

# Farmers' experiences and coping after disastrous veld fires in the North West Province

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## TABLE OF CONTENTS

Acknowledgements.....	4
Summary.....	6
Opsomming.....	8
Permission to Hand in Article for Examination Purposes.....	10
Guidelines for Authors.....	11
Literature Review.....	12
References.....	20
Title of Dissertation, Authors and Contact Details.....	24
Abstract.....	25
Manuscript for Examination.....	26
Research Methodology.....	29
Research Setting and Participants.....	29
Procedure and Ethical Considerations.....	30
Data Gathering.....	31
Data Analysis.....	32
Trustworthiness.....	32
Results.....	33
Discussion.....	47
Recommendations for Interventions and Future Research.....	52

Limitations.....	53
Conclusion.....	54
References.....	55
Critical Reflection.....	60
References.....	66
List of figures	
Figure 1: Visual representation of the results.....	33
CD containing the data analysis process	

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## SUMMARY

Research into the psychological consequences of natural disasters in South Africa remains largely unexplored. This is surprising, given the devastating economical and psychological ramifications that result from major catastrophic events. No research has been done relating specifically to the experiences and coping strategies of farmers who have experienced a veld fire disaster in South Africa. Farmers constitute an important sub-group for study as they may be psychologically at risk to the effects of disasters. In the international research arena exploration of the long-term consequences of disasters is lacking. In considering the question of coping following a disaster, few studies have focused on the influence of temporal dynamics, which would seem to be crucial to the outcomes of coping strategies.

This study aims to address these gaps in the literature by exploring the experiences and coping strategies of farmers who have experienced a veld fire disaster which occurred in the North West Province of South Africa on 23 August 2011. The total financial loss as a result of the fire amounted to R42 276 171. The fires were allegedly caused by damaged power lines, which produced sparks and ignited the nearby veld.

This study used a qualitative design. This methodological approach was adopted for its ability to capture the complex and time-sensitive dynamics of coping strategies. This was combined with a case study approach, based on the experiences and coping strategies of eight farmers who had experienced a veld fire disaster within the boundaries of one geographical area. Semi-structured interviews were conducted with the farmers in their homes and were recorded, transcribed and thematically analysed.

The results of the analysis showed that the farmers progressed through three time periods with distinct patterns of experience and corresponding coping strategies. The person-

environment relationship, as well as transitioning situational demands inherent in this relationship, were found to be crucial in determining the outcomes of the farmers' experiences and coping strategies. The results also suggest that successful coping is reliant on the individual's ability to continually adapt their coping strategies in a context-appropriate manner. It is recommended that psychological debriefing should be avoided and that crisis intervention teams (CIT) should focus on the long-term consequences of the veld fire. Future coping research needs to take the temporal aspects of coping into account.

**Keywords:** coping, disasters, farmers, adjustment phases, trauma, veld fires

## OPSOMMING

Navorsing in Suid Afrika oor die psigologiese gevolge van natuurrampe is karig. Gegewe die nadelige ekonomiese en psigologiese gevolge van katastrofiese rampe, is hierdie leemte onverstaanbaar. Geen navorsing bestaan spesifiek met betrekking tot die ervarings en hateringsvaardighede (coping) van Suid Afrikaanse boere wat 'n veldbrand beleef het nie. Boere is 'n belangrike studiegroep aangesien hulle 'n moonntlike psigologiese risiko verteenwoordig ten opsigte van rampe. Ook internasionaal is navorsing oor die langtermyn gevolge van rampe skaars. Min studies fokus op die tydsdinamika in die hantering van 'n ramp, wat blyk krities te wees in die suksesvolle hantering daarvan.

Hierdie studie het ten doel om die leemtes in die literatuur aan te spreek deur die ervarings en hateringsvaardighede van boere te ondersoek na vernietigende veldbrande in die Noordwes Provinsie van Suid Afrika op 23 Augustus 2011. Die totale verlies het R42 276 171 beloop. Die vuur is na bewering deur beskadigde elektrisiteitskabels veroorsaak, vonke waarvan die veld aan die brand gestee het.

'n Kwalitatiewe benadering is op die studie toegepas. Hierdie metodologiese benadering is gevolg omdat dit die komplekse en tyd-sensitiewe dinamika van hateringsvaardighede kan reflekteer. 'n Gevallestudie is gedoen van agt boere se ervarings en hantering van die ramp binne dieselfde geografiese gebied. Semi-gestruktureerde onderhoude is met die boere in hulle huise gevoer. Die onderhoude is elektronies opgeneem, getranskribeer en tematies geanaliseer.

Die resultate dui aan dat die boere deur drie tydsgewigte beweeg het, telkens met verskillende ervarings patrone en ooreenstemmende hateringsvaardighede. Die persoon-omgewing verhouding en die veranderende behoeftes inherent aan hierdie verhouding, het 'n kritiese rol gespeel. Die resultate dui voorts aan dat suksesvolle hantering van 'n ramp

afhanklik is van konteks-toepaslike aanpassings wat die individu moet maak aan sy hanteringsvaardighede. Daar word aanbeveel dat psigologiese ontlasting na 'n ramp vermy word en dat krisisintervensie spanne eerder op die langtermyn gevolge van 'n veldbrand fokus. Toekomstige navorsing oor die hantering van rampe behoort die tyd-spesifieke aspekte daarvan behoorlik te verdiskonteer.

**Sleutel woorde:** hanteringsvaardighede, rampe, boere, aanpassing fases, trauma, veld brande

## **PERMISSION TO HAND IN ARTICLE FOR EXAMINATION PURPOSES**

I, the supervisor of this study, hereby declare that the article written by Christiaan Becker, reflects the research conducted on the topic. I hereby consent to him submitting the article for examination. I therefore confirm that it complies with the requirements of the degree MA in Research Psychology.

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Prof. Vera Roos

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Hendri Coetzee

## **GUIDELINES FOR AUTHORS**

This article was written in accordance with the guidelines set by the Journal for African Safety Promotion, which stipulates that the American Psychological Association's 6<sup>th</sup> edition referencing style be used.

## LITERATURE REVIEW

It is estimated that between 2000 and 2009, 1 472 natural disasters have occurred globally, killing 595 783 people, adversely affecting 847.5 million people and causing R730.38 billion in damages (Kellett & Sparks, 2012). The distinction between natural and man-made disasters is blurred, because people are often the causes of natural disasters. How people interact with the environment around them can increase the risk of natural disasters occurring and the severity of their consequences. Factors that might contribute to the severity of natural disasters could include socio-economic deprivation, political injustices and marginalisation (Van Niekerk, 2011). Developing countries, where many of these factors are prevalent, count far more deaths than developed countries as a result of natural disasters. According to Kellett and Sparks (2012), although developing countries only suffer from 3 in every 10 disasters globally, they account for 7 out of every 10 people killed as a consequence. An infrastructure of mitigation, preparedness and preventative measures could have saved many of these lives.

South Africa, as a developing country, shares many of the vulnerabilities which are also prevalent in other developing countries prone to natural disasters. South Africa has widespread poverty and extreme inequality (Humby, 2010). A history of inequality and discrimination has meant that the quality of public education remains very low for some groups, mainly black people, and the country faces high unemployment (Humby, 2010). These factors limit people's capacity to recover from disasters (Van Niekerk, 2011).

South Africa's disaster risk profile is further exacerbated by the prevalence of natural hazards such as droughts, floods, storms and fires (African Centre for Disaster Studies, 2013). According to Humby (2010), between 1980 and 2010, 77 natural disasters occurred in South Africa. During this period, 1 869 people were killed and more than 18 million people

have been adversely affected by these disasters. It is estimated that every year 500 000 people are adversely affected by natural disasters, at a cost of R985 374 to the economy. These numbers are expected to rise in the future, because of climate change. South Africa is regarded as one of the most vulnerable countries in the world to the effects of climate change (Van Aalst, 2006). It is estimated that climate change will bring about an increase in extreme weather events, droughts, floods and veld fires (Humby, 2010).

Veld fires are one of the most common natural disasters in South Africa (African Centre for Disaster Studies, 2013). The National Veld and Forest Fires Act (No. 101 of 1998) defines veld fires as: “Veld, forest or mountain fire, where veld constitutes the open country side beyond urban limits or homestead boundary” (p.2). The high risk of fire in South Africa is associated with the country’s sunny, dry climate, the increasing infestation of alien plant species and the proximity of urban areas to vast stretches of grazing land (African Centre for Disaster Studies, 2013).

Although data on the consequences of veld fires in South Africa is limited, Forsyth, Kruger, and Le Maitre (2010) point out that veld fires have wide-ranging effects in South Africa. They result in significant loss of life, with the death toll running into hundreds in a given year, and in significant destruction of homes and livelihoods. Veld fires have severe economic consequences, especially for ecotourism, which suffers from the loss of resorts and wild life. In 2007 the forestry sector lost 61 700 ha of plantation forest amounting to R1. 33 billion in damages. The high risk to investors and the high cost of insurance as a consequence of veld fires constrain economic development in local communities. Veld fires can also cause environmental degradation by destroying the structure of surface soil horizons, leading to potentially excessive erosion.

The agriculture sector is particularly prone to the adverse effects of veld fires. This gives cause for concern, given the importance of agriculture for South African society. The

sector contributed R111 760 million to the country's GDP in 2007/2008. (South African Government Information, 2011). Primary agriculture contributes 3% to the GDP and provides for 7% of formal employment (South African Government Information, 2011). Veld fires can affect the food security and agricultural production of a province or the whole country. They are responsible for the loss of livestock, fodder banks and equipment. The destruction of feed stored for the winter months has latent effects for livestock farmers, resulting in additional livestock losses and extreme financial loss (African Centre for Disaster Studies, 2013).

In addition to the economic losses associated with veld fires, there are psychological consequences. Various theories could explain why events such as disasters are traumatic. Arguably the most widely-used theories in the disaster literature consist of the Cognitive Relational Theory of Stress, Assumptive Worlds Theory and the Conservation of Resources Theory (COR) (Hobfoll, 1989; Janoff-Bulman & Frieze, 1983; Lazarus & Folkman, 1984).

According to the Cognitive Relational Theory of Stress, traumatic events such as disasters produce stress reactions when people appraise the situation as threatening (Park & Folkman, 1997). This appraisal is often complex and mixed, influenced by personal and environmental factors. The situation may be interpreted as threatening because of actual or possible tangible loss, for example the loss of property or physical health. Moreover, in a secondary appraisal, people consider whether the particular strategies or behaviours they have at their disposal could counter the implications of the event (Park & Folkman, 1997). The evaluations of the primary and secondary appraisals result in distressing emotions. During a disaster, resources are often destroyed and many behavioural strategies might be ineffective (Ursano, McCaughey & Fullerton, 1994). Consequently disasters lead to extreme stress responses.

Janoff-Bulman and Berg (1998) contend that people have basic assumptions about themselves and the world around them. Traumatic experiences force people to challenge

these assumptions and consequently to become aware that their assumptions are no longer viable. Three general assumptions about the world which are shattered as a result of traumatic experiences include the belief in “personal invulnerability”, the perception of the “world as meaningful”, and the view of the “self as positive” (Janoff-Bulman & Berg, 1998).

The COR theory stipulates that people strive to build and protect their resources in order to maximise positive reinforcement and enhance the self (Hobfoll, 2011). Psychological stress or trauma occurs when there is a threat of a net loss of resources, a loss of resources or a lack of resource gain following the investment of resources. These resources consist of four categories and include object resources (e.g. personal possessions), condition resources (e.g. social roles, careers, relationships), personal characteristic resources (e.g. self-esteem, self-efficacy, optimism) and energy resources (e.g. money, time, knowledge) (Hobfoll, 2011).

International and local research give reason to believe that farmers in South Africa have fewer resources in terms of the COR theory. This seems to be related to the context-specific stressors related to their careers. International research on farmers has identified stressors to include possible property loss due to unstable market prices, high debt, changing weather patterns and fluctuating grain harvests (Botma, 1999). These stressors lead to a high prevalence of pathology in the farming community (Hood & Seedsman, 2004). Previous research has shown that up to 35% of farmers experience some form of psychiatric problem, particularly related to depression and anxiety (Booth & Loyd, 2000). These mental health issues and stressors are reflected in research into rural suicides. In the United Kingdom farming has been identified as the “fourth highest at risk” occupation for suicide (Kelly, Charlton, & Jenkins, 1995). In Australia a farmer commits suicide every four days (Page & Fragar, 2002). The international research above on farmer’s mental health is mirrored in Botma’s (1999) research on farmers in South Africa. He found similar stressors as well as context-specific stressors among South African farmers which include the demands of

competing farmers, conflicting roles in the family, the intimate link between personal life, workplace, immediate and extended family, in addition to uncontrollable weather circumstances, financial aspects and equipment failure. These uncontrollable factors lead to the greatest distress. Botma (1999) also found that South African farmers and their families have a poorer quality of life than city dwellers.

People who have fewer resources before a traumatic event will be affected to a greater extent psychologically afterwards (Hobfoll, 2011). They may experience loss spirals, an on-going loss reaction which leaves the individual with insufficient resources to manage a current threat as a result of resource depletion from a previous stressful event. Thus, according to the COR theory, farmers may encounter loss spirals after a disaster and may be especially vulnerable to the psychological consequences of natural disasters.

After a traumatic event, such as a disaster, people will attempt to decrease their stress through a process known as coping. Lazarus and Folkman (1984) define coping as “constantly changing cognitive and behavioural efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources of the person” (p.141).

Among the various coping strategies four types of coping strategies can be identified: problem-focused coping, emotion-focused coping, meaning making and avoidance coping. Problem-focused coping involves behaviours directed at altering, reducing or eliminating the sources of stress, such as seeking practical help from others, gathering information to assess one’s alternatives or taking direct action to change one’s situation (Lazarus & Folkman, 1984). Emotion-focused coping pertains to changing one’s own response to a stressful event, such as avoiding the event or denying that the event exists (Lazarus & Folkman, 1984). Park (2011) explains that meaning making involves reducing the discrepancy between global meaning and situational meaning, which decreases stress. There are also studies that describe

avoidant coping mechanisms, which involve people moving away from the source of distress (Scott, Carper, Middleton, White, & Renk, 2010).

According to international research on disasters, the relationship between coping strategies and people's mental health has produced some conflicting results. For example, problem-focused coping is generally related to better psychological health while emotion-focused coping provokes greater distress and adverse psychological outcomes in response to more wide-ranging stressors (Aldwin & Yancura, 2004; Penley, Tomaka, & Wiebe, 2002). Problem-focused coping may, however, lead to worse psychological outcomes than emotion-focused coping when the event is uncontrollable, such as a disaster (Scott et al., 2010). Scott et al. (2010) have suggested that employing avoidant coping strategies after a major traumatic event may be beneficial in the early stage of a disaster but detrimental over the long term. It has also been suggested that meaning-making coping is detrimental in the early stages following a disaster but beneficial in the later stages of disaster recovery (Ibañez, Buck, Khatchikian, & Norris, 2004; Rose, Bisson, Churchill, & Wessely 2002).

These studies reflect that a disaster, due to its overwhelming nature, requires a host of different and complicated coping strategies in comparison with the stressors of everyday life. This research also suggests that there are various time-sensitive dynamics related to coping strategies which may not have been captured by previous research.

Research into the psychological effects of disasters on farmers, relating specifically to veld fires in South Africa, has not been undertaken previously. In one study, Burger, Van Staden, and Nieuwoudt (1989) studied the psychological consequences of a flood that occurred in the Free State. The farmers engaged in a mixture of emotion- and problem-focused coping styles. In the emotion-focused category, 90% experienced an increased sense of community, 85% experienced hope and trust that they would be able to overcome the consequences of the flood, and 75% retold humorous anecdotes which occurred during the

flood (Burger et al., 1989). In the problem-focused category, 100% of those involved took part in rescue efforts, 75% focused on inadequate preparations before the flood and 50% engaged in irrational and aimless activities during the flood (Burger et al., 1989). Botma (1999) studied the coping strategies of Free State farmers exposed to drought and the effects of the strategies they employed on their satisfaction with, and quality of, life. He found that the farmers used problem-focused and religious-coping strategies. These strategies were positively correlated to better life satisfaction and quality in response to droughts (Botma, 1999).

Although these studies provide information about the psychological reactions and coping strategies of farmers after a disaster in the South African context, they do have some limitations. First, according to Norris (2006), disaster research needs to investigate the long-term psychological effects of disasters. These have been largely ignored (Norris, 2006). Second, the studies were essentially concerned with investigating which coping strategy was the most beneficial after a disaster. Studies by Botma (1999) and Burger et al. (1989) ignored the temporal aspects of coping, which appear to be crucial to the effectiveness of coping strategies. What is thus not clear from previous research is what long-term psychological effects of a disaster are to be expected in the South African farming community context and how temporal dynamics influence coping strategies. To address this gap in literature the research question which guided the study was: What are the experiences and coping strategies of farmers as they developed and progressed over a period of nine months after being exposed to a veld fire disaster in the North West Province?

This research question was contextualised against the backdrop of devastating veld fires which occurred in 2011 in the North West Province. The fire was allegedly caused by damaged power lines, which produced sparks and ignited the nearby veld. The fire resulted in the loss of lives, however the exact number is unclear due to conflicting reports. In light of

the almost non-existent literature on the experiences and coping strategies of farmers following a disaster in South Africa, it was decided to investigate these aspects further. This was achieved by conducting interviews with eight farmers, nine months after they experienced the veld fire disaster. It was hoped that the dynamic, time-sensitive nature of the farmers' coping strategies would become evident by investigating these as they unfolded over a period of nine months. A qualitative research design was considered appropriate to capture the inherent complexities of the coping strategies the farmers employed.

The results of this study may be used to inform policy and interventions in responding to a potential psychologically at-risk group after a veld fire disaster. Ursano et al. (1994) warn: "If disaster relief plans and policy do not account for the psychological consequences of disasters, they can overwhelm services and resources including rescue workers and victims" (p.5). Furthermore, this study will hopefully add to the global representation of disaster literature in which developing countries are currently under-represented (Norris, 2006).

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### Abstract

Veld fires are an annual occurrence in South Africa and have disastrous economic and psychological effects. The devastating veld fire which occurred on 23 August 2011 in the North West Province was no exception. This research set out to investigate the experiences and coping strategies of farmers affected by the veld fire as they developed and progressed over a nine-month period following the disaster. The participants consisted of seven white Afrikaans-speaking men and a black Tswana-speaking man. Data were collected through semi-structured interviews and analysed in response to a potential psychologically at-risk group after a veld fire disaster. The results of the analysis showed that the farmers progressed through three time periods, each characterised by distinct patterns of experience and corresponding coping strategies. The passage of time had a significant influence on the farmers' coping strategies, which changed as a result of transitioning situational demands. It seemed that certain coping strategies were effective during certain time periods but, detrimental in others, as a consequence of the constantly changing nature of the situational demands. Successful coping would appear to rely on the individual's ability to adapt coping strategies in a context-appropriate manner that would meet the situational demands of the disaster. It is recommended that future studies incorporate the influence of temporal dynamics into their research designs if we are to better understand how people cope with disasters. Recommendations for interventions with a disaster-affected farming community are made.

**Keywords:** coping, disasters, farmers, adjustment phases, trauma, veld fires

## MANUSCRIPT FOR EXAMINATION

Farmers' experiences and coping after disastrous veld fires in the North West Province.

On 23 August 2011, devastating veld fires broke out in the North West Province, resulting in the loss of human lives and an estimated R8 213 000 in livestock loss. The total financial loss as a result of the fire amounted to R42 276 171. Allegedly the fire was caused by damaged power lines, which produced sparks and ignited the nearby veld. After initial assessments were conducted, these veld fires were formally declared as a disaster according to the Disaster Management Act of 2002.

Disasters such as these are not an uncommon phenomenon in South Africa. The country is particularly prone to droughts, veld fires, severe storms and veld fires. Veld fires in particular are of significant concern. Forsyth et al. (2010), point out that "emergent farmers lose their livelihoods, commercial farmers loose livestock, fodder banks, machinery and equipment, and the ecotourism industry loses resorts and wildlife. Local communities also suffer periodically from the loss of important resources such as thatch grass, in wildfires" (p.4). The National Veld and Forestry Fires Act (No. 101 of 1998) defines veld fires as: "Veld, forest or mountain fire, where veld constitutes the open country side beyond urban limits or homestead boundary" (p.2).

Apart from the major financial and livelihood losses, disasters such as veld fires are experienced by the affected people as traumatic (Ursano et al., 1994). Exposure to a traumatic event, according to the American Psychiatric Association (2000), is defined as "experiencing, witnessing, or confronting an event that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others" (p.61). Disasters may result in shattered assumptions people hold about themselves and the world and produce significant distress. These include beliefs in the world as a comprehensible, predictable and orderly place, that

negative events will mostly not affect them and that they are mostly worthy and decent people (Janoff-Bulman and Berg, 1998). Disasters may also be traumatic due to large-scale resource loss. According to the COR theory, psychological distress or trauma occurs when a person experiences a net loss of their resources, loss of resources or lack of resource gain following the investment of resources (Hobfoll, 2011). These resources may consist of object resources (e.g. personal possessions), condition resources (e.g. social roles, careers, relationships), personal characteristic resources (e.g. self-esteem, self-efficacy, optimism) and energy resources (e.g. money, time or knowledge). People who have few resources before a disaster may be adversely affected psychologically to a greater extent than others. (Hobfoll, 2011).

Previous research suggests that farmers in general have few resources. International research on the farming community has identified high rates of pathology and suicide (Booth & Loyd, 2000; Kelly et al., 1995; Page & Fragar, 2002). In research conducted in South Africa, Botma (1999) found that farmers and their families have a lower quality of life than city dwellers. Botma (1999) contends that this has to do with context-specific stressors related to their occupation. Farmers may be regarded as a group psychologically at-risk to the effects of disasters.

Following a traumatic event, the person involved will try to decrease stress through a process known as coping. Lazarus and Folkman (1984) define coping as “constantly changing cognitive and behavioural efforts to manage specific external or internal demands that are appraised as taxing or exceeding the resources of the person” (p.141). The literature has defined many coping strategies. Some of the most prominent include problem-focused, emotion-focused, meaning-making and avoidant coping strategies. Problem-focused coping refers to taking action to change the problem causing the distress, while emotion-focused coping involves regulating distressing emotions (Lazarus & Folkman, 1984). Meaning

making occurs when someone redefines an event so that it fits in with their global meaning structures (Park, 2011). Avoidant coping involves distancing oneself mentally from the stressful event, for example by distraction and focusing on something other than the source of the stress (Scott et al., 2010).

Research into the experiences of farmers in South Africa and their coping strategies after a disaster is limited, with the exception of studies done by Burger et al. (1989) and Botma (1999). Although these studies provide information about the psychological reactions and coping strategies of farmers in the South African context, they have some limitations. Both, Burger et al. (1989) and Botma (1999) ignored the temporal aspects of coping strategies, which would appear crucial to its effectiveness (Ibañez et al., 2004; Rose et al., 2002; Scott et al., 2010). Their work has also overlooked the long-term consequences of disasters.

This study will attempt to address these limitations by investigating the experiences and coping strategies of the farmers as they unfolded over a period of nine months following a veld fire disaster. The research question that will guide the study is: what are the experiences and coping strategies of farmers as they developed and progressed over a period of nine months after being exposed to a veld fire disaster in the North West Province?

It is the belief of this study that its findings will add to the global representation of disaster literature, in which developing countries are currently under-represented (Norris, 2006). The results of this study may also be of use to mental health professionals who are likely to be in a position to facilitate healthy ways of coping in a farming community, potentially at risk psychologically, following a disaster.

## **Research Methodology**

This study followed an inductive and explorative approach. A qualitative research method was used because coping is a subjective process, with appraisals situated in significance and meaning and influenced by a variety of contextual factors (Braun & Clarke, 2006; Park & Folkman, 1997). This methodological approach is particularly suited to the investigation given its ability to capture the complex and time sensitive dynamics of coping strategies. A case study design was used to study the experiences and coping strategies of eight farmers who had experienced a veld fire disaster bounded by a specific geographical area, the North West Province. The case study design facilitated in-depth exploration of the farmers' experiences and coping strategies (De Vos, Strydom, Fouché & Delport, 2013). Elements of a descriptive and explanatory case study were used because the research describes the experiences and coping strategies of the farmers and at the same time produces new knowledge, which can be helpful in informing policy development (De Vos et al., 2013).

### **Research Setting and Participants**

The agriculture sector accounts for 2.6% of the contribution the North West Province makes to South Africa's GDP (Jacobs, Punt, & Botlhoko, 2009). The North West Province Agricultural sector provides for 1.7% of formal employment in the province (Jacobs et al., 2009). Veld fires however, continually plague this sector. In 2009 alone, 2825 veld fires occurred in this province (The Department of Agriculture, Forestry and Fisheries, 2010). Purposive sampling was used because this study looked at the experiences of a select group of people, namely the farmers, who were affected by the veld fire and had at least a years' experience in the farming industry. These particular participants were identified as being familiar with a farmer's way of life and its accompanying stressors. Attention was paid to farmers who had sustained the greatest property loss in view of the fact that COR theory

predicts that they would experience the greatest levels of psychological distress (Hobfoll, 2011). The participants consisted of seven white Afrikaans-speaking men, and one black Tswana-speaking man. Their ages ranged between 19 and 72. Most were livestock farmers, and the others maize farmers. The damage which they suffered collectively amounted to roughly R9 million. This sum was calculated on the basis of livestock losses, loss of grazing land, and damage to implements and structures.

### **Procedure and Ethical Considerations**

The North-West Universities' African Centre for Disaster Studies initiated a multi-disciplinary research project to assess the impact of veld fires. The research was conducted in terms of Ethical Code NWU-005-10-51, which was approved by the University. Information about the affected farmers was obtained from the African Centre for Disaster Studies. A gatekeeper was used to contact the farmers to discuss the possibility of their participation in the research. Interviews were conducted with them on their respective farms and lasted approximately 60 to 80 minutes. Participants had the right to withdraw from the study at any time and their identities were kept confidential. Participants were given an informed consent form to sign, which explained the purpose of the research and clarified their rights during the research study. It was anticipated that emotional reactions or possible secondary trauma could occur during the interviews because of previous trauma the farmers had experienced as a result of the natural disaster. During the interviews the researchers were careful not to pursue aspects which were painful to talk about. The researchers used the skills they had gained from their previous psychological training, which included active and empathetic listening. After each interview the researchers gave the participants their telephone numbers. They were informed that they could contact the researchers at any time. If they reported any adverse symptoms, the researchers would provide them with information about free psychological

services available at the North-West University's Potchefstroom Campus. After the interviews, the participants were contacted and invited to a free lecture by a trained clinical psychologist on the psychological consequences of traumatic events and healthy ways of coping with them. However, the lecture had to be cancelled owing to lack of interest from the participants. The interviews conducted with the participants were recorded, transcribed and analysed.

### **Data Gathering**

Data were collected through semi-structured interviews. Descombe (2010) holds that interviews are an appropriate method if a researcher wants to investigate people's experiences. It was decided to use open-ended questions so that participants could provide rich description and detailed explanations of their veld fire experience and coping strategies. The following questions were asked during the interview:

*In August last year, a devastating fire broke out which affected you. In retrospect, could you tell us everything you can remember of your experience of the veld fire?*

*How did you cope when you realised the impact the veld fires had on you?*

*Now, after a period of nine months, how would you describe your coping with the impact of the veld fires?*

Further probing questions were used to clarify points of interest and keep the conversation on track. The interviews were conducted in the participants' homes to ensure that they were as comfortable as possible. Data were recorded and transcribed verbatim. Discussions were held with the gatekeeper, which provided insights into the context in which the veld fire occurred, for example the farmer's way of life, the role played by the government, the nature of relationships in the farmer's community and how farmers deal with stressors in general.

## **Data Analysis**

The textual data were analysed using thematic content analysis. This method consists of various steps. The researcher transcribes the data, reading and re-reading the information, and puts forward initial ideas. The researcher then codes features of the data systematically across the entire data set and collates data relevant to each code. Themes are identified by organising the coded data into themes. The researcher then checks to see if the themes work in relation to the coded extracts and to the entire set of data, generating a thematic “map” of the analysis. The researcher continually refines the details of each theme and the overall picture the analysis reveals, until each theme is defined clearly. The final steps consist of selecting extracts that support the themes, checking if the analysis works in relation to the research question and literature and producing a report of the analysis (Braun & Clarke, 2006).

## **Trustworthiness**

This study used rich descriptions to illustrate the context and complexities of the farmers’ psychological reactions and coping strategies (Tracy, 2010). Three days were spent with the gatekeeper to gain a deeper understanding of the context of the farmers as well as, tacit knowledge within the farming community. Discussions with the gatekeeper were also used as a secondary source of information to triangulate the data. This study supported the principles of crystallisation through participation in a multi-disciplinary team aimed at assessing the impacts of the veld fires (Ellingson, 2009). Discussions during team meetings were taken into consideration in writing this thesis. Three researchers assisted in the analyses and writing, reinforcing the credibility of the research (Tracy, 2010). The process of reflexivity was attended to throughout the research.

## Results

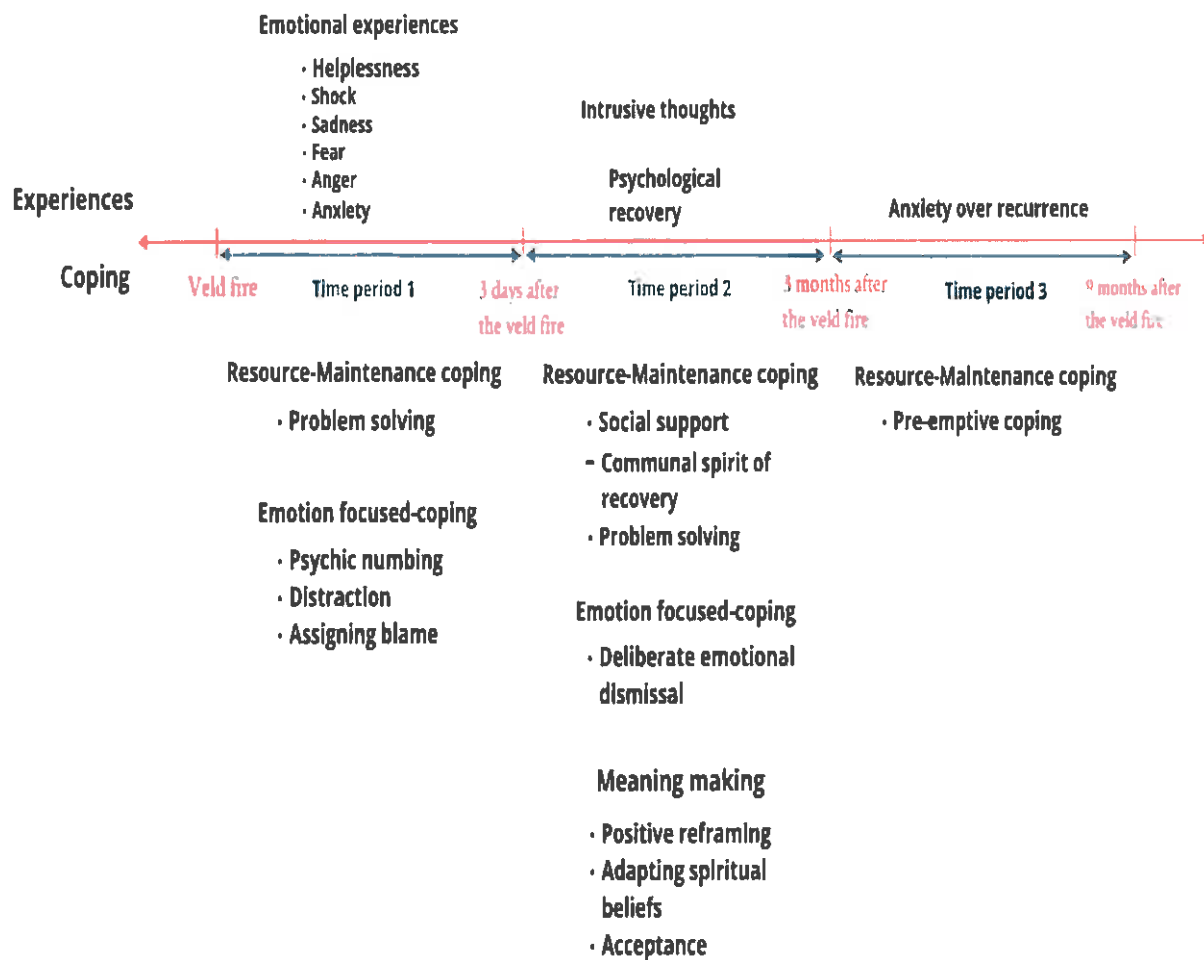


Figure 1: Visual representation of the results

### Time Period 1 (1-3 days after the disaster): Emotional Experiences

In the immediate aftermath of the disaster the farmers experienced extreme negative emotions, such as anger, sadness and fear and feeling overwhelmed. These were experienced in short succession and to varying degrees, until three days after the veld fire.

**Helplessness.** Due to the intensity and speed of the fire the farmers felt powerless to stop it and indeed most of their efforts were in vain. One of the participants expressed his feelings as follows:

*Participant 7: You are helpless because you can't come close to the fire. You try to put out [the fire in] your garden, you can't start the sprinklers, and you can't phone anyone because there is no signal. You can't come close to extinguish the fire with a bucket of water. The heat is too intense, you are helpless, and there is nothing you can do. You just stand there.*

*Participant 2: You feel helpless. I just stood there and watched. The fire brigade and everyone just watched. You can only stand there and watch because you or one of your workers can lose your lives if you try and put the fire out.*

**Shock.** Many of the farmers were shocked by the ferocity and size of the fires. The farmers could not believe or comprehend the amount of carnage and destruction the fires caused. It is not known exactly how many people died in the veld fires, but during the interviews it became apparent that there was significant loss of life.

*Participant 3: As I am talking to you I can see everything that happened. It flashes before my eyes. I know where the dead cattle were lying and where a cow was standing with her eyes burned out. She is naked, there is not a hair left on her body. Her eyes have burst, she is only still breathing. It feels as if everything has burned. Everything is pitch black.*

*Participant 5: My whole castle [sic] (world) collapsed when [farm worker] started moaning and I saw how badly he was burned. He was burned white. There was no skin left - he was burned white and all he could say was: Sir, I am dying.*

**Sadness.** The farmers' sadness was related to the loss of people they knew or who had worked for them and with their cattle. The farmers also felt sad when they sympathised with

families or individuals about the lives that had been lost in the fire. Many farmers had an emotional bond with their cattle because they had raised them from the moment they were born, interacted with them on a daily basis, knew each animal by name and took care of all their needs.

**Participant 8:** *In our immediate vicinity I know of one farm worker and one farmer who died. I cannot stop thinking about his wife and children. His son is five years old. I attended his funeral and it was extremely emotional.*

**Participant 5:** *I love my animals. I am not a grain farmer. I love my animals, I always tell my children. To see them suffer... I couldn't handle it.*

**Fear.** The fear the farmers felt was related to their inability to reach loved ones, and fear about possible losses caused by the veld fire, which included property loss and the loss of lives.

**Participant 7:** *I feared that all my farm implements could be damaged because they were still in the veld. The house could burn down. My cattle could burn to death. The fact that everything could burn down makes you stressed. You worry about your farm workers because they could burn to death. My mother helping to put the fire out could burn. You worry the whole time for others.*

**Participant 6:** *Everybody was terrified that the cattle would be touched by the fire but fortunately some other guys drove up with their cars and took the cattle out of the camps.*

**Anxiety.** The farmers reported that they experienced intense anxiety about the vast amount of damages they had suffered as a result of the veld fire. Most of the farmers could not sleep because they were so anxious about the consequences of the veld fire and how they would recover.

**Participant 3:** *For a month I had trouble sleeping.*

***Participant 7:** You stress and worry about what you are going to do now. What are you going to do with the cattle that survived? You have to feed them. I was worried about what was going to happen.*

**Anger.** The farmers were angry for a host of different reasons, which varied from one individual to another. They were angry because of the property and cattle they had lost. Some of the participants were angry with whoever started the fire, although they had no idea who was responsible. They were angry with people who had failed to do anything to prevent the fire and because necessary steps had not been taken to prevent the disaster. One participant also expressed anger because nothing had been done to punish those who had started the fire. One of the participants was furious with people who failed to treat the affected animals with sympathy when they killed them after the veld fire. One participant was angry with himself for not taking any measures to prevent the destruction of the veld fire.

***Participant 1:** I was angry because I suffered loss and angry with myself that I couldn't see it and that I didn't insure my cattle or remove them from the veld, that I could do nothing and that I couldn't prevent it.*

***Participant 5:** It irritates you ... who do you get angry with? You get angry with the people who started the fire. They are the problem.*

On a deeper level, the emotions mentioned above were also related to shattered assumptive worlds. After the traumatic event the farmers were confronted with information which challenged their world views. The violation of their beliefs caused strong emotional reactions in the farmers. These views included their belief in the world as a safe, orderly, predictable place; beliefs in God; beliefs in their own invulnerability; beliefs about people; and beliefs in a positive self. The following excerpt is an example of shattered assumptions about God, which lead to feelings of anger:

***Participant 5:** I was angry at God. I always prayed that He should protect my property. Then they stole my animals and then the animals were burned to death and then they stole my animals again. I just feel that God is Almighty and that He would do anything I would ask of Him. It just feels as if God turned away from me. I think my only emotion was anger at God because He brought this into my life. I felt that He should have protected me and in the process you become angry and you can't sleep.*

The following excerpt is an example of shattered assumptions about the world as predictable and orderly, which lead to feelings of anger:

***Participant 2:** I haven't seen anything like it. I fight fires every year but this was totally devastating. Let me tell you, I haven't had many of those feelings. I have been relatively blessed. Your animals are lying there and there is nothing you can do. The police had to shoot so many animals that they ran out of bullets. Then I heard that they had already used up 300 bullets...then you start feeling powerless*

### **Time Period 1 (1-3 days after the disaster): Coping Strategies**

**Resource-maintenance coping.** This is a general theme that relates to all the coping strategies employed by the farmers to protect or regain their resources over a period of nine months. The farmers' resource-maintenance coping in this period was characterised by attempts to protect their resources from the impact of the veld fire. Resource-maintenance coping in this time period consisted of the following coping strategy:

**Problem solving.** The possible and actual loss of the farmers' resources produced significant distress. Consequently, they attempted to reduce their stress by protecting their resources. They tried to extinguish the fire, they immediately thought of plans to provide feed

for their cattle, moved surviving cattle, attended to injured cattle, mended fences and removed the carcasses.

**Participant 2:** *You can imagine for yourself what will happen if four hundred cattle start to rot in the veld. We had to dig holes. It was hard work. We helped secure the cattle that ran away during the veld fire. We had to mend fences and nurse injured animals. It was an enormous effort.*

**Participant 5:** *Physically I worked very hard after the fire. We started working from six in the morning until eight at night. After you have eaten you go straight to bed.*

**Emotion focused-coping.** This is a general theme that relates to all the coping strategies employed by the farmers after the veld fire disaster in an attempt to decrease their emotional experiences over the nine-month period. In the first time period, the farmers' emotion-focused coping strategies were concentrated on reducing their emotional experiences either by consciously excluding information which was in conflict with their assumptive worlds or by managing the emotions this information caused. During this period, emotion focused-coping consisted of the following coping strategies:

**Psychic numbing.** During the veld fire the farmers did not seem to fully grasp the reality and consequences of the veld fires. Autonomous unconscious mechanisms seemed to protect them from the emotional impact and the severity of the disaster's destruction.

**Participant 5:** *I didn't feel shocked the day of the fire. My shock only came a few days later. The day of the fire I could handle everything, but the next day when I arrived at the farm and I saw everything, that shock was too much to bear.*

**Participant 8:** *It was a delayed shock reaction. When everything is up and running again, you take a moment to step back. Then you look back at everything that happened and you think to yourself everything happened so quickly. I realised that I rode on my motorbike*

*towards the fire [which was very dangerous]. All of these funny things come back. This is a month later when I realised all this.*

When the farmers felt they had their farms back in order again, they started to become aware of the true consequences of the veld fire. This realisation produced the delayed shock reaction they described.

***Distraction.*** During the veld fire and a couple of days afterwards the farmers distracted themselves from distressing thoughts about possible losses and consequences of the veld fire by keeping busy. This included trying to put the fire out and attending to problems which needed immediate attention. This helped reduce their distress.

***Participant 1:*** *I coped with my sadness by looking for work to do on the farm. I don't know what helped precisely, but I just concentrated on other things. I mended fences and everything the fire destroyed. I would say that helped a lot, concentrating on other things.*

***Participant 2:*** *I didn't want to think about it. I just wanted to go on and it helped to be physically involved with the rehabilitation following the veld fire. I arranged for feed for the other cattle. One had to get involved quickly otherwise one would have given up which would have caused an even bigger loss.*

***Assigning blame.*** The farmers blamed a number of things for the veld fire, which gave them a source to vent their anger against.

***Participant 3:*** *Directly after the fire I felt sadness, shock and anger. The fire started somewhere. Some people don't do anything to prevent veld fires.*

***Participant 5:*** *It gets you down. At who do you get angry ... you get angry at the people who started the fire and no one else. They are the problem.*

## **Time period 2 (from 3 days until 3 months after the disaster): Emotional Experiences**

**Intrusive thoughts.** After most of the problems which needed immediate attention had been dealt with, the full impact of the fire dawned on the farmers. This realisation took the form of intrusive thoughts when they went to sleep or had time to take a step back from the consequences of the fire.

***Participant 3:** I must say that I was so busy organising everything that it took the worst of it away, but when it got quite ... I went to sleep at 11 but by 2 o'clock it was finished. I couldn't sleep. You just wake up and it's these thoughts. If I farmed just with maize, then it was another story but now I'm sitting with these animals and I must take care of them. There is nothing for them to eat and I must get food somewhere.*

***Participant 4:** You are emotional afterwards when you see the animals which are mutilated. I mean those are our animals. When it starts to calm again you think about all of those things again.*

**Psychological recovery.** The farmers reported that they recovered emotionally and psychologically from the veld fire at different intervals. The average recovery time was about three months

***Participant 3:** After two months I started feeling better. If you look at individual things it might have taken longer but the worst part of it lasted for two months.*

***Participant 2:** For a month I struggled to sleep. It took a month to recover.*

## **Time period 2 (from 3 days until 3 months after the disaster): Coping Strategies**

**Resource-maintenance coping.** Farmers attempted to regain the resources which they had lost during the veld fire. Thanks to the various coping strategies the farmers employed in this period, most of them restored their farms and businesses to normal again.

which in turn aided their psychological recovery from the veld fire. Resource-maintenance coping consisted of the following coping strategies:

***Social support.*** One of the most prominent and beneficial coping strategies the farmers employed was social support. This involved asking for help and receiving assistance from other farmers in the form of donations from friends and family who provided warmth and sympathy.

***Participant 8:*** *The support you get from your friends and family makes the load easier to bear. I appreciated it when people phoned me and sympathised with my situation.*

***Participant 3:*** *I only took sleeping pills for three nights but I never had any anxiety attacks because of all the help which streamed in. I just had to figure out where I should put everything.*

Most of the farmers felt that they could not have survived the veld fire if it had not been for the tangible support of others. Most received help from across the country from farmers they had never even met; this speaks of the strong and extensive social networks that exist in the farming community.

***Communal spirit of recovery.*** As one farmer explained, farmers are generally bound together by issues related to loss of property.

***Participant 2:*** *If a neighbour or farmer has suffered damage everybody will help him and most will go out of their way to help him, despite the cost. In this region the farmers will do anything for one another. They will encounter problems [with other farmers] when a cow eats all the grass or tramples their corn, but as a community and on communal issues the farmers are united. You can't ask for better.*

The farmers came together and were drawn together by the bond of surviving the fire and spared no expense in helping one another.

**Participant 8:** *It helps you and everyone around you, together you must rise up out of the ashes.*

The farmers felt that everyone affected by the fire needed help. Their communal spirit of recovery was even evident in a touching story involving mice.

**Participant 3:** *We always killed mice when we saw them. After the fire we were catching them and feeding them seeds in the kitchen. It was a different experience for the children. When the grass and the veld started growing again, we let them go.*

One of the participants stated that social support mostly died down after two months, at which point the farmers who had allowed the participant's cattle to graze on their lands became annoyed with him.

**Participant 2:** *That [name omitted] is a wonderful guy. He said that in the first few weeks people are going to help you. Then you are in the thoughts of everyone and everyone sends you feed. Then after two months everybody has forgotten about you and gone on with their lives. When that happens it is very difficult. After two months everyone went on with their lives. The support declines. Then you are basically on your own.*

**Problem solving.** After the initial impact of the veld fire the farmers attempted to regain the resources they had lost, for example by fixing implements and finding new grazing for their cattle. Engaging in problem-solving helped them regain some sense of control. While acknowledging that they did not have total control over their environment, as the veld fires had shown them, successfully meeting the challenging consequences of the veld fires restored some sense of control.

**Participant 8:** *You are busy repairing the damage which has been done. It helped me personally. I mean this thing was broken and then you make a plan and we pray and then you see something rising up from the ground.*

One of the factors directly associated with this appraisal of control was self-efficacy. The farmers who believed that they would recover from the veld fire regained feelings of hope. Their individual beliefs of self-efficacy were constructed from previous successful experiences when they had succeeded or had overcome some form of stressor.

***Participant 3:** My determination helped me get through the fire. I just had to hold on. I have overcome a few things in my life. Twenty years ago there was a drought. It looks much better now than twenty years ago. Everything burned down but there is grass again.*

***Participant 2:** You can overcome the veld fire financially. You can work in that direction again. You know the way.*

**Emotion-focused coping.** The realisation of the true consequences of the veld fire produced distressing emotions in the farmers. Emotion-focused coping during this time period was characterised by managing these emotions. This was achieved by consciously regulating them.

***Deliberate emotional dismissal.*** The farmers reported that they had deliberately minimised or stopped their emotional reactions to the veld fire. They felt they could not think about the fire for long; they had to put it behind them because they had to save their farms and fix all the problems caused by the fire. Some of the participants reported that this had to be done to stop their emotions from interfering with their problem-solving efforts.

***Participant 1:** If I allow myself to get emotional every time I suffer losses I will make poor decisions so I don't allow myself to get emotional. You can be disappointed but not sad because you have to carry on. If you allow yourself to be sad, you will not be in business for long.*

**Participant 3:** *You can't keep on crying. If it helped to cry I would still be crying today but the next day I was finished. It wouldn't have improved my situation if I kept on pampering myself with emotions.*

**Meaning-making coping.** Towards the end of this time period the farmers started to incorporate their shattered assumptive worlds into coherent world views. The various coping strategies which they used to obtain coherent world views assisted in their recovery.

Although most of the farmers had reframed the veld fire in a meaningful way during the second time period, they continually came to new realisations and clarity about the disaster. For this reason meaning making continued for up to nine months after the event.

**Positive reframing.** The farmers redefined the veld fire so that they could see it in a more positive light. They did this mainly by identifying benefits or blessings from their experience. By making downward comparisons with people who had sustained more damage than them or had lost loved ones, they came to the conclusion that their situation could have been worse.

**Participant 8:** *The veld fire brought the people closer together. You need people to get through the fire. It also strengthened my faith; there are so many things you take for granted.*

**Participant 3:** *You see what could have happened. Farmers and their workers in other areas lost their lives. There are also other people who sustained a lot more damage than us. We are thankful that that did not happen to us.*

**Adapting spiritual beliefs.** This involved reconciling shattered beliefs in God with new beliefs. For example, one participant felt that God had forgotten about him. He then reminded himself that the veld fire could have been worse. He decided that he should be thankful to God for this and that God had in fact protected him.

*Participant 7: You ask a lot of questions about why and how this happened. Are you not forgotten? But it strengthened my faith and I started asking fewer questions. I am thankful that it didn't have the wrong effect on me – it could just as well have had. I wouldn't say that I started praying more than before but I think the way I live my life and think about things brought me closer to remembering that one is only a human on this earth.*

**Acceptance.** This involved reconciling shattered world beliefs into a more realistic framework. The farmers accepted their situation and felt that they should carry on and rebuild their lives.

*Participant 2: Veld fires are part of us; that fact we must accept.*

*Participant 3: You must be tough to survive in this industry. They always say we farmers are always complaining and are never content. This is the industry which I chose and I have to continue and make other plans.*

The fact that this was a natural disaster helped some to accept what had happened to them.

*Participant 3: A few of the cattle did survive and I regard it as a natural thing. You must think about that.*

Natural disasters are easier to accept because there is no malicious intent involved. This was evident in the discussion with one of the farmers about stolen cattle.

*Participant 5: I can process the veld fire; it was an emotional shock but you can process it because it's a natural thing. Now every week fifteen of my cattle get stolen. That I can't process.*

### **Time Period 3 (from 3 months until 9 months after the disaster): Emotional Experiences**

**Anxiety over recurrence.** The region the farmers occupy is particularly prone to veld fires. It is therefore understandable that they feel anxious about possible recurrence of this

veld fire. Their experience of the previous veld fire and the anticipation of a future disaster prolonged their stress reaction. The farmers also felt that anxiety over the anticipated veld fire undermined the psychological recovery they had made.

***Participant 4:** I'm already stressing about the next veld fire which is going to come. I know it's going to happen again, I'm a 100% certain.*

***Participant 2:** The veld fire definitely left a scar and now that the winter season [fire season] is coming that scar is going to be ripped open again.*

### **Time Period 3 (from 3 months until 9 months after the disaster): Coping Strategies**

**Resource-maintenance coping.** The strategy during this time period was characterised by the farmers' protecting their resources against possible future veld fires. Resource-maintenance focused coping in this period consisted of the following coping strategy.

**Pre-emptive coping.** The farmers reacted to the anticipated veld fires in pre-emptive ways, for example by making fire breaks. They stated that they would have engaged in more self-blame if it had not been for the preventative measures they had taken before the veld fire.

***Participant 5:** We have to make sure that we prevent it before it comes. We must get fire bells and fire extinguishers. We are experiencing fear and some stress that the fire must not come again. Yes, we stress as cattle farmers. We look where we can get some help from the department or NGOs so that we do not have the same problem as we had last year. That makes the stress go away.*

***Participant 6:** Today I have to start preparing everything for the coming winter months. Something like this can happen again.*

## Discussion

This study set out to investigate the experiences and coping strategies of farmers as they unfolded over a period of nine months after they experienced a veld fire disaster. To this end, three time periods were identified which consisted of a range of experiences and coping strategies. This study was also interested in the influence of temporal aspects on the psychological consequences of veld fire. The passage of time was shown to have a significant influence on the farmers: their experiences and coping strategies were observed to transition through the three distinct time periods, each with its own unique patterns of experiences and coping strategies. It appears, however, that it is not necessarily the passage of time itself which facilitated the transition of these periods, but rather the changing situational demands placed on the farmers inherent in the passage of time. Each of the time periods was distinguished by its own unique set of circumstances, which produced emotional reactions or experiences in the farmers. Each of these circumstances also produced perceived situational demands. The coping strategies employed by the farmers were the vehicles used to meet these demands. By meeting the demands of the situation the farmers changed their own situation, which in turn decreased their negative emotional experiences. Inevitably, when the farmers changed their circumstances they were faced with new circumstances and situational demands, which signalled the beginning of a new time period.

In the first time period, the farmers' circumstances involved facing a veld fire, which threatened almost every aspect of their lives. This produced distressing emotional experiences as a result of their potential and actual property loss and their shattered assumptive worlds. The perceived situational demand was to save their resources and extinguish the fire. Trying to construct coherent world views through meaning making at this stage would not have satisfied their perceived situational demands. Attending to their shattered assumptive worlds was given a secondary priority. The meaning-making process was temporarily discarded and

avoidant coping strategies were substituted to manage the distress caused by their shattered assumptive worlds. The problem-solving activities employed by the farmers helped them to save what they could and eventually extinguish the fire. After the fire had been extinguished their situation changed and they were faced with new demands, which ushered in time period two.

In the second time period, the circumstances of the farmers constituted the realisation of the full impact of the veld fire, which produced significant distress. The perceived situational demand was to regain their resources and rebuild their farms. To achieve this goal the farmers used their problem-solving abilities as well as their strong and extensive social networks. According to Hobfoll (2011), distress will decrease after a traumatic experience once resources have been recovered. Deliberate emotional dismissal was used to prevent the farmers' emotional experience from interfering with their problem-solving efforts. Lazarus and Folkman (1984), found that problem-focused coping and emotion-focused coping may facilitate each other. In this sense, deliberate emotional dismissal was conducive to the perceived situational demand of the farmers' circumstances. The farmers' use of strong, all-consuming, resource-maintenance focused coping and deliberate emotional dismissal in this time period is relatively unique compared with other studies. Deliberate emotional dismissal has been observed in one other study as "stoic resolve", where the authors investigated the consequences of a military air crash (Bartone & Wright, 1990). The reason for these context-specific coping strategies could be the unique situation in which the farmers found themselves. The veld fire not only destroyed their property, which is the case with most disaster victims, but also affected their livelihoods. The farmers were solely responsible for recovering from the veld fire as they did not receive any financial assistance from the government. This may explain the strong need for resource-maintenance coping. Deliberate emotional dismissal had to be employed to facilitate the farmers' problem-solving abilities.

The farmers started to deal with their shattered assumptive worlds only when most of their resources had been recovered in the form of meaning-making. Horowitz (2011) holds that denial and emotional dismissal will ensue after a disaster until the individual involved has fulfilled the need for reconstruction and self-preservation. The farmers reported that the combination of rebuilding their farms and assimilating their veld fire experience into coherent world views, resulted in the psychological recovery from the veld fire.

In time period three most of the farmers felt that they had recovered emotionally from the veld fire but were faced with a new situation in terms of the expected upcoming veld fire season. The farmers experienced intense anxiety over the possibility of another veld fire. This situation demanded that their resources be protected from this eventuality. They attended to this situational demand by engaging in pre-emptive coping, which reduced their anxiety. A particular and disconcerting aspect of the farmers' experiences was the constant distress provoked by the possibility another veld fire. Kessler et al. (2008) suggests that chronic stress due to continuing stressors after a disaster is linked to prolonged levels of somatic complaints, anxiety, depression, post-traumatic stress disorder and suicidality. Their experiences with earlier veld fires and the anticipation of a future disaster, prolonged the stress reaction of the most recent fire. The farmers also felt that their anxiety over the anticipated veld fire undermined the psychological recovery they had made. Previous research suggests that if the farmers were to suffer a recurrence of the veld fire it would have devastating mental health consequences. Wind, Joshi, Kleber, and Komproe (2013) contend that recurring disasters have significantly greater adverse effects on someone's mental health and functioning compared to other studies focusing on a single natural disaster.

What is important in terms of the progression of these time periods is the relationship between the farmers and their environment. The circumstances and situational demands placed on them by the veld fire marked the beginning of a certain phase, which triggered

various experiences and coping strategies. By meeting the demands of their situation the farmers actively changed their situation or environment. This changes the assumption of people as mere passive bystanders when faced with the psychological consequences of disaster. People are instrumental in determining and defining the phases of their psychological reactions to a disaster. The relationship between a person's environment, experiences and coping strategies will also determine his or her psychological reactions to a disaster. Psychological interventions after a disaster need to actively address the individual's external environment to the same extent that they facilitate healthy coping.

The changing situational demands observed in this study, which forms part of the person-environment relationship, also hold important implications for future coping research and our understanding of how coping processes operate after a disaster. Lazarus and Folkman (1984) contend that "the effectiveness of a coping strategy depends on the extent to which it is appropriate to the internal and/or external demands of the situation" (p. 185). However, because these demands continually change during a disaster, those affected have to continually adapt their coping strategies. It may not necessarily be the application of a certain coping strategy that determines successful coping but the individual's ability to continually adapt their coping strategies in a context-appropriate manner. Research studies on coping after a traumatic event without accounting for its temporal dynamics, as is the case with the majority of coping studies, may be following an unhelpful line of enquiry (Folkman & Lazarus, 1985; Litt, Tennen, & Affleck 2011; Norris, Friedman, & Watson, 2002). A certain coping strategy may be very effective in a particular phase after a disaster but may be detrimental in another phase. An example of this notion was seen in the coping strategy of social support.

Research has consistently found that social support is extremely effective in decreasing distress after traumatic events, including disasters (Kaniasty & Norris, 1995). In

this study the farmers perceived social support as a highly effective and beneficial coping strategy in the early stages following the disaster. As time passed, one of the farmers reported that the quality and quantity of social support had started to decline. This is in line with previous findings (Kaniasty & Norris, 1995; Pennebaker & Harber, 1993). This produced significant distress in the farmer. In the later stages of the disaster social support no longer addressed the situational demand of regaining resources. This would indicate that relying on social support in the later stages of a disaster may provoke significant emotional distress.

The role of temporal dynamics in coping strategies may also provide a possible answer to conflicting findings in relation to the use of avoidance coping strategies after a traumatic event. Some studies have found that employing avoidance coping strategies after a traumatic event can be beneficial in terms of mental health outcomes while others have found it to be detrimental (Boelen, van den Bout, & van den Hout, 2006; Nolen-Hoeksema, 2001). Avoidance coping strategies, including distraction, denial and deliberate emotional dismissal, may be beneficial only in the early stages of a traumatic event such as a disaster because they facilitate problem-solving coping strategies which meet the situational demands of the early phase of the disaster. According to Olff, Langeland and Gersons (2005), people who engage in avoidant coping strategies in the immediate aftermath of extreme stress may appraise their situation as less threatening and consequently direct their coping strategies to problem-solving (Olff et al., 2005). Problem-solving strategies are beneficial because the person deals actively with the stressor and avoids long-term physiological dysregulation and post-trauma symptoms (Olff et al., 2005). These researchers further contend that a reduced threat perception, due to avoidance coping strategies shields the person psychologically and decreases hypothalamic-pituitary-adrenal axis activation and cortisol secretion, thereby reducing the risk of developing post-traumatic stress disorder. Avoidance coping strategies may, however, be detrimental in the long term because they could interfere with the longer-

term situational demand of reconstructing the veld fire event into coherent world views through meaning making, which is essential for trauma resolution (Horowitz, 2011; Park, 2011).

The potential benefits of avoidance coping strategies in the early stages after a disaster challenges the practice of administering psychological debriefing. According to Bell (2013), psychological debriefing is widely used after a disaster and new, untested single-session disaster treatments appear to be gaining in popularity. Psychological debriefing mainly involves achieving some form of catharsis by encouraging the recollection of the event and eventually redefining the event, shortly after the traumatic event has occurred (Rose et al., 2002). In this approach, avoidance coping strategies are discouraged and may often be pathologised. After an extensive review of the effects of psychological debriefing, Rose et al. (2002), have however found that psychological debriefing does not facilitate recovery after traumatic events and may in some cases lead to worse mental health outcomes. In light of Rose et al. (2002) and this study's findings, it appears that confronting the realities of a traumatic event in its early stages is not beneficial and may in fact be unhealthy. Temporarily distancing oneself from the traumatic event could in fact be adaptive in terms of facilitating problem-solving skills. On this point Shalev (1994) states: "The role of coping strategies in debriefing is problematic and may challenge the appropriateness of this technique for all individuals. Some individuals, by virtue of their coping style, may do better when they are allowed to repress and forget their trauma" (p.212).

### **Recommendations for Interventions and Future Research**

In terms of the findings of this study a number of recommendations might be made. In the immediate aftermath of a disaster it is advisable that crises intervention teams (CIT) play a more practical role. Avoidance coping strategies should not be interfered with and emphasis

should be given to the long-term consequences of the disaster. Psychological debriefing should be avoided and the Psychological First Aid Model should be used (Ruzek et al., 2007). Ruzek et al., contends that the Psychological First Aid Model aims at “reducing initial distress caused by traumatic events and fostering better short- and long-term adaptive functioning of survivors.” (p.39). The fire-prone environment in which the farmers live needs to be addressed through a multidisciplinary approach. Future research needs to account for the time-sensitive dynamics of coping strategies in their research designs. Conclusions arrived at by studies which miss the temporal aspects inherent in coping strategies may be misleading. Future researchers might also want to look at ways in which the risk of veld fires can be reduced and levels of social support be kept consistent over the long-term of the disaster. Further research into the coping strategies and experiences of farmers after a disaster needs to be conducted.

### **Limitations**

The results of this study were based on retrospective self-reported data and thus relied on the reconstructed memory of the farmer’s veld fire experience. Recall bias may have influenced the farmer’s memory of the veld fire experience (Gilbert, 2006). Future research may want to employ longitudinal study designs with multiple points of data collection. As this study is based on the subjective experiences of the farmers it may not generalise well to other contexts. However, researchers and practitioners should in any event be very cautious when generalising any disaster research on to other communities, as reactions to disasters are very context-specific. The phases identified here should preferably be used as guidelines when working with farming communities affected by disaster. It is also recommended that future studies make use of more data collection methods.

## Conclusion

Research about people confronted with natural disasters should be mindful of experiences and coping strategies in terms of the time periods in which they occur. Each time period is associated with specific requirements and contra-indications. The person-environment relationship as well as transitioning situational demands inherent in this relationship, was found to be crucial in determining the outcomes of the farmers' experiences and coping strategies. The results also suggest that successful coping is reliant on the individual's ability to adapt coping strategies continually, in a context-appropriate manner. It is recommended that psychological debriefing should be avoided and that CIT should focus on the long-term consequences of the veld fire. Future coping research would benefit from taking the time-sensitive dynamics of coping strategies into account.

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## CRITICAL REFLECTION

Previous literature has recommended that the long-term consequences of disasters need to be investigated (Norris, 2006). Little is known about the long-term psychological experiences and coping strategies of people who have experienced a disaster. International research on coping and disasters suggest that this is a complex area and that the effectiveness of coping strategies can be affected by temporal dynamics (Ibañez et al., 2004; Rose, Bisson, Churchill & Wessely, 2002; Scott et al., 2010). This complex and time-sensitive nature of coping strategies may not have been captured by previous research. In order to investigate these aspects further, this study employed a qualitative, retrospective approach.

It was found that the farmers' experiences and coping strategies evolved through three distinct time periods. These can be thought of as phases or stages through which they progressed. Previous research studies have similarly suggested that people progress through distinct psychological phases after a disaster. Perhaps the most widely used formulation of these phases consists of the following (Centre for Mental Health Services, 2002):

- Impact phase;
- Rescue phase;
- Honeymoon phase;
- Inventory phase;
- Disillusionment phase; and
- Recovery phase

This formulation combines psychological experiences and coping strategies in its description of the phases through which the individual progresses. In the impact phase reactions may range from shock, panic or hysteria. People respond by focusing on their survival and well-being. In the heroic phase people are motivated to save others or their property, fuelled by

high levels of adrenalin. In the honeymoon phase survivors will feel optimistic about their future and will experience a strong sense of social cohesiveness. In the inventory phase people become exhausted due to the multitude of challenges they must face and realise the true consequences of the disaster. The disillusionment phase is marked by the decline in tangible and social support. People may become pessimistic because they have still not obtained the necessary resources to recover from the disaster. In the recovery phase they eventually regain the resources which they have lost and find a sense of meaning in the disaster. The farmers' experiences and coping strategies were relatively in keeping with these phases, but there were notable exceptions.

A strong, all-consuming resource-maintenance coping was observed operating from directly after the veld fire until three months afterwards. The farmers had to engage in this type of coping not only to restore their property but also to ensure their business and farms, which provide their main source of income, were functioning again. Deliberate emotional dismissal accompanied their resource-maintenance coping thus facilitating their problem-solving abilities. This prolonged period of avoidance coping is relatively uncommon in comparison to the typical psychological phases of disaster reactions. Deliberate emotional dismissal did not seem to be detrimental because it facilitated problem solving. Problem-solving resulted in resource gain, which was crucial to the farmer's psychological recovery. In general, the inventory and disillusionment phases were short-lived. This may be due to the fact that the farmers accepted that they were the ones responsible for recovering from the disaster and felt that they would not receive any help from the government. Overcoming previous experiences related to loss or destruction of property also gave them a sense of self-efficacy and they believed they would overcome the consequences of the veld fire through hard work. The third time period or phase observed in this study was marked by anxiety about the possibility of future veld fires. This phase is particularly disconcerting as the

farmers reported that anxiety undermined the psychological recovery which they had made. Previous research also suggests that if the farmers were to suffer from another veld fire disaster, it would have devastating mental health consequences (Wind, Joshi, Kleber & Komproe, 2013). These deviations from the typical stages of disaster recovery suggest that the psychological consequences of a disaster are context-specific.

The time periods or phases the farmers progressed through were defined by the transitioning relationship between their environment, psychological experiences and coping strategies. The veld fire produced emotional experiences, which triggered various coping strategies. By using specific coping strategies the farmers changed their environment and as a result they encountered new experiences. These new experiences in turn triggered new coping strategies. The farmers' experiences, coping strategies and environment were not only inextricably linked, but also, mutually influential.

The dynamic and transitioning nature of the relationship between the farmers' environment, emotional experiences and coping strategies are in accordance with Folkman, Lazarus, Dunkel-Schetter, DeLongis, & Gruen's (1986) understanding of the relationship between a stressor and a person's coping strategies "as transactional in that the person and the environment are viewed as being in a dynamic, mutually reciprocal, bidirectional relationship" (p.1). The ability to capture this dynamic and transitioning relationship was a result of using a qualitative, retrospective research approach. This is in contrast to a large body of disaster and coping research studies which uses cross-sectional research designs to provide a snapshot of coping strategies at a single point in time (Folkman et al., 1986; Litt et al., 2011; Norris et al., 2002). Studies with these kinds of designs inherently assume that the way people cope at a particular point in time is representative of the way in which they will cope in general (Folkman et al., 1986; Litt et al., 2011). In this study the farmers' coping strategies were certainly not static, but developed and changed constantly to accommodate

changing situational demands. Based on the assumption of the stability of coping strategies, these cross-sectional studies then endeavour to determine which coping strategy is related to the best psychological health outcomes (Litt et al., 2011). Due to the changing situational demands following a disaster, a certain coping strategy may be effective at a specific stage of a disaster, but detrimental at another stage. This seemed to be the case with avoidance coping and social support.

According to Norris et al. (2002), the majority of studies focusing on coping and disasters have concluded that avoidance coping is related to detrimental psychological outcomes. Most of these studies used cross-sectional research designs (Norris et al., 2002). In this study however, avoidance coping strategies seemed to be beneficial as they facilitated problem-solving efforts in the early stages of the disaster. In the long term avoidance-coping strategies might be detrimental as they may interfere with meaning making, which is an important part of the recovery process (Horowitz, 2011; Park, 2011).

Social support has consistently been found to be a beneficial coping strategy after a disaster. This study and previous findings would suggest however, that social support declines after a disaster (Kaniasty & Norris, 1995; Pennebaker & Harber, 1993). Relying on social support in the later stages of a disaster may not be a beneficial strategy and may produce significant distress.

Successful coping seems rather to be dependent on adapting individual coping strategies in a context-appropriate manner than on the use of a specific coping strategy. This notion is particularly relevant in terms of disasters given the multiple challenges those involved will face long afterwards. Cross-sectional research designs have inevitably failed to capture the influence of temporal dynamics on people's experiences and coping strategies. Consequently, misleading conclusions about particular coping strategies may have been drawn. "To examine a stressful encounter without recognising that its momentary properties

may change can be misleading, and may also mean that one of the most important features of human adaptation, namely, the way people change troubled person-environment relationships through coping, will be ignored” (Folkman & Lazarus, 1985, p.168).

Our conceptualisation and study of people’s coping strategies after a disaster clearly have to change. The way we have studied and measured coping has shaped our perspectives of coping with a disaster, and not the other way around (Litt et al., 2011). People’s psychological reactions to a disaster and how they cope with it is a context-specific, complex and dynamic process. The relationship between the environment, experiences and coping strategies are inherently linked and needs to be studied as a whole. The process by which this relationship unfolds, needs to be examined by emphasising its time-relevant properties. The use of daily dairies and time-sensitive statistical techniques such as structural equation modelling provide promising avenues for future research. Trying to determine which coping strategy is the “best” would seem to be a futile line of enquiry. The psychological outcomes of a person’s ability to constantly fine-tune their coping strategies in a context-appropriate manner need to be examined further.

Due to the context-specific nature of psychological reactions to a disaster the typical phases of disaster recovery and other international disaster research may not be entirely applicable to the South African farming community. In the light of the previous notion and the almost non-existent research into the psychological consequences of disasters in farming communities, this study is particularly relevant. A number of recommendations based on the results obtained can be made to assist CIT working with disaster-affected farming communities.

The time periods or phases identified in the study may be used by CIT to help plan interventions. As the psychological reactions to a disaster are context-specific, these phases are not set in stone and it would be preferable for CIT to treat them as guidelines. The phases

identified in this study are based on the farmers' subjective experiences and may differ from other people.

In the immediate aftermath of a disaster, it is advisable that CIT play a more practical role. The intervention team must assist farmers with finding solutions to the multiple problems they will encounter and with contacting individuals who may be able to provide tangible or emotional support. It is recommended that the Psychological First Aid model be used. Psychological debriefing should be avoided and avoidance coping strategies, such as deliberate emotional dismissal, denial and distraction, should not be interfered with. CIT should focus on the long-term consequences of the disaster as they can play an active role in assisting farmers with meaning making. Benefit finding, adapting spiritual beliefs and accepting the reality of the veld fire, were all effective pathways the farmers followed to give the veld fire a sense of meaning. As the farming community is particularly religious, it is recommended that support from local churches be obtained to assist with potential religious issues. If social support deteriorates, CIT must look at possible pathways to reverse this. This may involve teaching conflict resolution skills or tapping the strong extended social network which the farming community has in place. The fire-prone environment the farmers live in needs to be addressed through a multidisciplinary approach. Every effort needs to be made to ensure that fire breaks are in place before the fire season starts and that fire protection associations are fully operational and functional.

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