**

**(a) Step 1 Analyses and biographical characteristics of the sample**

The population for this empirical investigation are firefighters from the Fire Brigades of a metropolitan municipality. An available sample will be selected from this population, which will consist of male and female firefighters from different population and languages groups.

**(b) Step 2 Selecting the measuring instruments**

The following measuring instruments were selected in this research design to measure job stress: a *Biographical questionnaire*, an *Experience of work and life circumstances questionnaire*, a *Stress questionnaire* and an *Interview*.

**(c) Step 3 Data collection**

The data will be collected by administering three questionnaires and conducting interviews.

**(d) Step 4 Statistical processing of data**

The statistical processing of the data will be performed by applying quantitative procedures and statistical techniques, as well as qualitative procedures.

**(e) Step 5 Results**

The quantitative and qualitative results will be described.

**(f) Step 6 Conclusions, recommendations and limitations**

The conclusions, recommendations and limitations of the research are discussed

## **1.8 CHAPTER DIVISION**

The chapters of the thesis will be divided as follows:

**Chapter 2:** Job stress amongst firefighters

**Chapter 3:** Family stress amongst firefighters

**Chapter 4:** Empirical study

**Chapter 5:** Results

**Chapter 6:** Conclusions, recommendations and limitations

## **1.9 CHAPTER SUMMARY**

This introductory chapter has provided a broad overview of the research, as well as its background. The problem statements and aims have been outlined. The research model and paradigm perspective have been described, and the research design and method have been clarified.

Phase 1 of the research follows, which will be a detailed literature review, aimed at providing support for the theoretical aims outlined in **Chapter 1**. Job stress amongst firefighters will be discussed in **Chapter 2**.