



**Karoo Farmers Living and Working Experiences in Protracted Drought Conditions: A
Case Study**

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COMPULSORY DECLARATION

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Abstract

In the South African context, a geographical region prone to the occurrence of frequent and intense periods of drought, the emergence of climate conditions reaching new extremes raises concerns of adaptability to sustain living and work well-being in such circumstances. The realisation of economic, social, environmental and psychological impacts resultant from drought conditions is particularly relevant to farmers, an occupation group who are often characterised by socio-economic vulnerability in South Africa. Consequently, this research seeks to explore the yet undocumented experiences of farmers living and working in the current drought conditions, located in the Karoo region of South Africa. A further aim of this research is to explore how these experiences have affected farmers' psychological well-being, as well as understanding the coping mechanisms they have used to deal with this long-standing crisis situation. The present study adopted an exploratory case study design using an interpretivist paradigmatic stance. Based on research conducted and reviewed within the climate change domain, it was understood that farmers' experiences of working in drought conditions were complex, context specific and differed amongst individuals. Therefore, knowledge was viewed as subjective as there was no particular, correct path to knowledge as it emerged through various contexts. The case under study was Karoo farmers in the Western Cape province. Their living and working experiences, and coping mechanisms were specific to their surrounding landscapes and chosen type of farming. Furthermore, this case study was particularly concerned with farmers who retained close living, working and cultural relationships to their natural environments. Consequently, the unit of analysis in this study was the individual. A purposive sampling strategy was adopted and a total of eight participants were interviewed. An inductive approach to analysing the data was undertaken, using Braun and Clarke's (2006) Thematic Analysis. Three major themes emerged during the analysis with a number of associated sub-themes. The results describe the sample's shared ecological grief experiences due to both implicit and explicit impacts resultant from sustained drought conditions. The negative psychological outcomes the sample endured as a result of these experiences, demonstrates the implication of living and working in such conditions for work and psychological well-being. The common coping mechanisms employed over this time are also extracted from the themes. The discussion presents the findings of this study through the lens of the Sustainable Livelihoods Approach framework, to understand how drought conditions presents barriers to these farmers sustaining their well-being.

Keywords: qualitative, exploratory, interpretivist, farmers, drought, experiences

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Introduction

In the Anthropocene epoch, a term widely understood to mark an era in which the earth has been significantly impacted by human action, it is evident that climate change is a current defining issue (Phillips, 2019). Its impacts on the ecosystem are global in scope and unprecedented in scale, as the departure from average climatic conditions are starting to reach new extremes with increased frequency and intensity (Conradie, 2019; Bogardi et al., 2005). The consequences of these impacts require adaptability to survive as these new climatic conditions emerge. Whilst for some organisms this process of change is organic, human beings are required to consciously develop new strategies for adaptation. Many of these strategies require the modification of existing behavioural tendencies in order to successfully interact with changing environmental realities (Bogardi et al., 2005).

In South Africa, the challenge to adapt is particularly present for the Department of Agriculture and all those in this domain, as this geographic region is naturally prone to the occurrence of extreme periods of drought (Baudoin et al., 2017). The El Nino-related drought in 2015-2016 has been qualified as the most severe drought since the 1992-1995 drought period, indicating that the intensity of this climate conditions is steadily increasing. Additionally, the frequency of these drought events is increasing as only two years later in 2018 another drought ensued, the effects of which have not yet abated (Baudoin et al., 2017). Given the extent of economic, social, environmental and psychological disruptions resulting from drought conditions, this research seeks to explore the yet undocumented experiences of farmers working in these drought conditions, located in the Karoo region of South Africa. A further aim of this research is to explore how these experiences have affected farmers' psychological well-being, as well as understanding the coping mechanisms they have used to deal with this long-standing crisis situation. This area of inquiry is thought to be relevant at both the macro and micro level, as well as within the organisational psychology domain. Reasons for this assertion of relevance will be discussed and presented throughout this chapter.

At the macro level, South Africa is extremely vulnerable to the effects of drought. The agricultural sector is a significant contributor to the country's economy, relying on both rural subsistence and commercial farmers who are highly dependent on rainfall for production (Conradie, 2019; Monyela, 2017). Consequently, extended periods of drought lead to water restrictions, decreased production, unemployment, increased food prices and therefore, a decrease in purchasing power (Botai et al., 2017). There is contemporary research highlighting psychological and social impacts on identity, security, self-esteem, well-being and belonging, resulting from climate conditions such as drought (Ellis & Albrecht, 2017). Thus, the country's

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vulnerability to this climate condition goes beyond the resultant pressure placed on the nation's agro-economic system, and more importantly beyond economic impacts (Baudoin et al., 2017).

According to Howard and Huston (2019), heat-related events such as droughts, can have adverse effects on health and work productivity, as these effects become imbedded within everyday experiences, thus resulting in far reaching emotional responses to drought. At the micro level, it is arguably farmers, their employees, their respective families and communities who are at the forefront of experiencing and dealing with the psychological effects resultant from drought periods (Jones, 2018); as the everyday experiences of these individuals involve working in landscapes that have been significantly altered by drought events, explicitly impacting their livelihoods and psychological well-being. Findings by Mare et al. (2018), report an increased number of farmers exhibiting signs of depression in the South African agricultural landscape. The extent to which has resulted in a rise of suicide-related deaths (Mare et al., 2018). Against these findings, the importance of exploring farmers' experiences of working in drought conditions is clearly evident, as the resulting effects on farmers' psychological well-being is likely to increase as climate conditions are emerging more frequently and with greater intensities (Conradie, 2019).

The Sustainable Livelihoods Approach (SLA) will be used as a framework to understand the impact of drought conditions on farmers' well-being. The SLA organises factors that impede or promote livelihood opportunities, whilst demonstrating how these factors relate to one another (Serrat, 2017). This framework offers a lens to aid in understanding how farmers' existing capital assets and the current surrounding government policies and agricultural institutions threaten or contribute to sustaining their livelihoods in the current drought conditions (Serrat, 2017).

Rationale of Research Study

The extent to which agriculture is essential to the national economy, local communities and individuals in South Africa, is well established (Baudoin et al., 2017). As is the need to proactively manage and mitigate the effects of drought. However, both international and local research to date has focused on the economic and physical impacts resulting from sustained periods of drought, leaving the psychological effects on the farmers' well-being under-examined in climate change research (O'Neill et al., 2010).

O'Neill et al. (2010), states that these knowledge biases toward the economic and physical sciences in the discipline of climate change, are due to the desired real-world practices and actions outlined by political and economic systems throughout the world. However, despite

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there being a desire for real-world practises emanating from social systems to support the psychological effects of drought, there is a lack of research in this area. O'Neill et al. (2010), proposes this may be due to the multitude of psychological, social and infrastructural barriers that impede sustainable practices in climate change research. Consequently, this oversight by climate change scholars is particularly present in regions such as South Africa. Thus, leaving the embodied experiences of those whose livelihoods and well-being are dependent on their surrounding landscapes, overlooked (Tschakert et al., 2013). Farmers located in the Karoo region of South Africa, who retain close living and working relationships to their natural environments who are confronted by the effects of the drought on a daily basis, are examples of those who have been overlooked. It is this group of farmers, located in the Laingsburg and Matjiesfontein areas of the Karoo, that are the case under study. It is against this background that this study aims to explore these farmers' intangible values attached to the loss and damage to their surroundings. This area of study may serve as a potential starting point for addressing the psychological well-being of this occupation group working under these circumstances. The research findings are envisioned to bring about awareness and understanding of the psychological impacts resulting from drought conditions, how they are being managed and the impact it has on work well-being. Consequently, allowing farmers to adapt their livelihood strategies and improve their well-being, as a gain in knowledge has been shown to be one of the best ways of motivating action (Howard & Huston, 2019). Action is motivated as this increase in knowledge enables individuals to understand how they may develop strategies to prepare or adapt to their circumstances. A lack of knowledge may indicate an individual's uncertainty, which has been found to inhibit the decision-making process, resulting in a decrease of adaptability and work well-being (Altig et al., 2020).

Occupational Health and Sustainable Livelihoods

Research conducted within the Industrial / Organisational (I/O) psychology domain, consists of a wide variety of subjects related to various disciplines within the field (Schreuder & Coetzee, 2010). One such discipline in this domain is Occupational Health Psychology (OHP), which focuses on workers physical and psychological health within organisations. Consequently, any work-related factors, including workplace psychosocial hazards that affect employees' well-being as well as their families, may be of interest to OHP researchers (Leka & Houdmont, 2010). To this end, the SLA, has been used by OP practitioners and researchers to address decent work and sustainable development in the South African context (Schreuder & Coetzee, 2010). The success and popularity of the SLA framework may be attributed to its

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effective organisation of factors that facilitate or constrain livelihood outcomes, such as well-being, whilst demonstrating how these factors relate (Figure 1) (Leka & Houdmont, 2010; Serrat, 2017).

Figure 1

Sustainable Livelihoods Approach

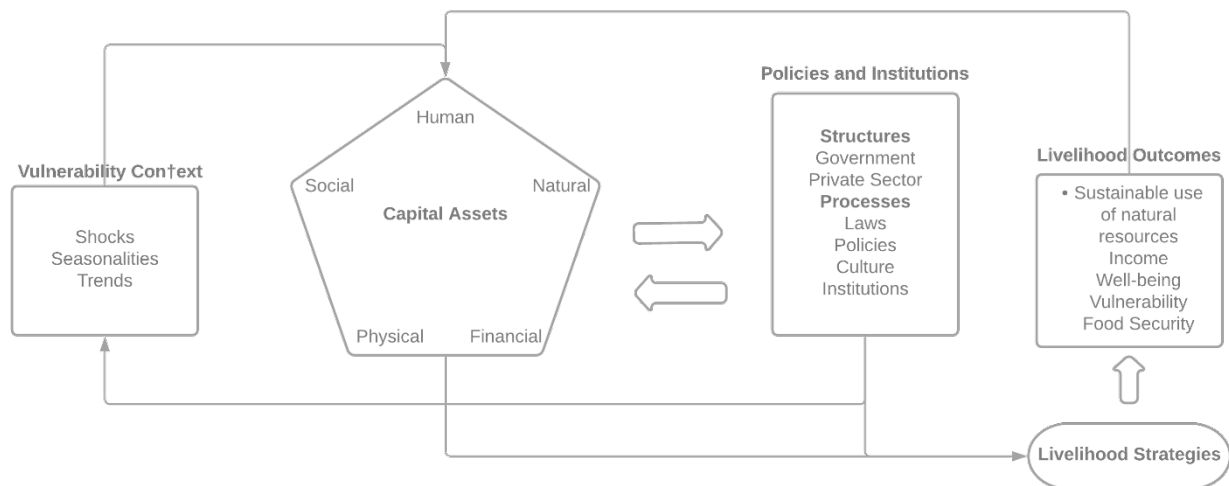


Figure 1. A visual representation of the Sustainable Livelihoods Approach, displaying the vulnerability context, capital assets and policies and institutions, which create livelihood strategies, leading to livelihood outcomes.

This study's relevance to the I/O psychology domain lies within the OHP sub-discipline. Whilst the workplace setting that farmers operate in differs from the traditional organisational contexts found within OHP research, the aim and context of this research study is deemed relevant. The reason being that farmers' working experiences in drought conditions and the resultant effects on their well-being arises within their "workplace". These experiences are, therefore, work-related factors that directly affects these workers' wellbeing. In this context, the SLA is a deemed well suited to understanding the area under study. The SLA stipulates, one's livelihood encompasses capabilities, assets and activities that are required to create a means of living (Figure 1). This livelihood is sustainable when it can cope with and recover from stresses, trends and shocks, whilst simultaneously maintaining or enhancing its capabilities and assets, without undermining the natural resource base (Morse et al., 2009). Sustainability is therefore, considered in terms of available capital and the vulnerability context in which these assets exist. The SLA provides a framework through which the resultant effects of the drought, classified as a shock, impacts the farmer's livelihood, and in turn the livelihood

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outcome of his well-being (Figure 1) (Serrat, 2017). Moreover, the SLA is appropriate for this study, as it has been successfully applied in research examining the occupational health of those in the agricultural domain, in South Africa as well as other rural contexts and developing countries (Amekawa et al., 2010; Daskon & Binns, 2010; Morse et al., 2009; Pienaar & Traub, 2015; Schreuder & Coetzee, 2010). This approach is not narrowly focused, complimenting exploratory studies, as is the nature of this research. The SLA allows for the exploration of the relationships between various activities and factors that constitute one's livelihood (Serrat, 2017).

According to the SLA, capital consists of human, social, natural, physical and financial capital, with each asset being as equally important as the other. However, this asset mix will vary amongst different individuals or groups, dependent on the assets they have access to or are dependent upon (Serrat, 2017). Human capital comprises of health, skills, knowledge and the capacity to adapt and work (Pandey et al., 2017). When utilised, these assets enable individuals to pursue various livelihood strategies that are aimed toward ascertaining their desired livelihood outcomes. Social capital encompasses the relationships and connections that exist within the individual's network, which are underpinned by trust and mutual understanding, as well as shared values and behaviours (Pandey et al., 2017; Serrat, 2017). Natural capital includes the natural resources that the individual is dependent upon. This capital includes a wide range of tangible and intangible resources, such as land, produce, water, wildlife and environmental services (Pandey et al., 2017; Serrat, 2017). Physical capital refers to the infrastructure, tools and technology required to sustain the livelihood strategies implemented (Pandey et al., 2017). Finally, financial capital denotes financial resources used to sustain livelihood outcomes and cope with the vulnerability context (Serrat, 2017).

The vulnerability context consists of two facets. The external side refers to shocks, seasonalities and critical trends that negatively impacts one's capital, such as droughts, employment opportunities and technological trends respectively. Whilst, the internal side refers to individual's defencelessness caused by their lack of assets resulting in an inability to cope with the external factors (Serrat, 2017). The individuals' capital assets and vulnerability context will be the two main facets of interest in this study and the surrounding policies and institutions of the SLA approach will not be explored, as this is beyond the scope of this research. This is in line with the aim of this study, which is to explore the undocumented experiences of farmers working in these drought conditions and how these experiences have affected farmers' psychological well-being, as well as the coping mechanisms they have used to deal with this long-standing crisis situation. This exploration will begin with a review of the

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drought conditions within the Western Cape. Subsequent to which, existing research within the climate change and occupational health domains that pertain to farmers' experiences of drought conditions will be explored.

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Literature Review

This literature review will undertake to establish the current state of knowledge of farmers living and working experiences within the South African as well as additional contexts, that may provide insight into this area of enquiry. The drought conditions of the Karoo, Western Cape, the location of the sample of this study, will be examined first to gain an understanding of the intensity of the current drought, and its subsequent impact on these farmers. Subsequently, government's assistance toward addressing the drought's impacts will be unpacked as this institution's policies influence farmers' living and working experiences (Baudoin et al., 2017). Moreover, the concepts of ecological grief, place attachment and psychological outcomes resulting from the climate change event of drought will be examined. These are significant experiences identified by researchers in recent climate change literature, that pertain to the work well-being of this study's sample (Cunsolo & Ellis, 2018). A review of the significance of the farmer identity to his work well-being will follow, as certain attributes of the farmer's identity influence the impacts of the drought (Bryant & Garnham, 2015). These impacts are further moderated by these individuals chosen coping mechanisms. Which is the final area of enquiry examined. Consequently, the aim is to provide a well-rounded literature review, to form the basis upon which this study will be undertaken.

Drought and Agriculture in Western Cape, South Africa

Within each sector, external factors impact working conditions, the nature of work and industries as a whole, including political systems, policy development and implementation, social movements, price and production variability, food insecurity, unemployment, and climate change (Botai et al., 2017). The latter, climate change, is the external factor of interest in this study, a subject receiving greater attention from climate change and organisational psychologist researchers as environmental concerns and its impact on the world of work are emerging rapidly (Staniford et al., 2009). Drought is one such climate change event, a recurring natural phenomenon, difficult to document and define for a variety of reasons (Botai et al., 2017; Vins et al., 2015). Drought is damaging due to the inherent complexity in detecting this climate condition, resulting in numerous indicators to record and quantify the onset, duration, extent, beginning and end (Vins et al., 2015). Drought is slow in onset, developing over extended periods of time and characterised by a lack of highly visible and structural impacts. Albeit, the effects are geographically extensive, cutting across a wide array of sectors with these impacts accumulating over time as the drought progresses, which can last for years (Stanke et al., 2013); with some regions experiencing an increase in frequency and intensity of

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this natural disaster, preventing societies and economies to recover before the next drought occurs. In the South African context, drought is characterised by the same slow onset, prolonged periods and uncertainty described above (Mare et al., 2018). Whilst this region is prone to frequent occurrences of this natural disaster throughout, each drought is returning with increased intensity and more frequently (Bahta et al., 2016). Consequently, the working conditions and livelihoods of commercial, emerging, subsistence and communal farmers are impacted by the resultant economic, social, and environmental disruptions from drought, compounded with every new occurrence of this climate condition.

South Africa has a diverse climate with varying drought intensities in each province. This may be distinguished further by assessing the standardised precipitation index and four drought monitoring indicators within each province; consisting of the different levels of precipitation, drought duration, severity, intensity, and frequency respectively (Botai et al., 2017). The relevance of which is that the Karoo region within the Western Cape is the geographical area of interest of this study. Therefore, it is important to understand this context in terms of the drought characteristics of this province, and the degree to which agricultural activities and communities may be affected. Results from research conducted by Botai et al. (2017), indicate that the Western Cape has experienced recurrent mild drought conditions from 1985 to 2016. However, the classification of mild remains to be seen as somewhat inadequate as persistent drought conditions in the province between 2014 – 2017 resulted in the worst water shortage in 113 years with the province's average dam levels below 30% (Botai et al., 2017; Mare et al., 2018). These drought conditions, seem to exacerbate in the Central Karoo, a region supposed to be receiving year-round rainfall. Consequently, the Karoo's insufficient rainfall throughout the year, coupled with warm temperatures led to crop stress and loss of water in the various water reservoirs. It is the past and projected persistence of these climate conditions which significantly impact agricultural production, that leads to the logical deduction that the resultant socio-economic impacts would reverberate for months to come. These impacts include employment levels, food security, poor working conditions, and a sustainable income (Botai et al., 2017), which may have long-lasting, knock-on effects given the significant role of agriculture in the Western Cape economy. Therefore, understanding the drought policies and procedures implemented at the local, provincial, and national level is integral to understanding how farmers are protected and supported against the impacts of this climate condition.

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Government Assistance and Formal Initiatives

As Baudoin et al. (2017) highlight, notwithstanding the advances in technology to timeously and to some degree accurately predict hazards such as drought, many challenges remain to effectively mitigate the impacts of such climate events, one of them being the role institutions may play in managing disaster risks (Baudoin et al., 2017). In South Africa, past drought management by government indicates a trend to focus on reactive approaches through relief and emergency support, instead of implementing proactive policies that tackle the root causes of vulnerability and build capacity toward resilience against drought (Baudoin et al., 2017). As Vins et al. (2015) outline, government assistance and other initiatives are important protective factors for farmers in dealing with and preparing for drought conditions. However should their assistance prove ineffective, this may further compound and exacerbate the negative effects of this climate event on farmers. Thus, assessing the drought risk governance of the South African government will determine whether farmers can rely on their assistance to combat this climate condition. Moreover, government's assistance will influence farmers' experiences of working in and coping with drought conditions.

Baudoin et al. (2017) conducted research to assess drought management in South Africa, focusing on the recent El Nino-related drought. Representatives from various significant institutions who execute the Disaster Management Act (DMA), were interviewed. Providing a comprehensive overview of the complex processes undertaken by the National Disaster Management Centre (NDMC) (Baudoin et al., 2017). The results of this research, indicate that most of the DMA, is reactionary, occurring when the consequences of drought have already severely impacted farmers. The DMA simply monitors, and reports impacts such as threatened food prices, security, and job losses, from the municipal to the national level (Baudoin et al., 2017). The DMA's subsequent response entails the release of in-kind support, in which each level must use self-funding, by means of reallocating funds from their existing budget for disaster response and recovery. Additional support can only be requested once these initial resources have been exhausted. Note, these resources do not consist of financial grants to aid vulnerable communities but rather in-kind support such as fodder and boreholes. At the national and provincial levels, nutrition plans to provide food to the poorest of farmers is activated as well as 'soft loans' with low interest rates to aid their financial recovery (Baudoin et al., 2017). The release of additional funds is only enabled once all nine provinces have declared a state of drought disaster. The reallocation and transfer of which is a bureaucratic process, taking up to two to six months after submission (Baudoin et al., 2017).

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Regarding the small proactive side of the DMA, the responsibility lies with provinces, municipalities, and individuals to implement and fund early warning and risk preparedness measures (Baudoin et al., 2017). These measures and interventions include educational seminars to train farmers on drought resilience practises or rehabilitating water pumps. Noting, no additional financing is allocated in the provincial and municipal budgets for these measures (Baudoin et al., 2017). Additionally, farmers are required to prepare using their own resources, thus, raising the concern that if these individuals are already under financial constrain, how are they supposed to make concrete use of climate related products intended for risk preparedness.

Providing a snapshot of the DMA, is indicative of a world-leading legislation for disaster risk reduction that is ineffective in practise due to the way in which it is currently being implemented (Baudoin et al., 2017). For whilst is it positive to have a decentralised approach to risk reduction including varying levels and sectors, the delayed action and seemingly bureaucratic hurdles that impede and negate positive action to address drought conditions have resulted in an ineffective and inflexible institutional response. Thus, leaving farmers and the agricultural sector with ineffective government assistance. Farmers' perspectives of government's assistance, was reviewed in research conducted by Bahta et al. (2016). The findings of which indicated that they also perceived the role of government in combating the effects of drought to be staggeringly low.

Bahta et al.'s (2016), research participants were communal farmers in the Eastern Cape, South Africa. Farmers' perception of government's role in drought risk reduction was measured using seven indicators including (1) government's past help in drought mitigation, (2) their interest in drought issues, (3) involvement in drought training, (4) provision of funding and (5) resources, (6) information dissemination about drought reduction and finally, (7) future help. Results indicated that out of 87 communal farmers, the role of government was perceived to be staggeringly low (22%). Communal farmers widely held the opinion that drought relief was either inadequate, late or absent (Bahta et al., 2016). Opinions which were also held by farmers in the Northern Cape province (Jordaan, 2012) and others in the Eastern Cape and Free State (Ngaka, 2012). Moreover, government's drought relief schemes were considered reactionary, attempting to focus on immediate needs, rather than building farmers' resilience through training and information seminars on drought policies or initiatives. Consequently, government's role in drought periods appeared to contribute to farmers vulnerability, leaving them without significant support and exposed due to a lack of resources. Thus, reducing farmers' capacity to adapt to drought adversities and increasing this group's drought vulnerability, instead of contributing to the development of their resilience (Bahta et al., 2016).

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The importance of the agricultural sector to the South African economy, coupled with the country's repeated exposure to severe periods of drought, it is concerning that government's assistance is ineffective in both preventing and mitigating this climate condition (Bahta et al., 2016; Baudoin et al., 2017; Vins et al., 2015). A review of the conditions in which farmers are living and working, provides insight into the context in which the resultant impacts from drought may be experienced by farmers. An examination of these impacts, including ecological grief, place attachment and psychological outcomes is required to understand farmers living and working experiences in drought conditions.

Ecological Grief

Ecological grief refers to “grief felt in relation to experienced and anticipated ecological loss, including the loss of species, ecosystems and meaningful landscapes due to acute or chronic environmental change,” (Cunsolo & Ellis, 2018, p. 275). Experiences of ecological grief emerge after climate-related events or may occur during ongoing, gradual changes to ecosystems and landscapes. This grief may be experienced in three different climate-related contexts; grief associated with physical ecological loss, with disruptions to environmental knowledge and loss of identity, and grief associated with anticipated future ecological loss (Cunsolo & Ellis, 2018).

Ecological grief is a newly coined phrase by Cunsolo and Ellis (2018), which may partially account for why this concept has been relatively under-explored in climate change literature to date. Cunsolo and Ellis (2018), first explored this concept in two different samples, one being farmers from the Australian Wheatbelt and their experiences of ecological grief resulting from periods of drought. One reason for this chosen sample being that this grief is more commonly felt by those who retain close living, working and cultural relationships to their natural environments, such as farmers (Cunsolo & Ellis, 2018). This reality is evident in a study conducted by Tschakert et al. (2013), investigating farmers and their families' experiences of drought in Ghana. One participant within this study described a situation in which they felt there was little opportunity to distance themselves from the issues of their environment. They could not escape the effects of drought on the land they lived close to and engaged with on a daily basis, thus, leading to experiences of ecological grief. Moreover, farmers in this study expressed negative emotions of anger, sadness and helplessness due to the deterioration of agricultural sites, consisting of both home gardens and community farmlands (Tschakert et al., 2013). Other participants expressed fear for future livelihoods and the state of the community. As can be seen in an account presented in this study from an elderly

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woman whose family owned a farm. The woman expressed sadness as she could not see how she and her family/community/employees were going to survive the next season (Tschakert et al., 2013). Thus, this account illustrates the extent to which individuals and communities have relational ties and fundamental dependencies on ecological systems (Cunsolo & Ellis, 2018). The exploration of these constructs gives rise to understanding farmers lived and working experiences in drought conditions. Given that this area of inquiry has been relatively unexplored in climate change literature, an opportunity is present in this study to ascertain whether the experiences of South African farmers' resultant from drought, include that of ecological grief.

Ecological Research in the South African Context

Agricultural activities in South Africa are more than just jobs for the majority of farmers (Muyambo et al., 2017). Instead, farming, for many, is seen as a traditional family occupation passed down through generations, thus becoming embedded in cultural values and practises. As a result, a large number of South African farmers maintain extensive indigenous agricultural knowledge that assists in reducing the impacts of drought (Muyambo et al., 2017). However, given the severity of drought periods that occur within the South African climate and the subsequent effects including grief, depression, anxiety and loss, ecological grief is likely to be experienced by South African farmers (Ellis & Albrecht, 2017). As the extent to which this climate condition disrupts and erodes landscapes and ecosystems, farmers may experience a loss of local and traditional knowledge as well as grief over the deterioration of their farmlands. Such is evident in research conducted on farmers in Australia by Cunsolo and Ellis (2018). Farmers reported having lost confidence in their ability to know seasonal rhythms and give advice about travel routes, as parameters for prediction and risk had shifted with changes resulting from drought conditions (Cunsolo & Ellis, 2018). Consequently, this led to ecological grief, as farmers experienced a loss of identity tied to their indigenous knowledge and cultural system. A cultural system of sharing land-based knowledge, that would no longer continue as the disruptions of drought persisted. Clark (2020), stipulate that such identity adversities are more likely to be experienced by those who are most vulnerable to environmental change due to mode of livelihood, poverty and social status. Such factors permeate throughout most farming communities within South Africa, contributing to an already vulnerable socio-economic context (Muyambo et al., 2017). However, notwithstanding the vulnerabilities of farmers and the contexts in which ecological grief occurs, as Craps (2020) states, how to grapple with this grief which so instrumentally impacts psychological well-being, is the

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unanswered question. A question that is more likely to be addressed by gaining a greater understanding of the various factors that contribute to this phenomenon in various contexts (Craps, 2020). Thus, drawing on the discussion of the farmer's identity above; the importance of their indigenous knowledge, coupled with the integral role of how meaningful landscapes are maintained, an exploration of place-attachment in the context of ecological grief will be undertaken. This may provide a greater understanding of this phenomenon and therefore, the implications it has for farmers working in drought conditions and their psychological well-being.

Place Attachment

The concept of "place", as referred to by Counted (2016), is an environmental locus in which an individual or community's actions, experiences, intentions and meanings occur. In the context of place attachment, a "place" is that in which people's emotions can resonate with their natural environments, form meaningful bonds and where individual and collective activities take place. The resultant emotional bonding to such meaningful places is called "place attachment" (Counted, 2016). The experience which is indicative of a connection between individuals and places that assure attachment security, sense of belonging, enhancing identity and self-esteem and career support (Ellis & Albrecht, 2017).

According to Ellis and Albrecht (2017) climate adversity, such as periods of drought can disrupt place attachment through the long-term process of environmental change, eliciting feelings of grief and psychological distress. As the small and slow-moving changes in the surrounding landscapes undermine the well-being of those who retain close living, cultural and working relationships to their land (Ellis & Albrecht, 2017). Family farmers were identified as one such group by Ellis and Albrecht (2017), who reviewed the impact of climate change events on the place-related well-being of family farmers in the Western Australian Wheatbelt. Their results reported that such events significantly impacted the well-being of their participants, due to the meanings they had attributed to their farms which had either been extensively disrupted or lost. Whilst Marshall et al. (2019), agree that such grief can be experienced in response to environmental disruptions, they propose that the extent to which individuals experienced these emotions is dependent upon the specific meanings or intrinsic values attributed to the place in question.

In Ellis and Albrecht's (2017) findings, the participants' valued place was their farm properties, identifying this to be an important, central aspect of their self-identity, as time spent developing their land was indicative of their own values or personalities, as well as holding the

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meaning of 'home' and 'family'. Furthermore, some farmers placed their sense of health and well-being in the aesthetic value of their farm. Drawing an appreciation of the life and abundance visible on their farm, or specific special site that held a special meaning. These feelings of appreciation were heightened in times of rain, as farmers experienced emotions of positivity and relief. Which indicates the important role of weather. As climate conditions significantly changed with prolonged periods of drought, farmers recounted feeling scared, nervous, and fearful, as well as emotional turbulence due to checking weather forecasts up to 20 times a day. Consequently, farmers reported a loss in confidence, as climate conditions rendered them unable to predict future weather. Moreover, farmers not only attributed meaning to their farms by its aesthetic value, but also by its overall "health", the land's condition. One participant experiencing wind erosion, felt as though they were a "bad" farmer, despite the wind being out of their control. Ellis and Albrecht's (2017) analysis indicated that the degradation of this farmer's landscape undermined their notion of personal identity, resulting in a diminished positive farmer identity, and negative effects on their psychological well-being. The continued experience of such conditions further eroded these farmers' well-being, as the effects of non-acute climate conditions were cumulative and compounding, resulting in the slow deterioration of their place attachment. Interestingly, in Tschakert et al.'s (2017) study exploring the values, place and experiences lost as a result of climate change, both family farmers in Australia and subsistence farmers in Ghana attributed the same meanings and values of their farms, as those identified in Ellis and Albrecht's (2017) study. Drawing attention to the fact, that based on these repeatedly identified values and meanings of their farms, farmers place attachments; the meaning of their lives and well-being, is based in their day-to-day activities, encounters and engagements (Tschakert et al., 2017). Consequently, farmers are more likely to experience ecological grief, if the day-to-day activities from which they draw value and meaning in the environment in which they live and work, is disrupted by drought to the extent where farmers find themselves with little to no locus of control over the future of their farms and well-being (Tschakert et al., 2017).

It is significant to note, that when considering how farmers may deal with ecological grief and the effects of drought, strong place attachment which integrates shared values and identity can promote a sense of community, enhance well-being, and potentially be a key determinant of adaptive capacity (Tschakert et al., 2017). Tschakert et al. (2017) argue that the basis for adaptive decision making and trade-offs between losses and gains, is formed by the relationship between place, identity and value (Tschakert et al., 2017). Migrating is a long-standing strategy utilised by farmers to adapt to the environmental changes from prolonged

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periods of drought (Vins et al., 2015). The strong emotional bonds to a farmer's farm is more likely to result in them staying to rebuild, restore, and take ameliorative actions to protect that which they value in their place attachment (Counted, 2016; Dandy, 2019; Tschakert et al., 2017). This chosen response, demonstrates and builds the resilience found within the farmer identity (Dandy, 2019). However, that this does not imply that all people with strong place attachment will choose to stay to protect their place of value. Notwithstanding that place attachment is generally viewed as positive, promoted as that which gives meaning to people's lives as well as fundamentally contributing to positive psychological well-being. This is not always the case. For when a place has lost its perceived or experienced value, benefits or liveability, and/or when social relationships that underpin this place attachment are compromised, an individual or group's best recourse may be to migrate (Dandy, 2019). Farmers' loss and grief experiences of this place attachment; identity, relational ties, condition of the land relating to social and emotional well-being, is too overwhelming to endure any further (Cunsolo & Ellis, 2018; Dandy, 2019; Tschakert et al., 2017). Noting, that a farmer and his family's threshold to withstand and endure the impacts of drought conditions will fluctuate as a function of the characteristics of both the individual and group. Moreover, differences in protective factors such as social capital, community resilience, and social connectedness afford some groups opportunity of choice, to stay or leave. For others, a lack of material and community resources might simultaneously constrain their ability to move and diminish their ability to withstand deleterious effects of drought (Dandy, 2019).

Consequently, the degree to which the farmer manages to maintain the state of his land, historical patriarchal lineage, valued rural lifestyle and occupational opportunities for future generations, may inform his psychological well-being. The farmer may also experience other psychological outcomes, in addition to ecological grief or a loss of place attachment. It is an occupation that has been identified as highly stressful with numerous occupational health risks (Daghagh et al., 2019). Therefore, a review of additional psychological outcomes may demonstrate the severe impacts drought conditions may have on farmers living and working experiences.

Drought and Psychological Outcomes

Evidence accrued from research to date, shows that global ecosystem productivity is declining with increased climate change events (Tschakert et al., 2017). As a result, mental health experiences invoked from such climate conditions are increasing in frequency, thus gaining some research attention (Cunsolo & Ellis, 2018). Findings indicate that these mental

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health experiences include sadness, despair, hopelessness, pre- and post-traumatic stress disorder (PTSD), suicide ideation, and disruptions to people-place relationships and identity, as reviewed above (Ellis & Albrecht, 2017; Stanke et al., 2013). Most of the research conducted in the area of climate change and mental health has predominantly focused on acute weather events and natural disasters (Vins et al., 2015). Whilst these studies demonstrate a positive move toward understanding the mental health impacts resulting from climate change, the mental health effects and psychological outcomes borne from the non-acute climate condition of drought is a knowledge gap to be addressed (Edwards et al., 2014; O'Brien et al., 2014; Vins et al., 2015). Albeit there is limited climate change research acknowledging the importance and severity of mental health effects from drought conditions (Daghagh et al., 2019; Vins et al., 2015). Research which has to some degree been conducted in the agricultural domain. This may be attributed to the fact that the livelihoods of individuals in this sector are significantly influenced by weather conditions and water access, such as farmers and their respective communities (Jones, 2018; Vins et al., 2015).

Research conducted by Jones (2018), on mental health outcomes due to the effects of drought, stipulates that droughts are characterised by uncertainty. As unlike other climate conditions, they are not simply once-off incidences, but rather long periods defined by absence. The absence of rain. The significance of this characteristic is that uncertainty is integral to the decision-making process, as it affects one's choices and the plans they are able to make (Altig et al., 2020). This characteristic influences the expectations one may have in any given situation (Bloom et al., 2020). When the decision maker is unable to eliminate uncertainty, this restricts the effectiveness of the decision-making process. Alternative approaches to help reduce or cope with this uncertainty are then required (Sniazhko, 2019). O'Brien et al. (2014), supports Jones' (2018), observation, stating the beginning and end of droughts, and therefore the length of these periods may only be assessed and determined in hindsight. Moreover, research conducted by Staniford et al. (2009), on drought stricken citrus growers, supported Jones' (2018) findings. Both studies found that this uncertainty impacted farmers' mental health by eliciting many emotions, including feelings of anxiety, disappointment, despair, envy, shame, and hope. Jones' (2018) findings were based on her analysis of a variety of secondary resources, including but not limited to an array of diaries and personal accounts from members of different farming families across Australia. For example, Ann Currie, a farmers' wife in Melbourne, Australia, wrote in her diary that the sight of clouds gave rise to the hope of rain, which did not materialise, leading to disappointment. Furthermore, she expressed that feelings of anxiety arose due to farmers fearing loss of feed and water for their animals and crops (Jones, 2018).

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Additionally, Jones' (2018), concluded based on her analysis, that the continued experience of such emotions outlined above became debilitating and significantly affected farmers' psychological well-being over extended periods of time. This may also be attributed to the fact that farmers' learned expectations of ecological conditions were no longer valid during these periods of drought, leaving them in fear of the future as they became uncertain about social, economic, and environmental factors they could not control (Jones, 2018).

Research conducted by Edwards et al. (2014), support that of Jones' (2018), that the climate condition of drought negatively impacted farmers' mental health. As Edwards et al. (2014), found that farmers in rural areas of Australia had a significantly higher rate of mental health problems and negative psychological outcomes than those in non-agricultural employment. Edwards et al. (2014), suggested that the direct economic impact resulting from periods of drought was the primary mechanism through which mental health was affected. A systematic review of 82 articles using a variety of methods in different contexts on drought and the resultant mental health outcomes, also identified economic effects alongside migratory effects as the most supported causal pathways (Vins et al., 2015). The direct economic effects start with a decline in agricultural production, crop failure and livestock loss. These findings were also supported by Rezaei et al's. (2016) research on the effects of drought in rural areas of Iran. Both Vins et al. (2015) and Rezaei et al. (2016), found these economic impacts lead to financial constraints and unemployment, as well as issues associated with a decrease in availability and access to food. Additionally, environmental and social causal pathways were also identified as leading to negative psychological outcomes. Effects include the environmental degradation of farmers' homes altering their environmental relationships. Moreover, this change in relationship leading to a loss of culture and identity as well as altered social, community and family structures, resulting in family tension and spousal stress. As Vins et al. (2015) highlighted, drought poses a unique threat to farmers' psychological well-being through indirect mechanisms of effect, such is evident above. Noting, however, that the intangible effects such as shame or loss of environmental relationships are considered secondary causal pathways of negative psychological outcomes, whilst the economic impacts are highlighted as the primary (Vins et al., 2015).

The Significance of the Farmer Identity to Work Well-Being

The role of intangible values in farmers' experiences of drought conditions, have emerged as important factors in reviewing ecological grief, place attachment and psychological outcomes of drought. Intangible values seem to contribute to a particular "farming identity".

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This identity and its subsequent influence on farmers' experiences of drought conditions has been identified and somewhat debated, in recent climate change literature (Alston & Kent, 2008; Bryant & Garnham, 2015; Roy et al., 2017). An exploration of this proposed identity is important, as McGuire et al. (2013), argue that one's gender, occupational and, or cultural identity may inform their emotional experiences and chosen coping mechanisms. This exploration will be conducted in relation to male farmers, as the farming occupation in South Africa remains male dominated (Muyambo et al., 2017).

According to Roy et al.'s (2017) research conducted in Quebec, Canada, farmers are often depicted as strong relentless workers, who are resilient, resourceful and stoic. Similarly, Bryant and Garnham's (2015), research on Australian rural farmers, depicted farmers whose pride and self-worth are apparent in their hard work, struggle and self-sacrifice. In both depictions, the farmer represents a strong, traditional form of masculinity. Bryant and Garnham (2015), propose this construct of masculinity may be constituted as inherently so, as it is embodied through patriarchal practices of inheritance and succession, such as ensuring the farm's history and heritage is passed on to his children, especially sons. Research conducted by Brandth (2016), on rural masculinities and fathering practices, seconds this patriarchal characteristic of the farm family. Given the proximity of home and work, fathers pass on these skills daily to ensure the acquisition of skills necessary for the son's future working life. Moreover, Bryant and Garnham (2015), suggest the farmer must ensure the continuation of economic security and valued rural lifestyle, both of which to be successfully maintained for the next generation.

It is thus evident that the farmer's identity constructed above, is not only tied to male ownership, but also to the conditions, quality and maintenance of his land, agricultural practices, and generational knowledge. These gender-linked cultural factors, as referred to by Bryant and Garnham (2015), may be considered as indicators of the farmer's success by which he measures his position of power and esteem, and therefore, the strength of his identity. In McGuire et al.'s (2013) study, examining how performance-based environment management interventions influence farmer identities, the researchers stipulate that each farmer has a set of standards related to specific goals and behaviours by which he measures how well he is meeting the standards set within his identity. The research recounts four standards which constitute a good farmer identity, similar to those identified by Bryant and Garnham (2015), including the physical appearance of the livestock or crop, the chosen measure of production, an evaluation of how well the farmer is meeting the local, informal farming standards, and the physical characteristics of the farm, family farming the land and history of the farm. It seems reasonable

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to conclude that the farmer's identity is inherently tied to his intimate connection with his land, and less so his business and economic success. Consequently, the degree to which the farmer manages to maintain the state of his land, historical patriarchal lineage, valued rural lifestyle and occupational opportunities for future generations, may inform his psychological well-being. It is important to note however, that one's identity does not exist in isolation, but rather as McGuire et al. (2013) argue, they are arranged in a hierarchy of nested identities with a particular identity at the top interconnected to other identities at lower levels. Thus, whilst there are likely to be similar identity attributes amongst rural South African farmers, the effects of the drought may impact each farmer differently. Each farmer will have a multitude of different identities, identity attributes and chosen coping strategies, which may inform different psychological well-being outcomes.

Farmers Chosen Coping Strategies

Based on the conceptualisation of the male, farmer's identity above, the social, environmental, and economic effects of drought pose a direct threat to the farmer's psychological well-being (Alston & Kent, 2008). In response to these threats, farmers adopt an array of coping strategies. These strategies are defined by Smith et al. (2016), as cognitive and behavioural efforts to control internal and external demands which may be considered as exceeding personal resources. However, the attributes that constitute the farmers identity, particularly his "stoicism" and "self-sacrifice", may exacerbate the negative effects of drought as the masculine norm is to cope with personal issues alone, whilst maintaining the breadwinner and protector role unwaveringly (Alston & Kent, 2008; Bryant & Garnham, 2015; Roy et al., 2017). Findings in Vins et al.'s (2015), systematic review supports this notion. As their research findings repeatedly demonstrated that the phenomenon of rural stoicism, coupled with the culture of self-reliance, interfered with help-seeking behaviours whilst simultaneously diminishing farmers' ability to effectively adapt to drought conditions. Whilst this has to some degree resulted in coping strategies that perpetuate negative psychological outcomes, farmers have adopted other strategies that alleviate stress and promote positive psychological outcomes (Fennell et al., 2012; Roy et al., 2017; Smith et al., 2016; Vins et al., 2015). The strategies farmers utilise repeatedly identified in climate change research, were mostly commonly found to be task-orientated, emotion-orientated and/or avoidance orientated coping strategies (Smith et al., 2016).

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Task-Oriented Coping

Task-oriented coping refers to strategies in which individuals attempt to address the problem causing them distress through reconceptualization or finding solutions through action planning, problem solving or positive reappraisal. Fennell et al. (2012), conducted a quantitative study in which 309 South Australian farmers or farming spouses completed the Coping Orientation to Problems Experienced (COPE) inventory developed by Carver et al. (1989) to measure the coping strategies utilised by participants in drought-stricken conditions. The results indicated four main strategies utilised, the first and third most used being planning and active coping, respectively. Whilst Fennell et al. (2012), did not explore why these task-orientated coping strategies were repeatedly used, Vins et al.'s (2015) systematic review of 82 studies, also found that farmers' most utilised strategies to deal with the effects of drought were to employ practical solutions and active methods, including planning for the future. Vins et al.'s (2015), analysis indicated that these task-orientated strategies allowed farmers to plan economic and lifestyle plans so that future generations would not be jeopardised by a failing farm. The use of task-orientated strategies was further supported in Roy et al.'s (2017), qualitative research findings, consisting of 32-in depth interviews with male farmers in Quebec, Canada. Farmers identified strategic planning associated with positive reframing, as a successful coping strategy. The combined use of which results in positive psychological outcomes, as farmers focused on using skills which they were proud of as well as their passion for agriculture to develop strategic plans to combat the effects of drought, noting that these plans were focused on the farmer's current situation, as opposed to future planning.

The positive reframing was another task-orientated strategy utilised extensively by farmers to deal with the effects of drought (Fennell et al., 2012; Roy et al., 2017; Smith et al., 2016; Vins et al., 2015). One livestock farmer in Roy et al.'s (2017), study noted, "We must learn to live on hope and optimism, not dreams" (p. 1541). His choice to adopt a positive attitude towards farming was his way of surviving tough times. Roy et al. (2017), concluded that farmers who adopted this positive long-term perspective of both the farm and their family circumstances, experienced more positive psychological outcomes. Thus, these participants fared better against the extenuating circumstances resultant from the drought. Vins et al. (2015), also found positive thinking, acceptance and reframing of the problem, to be the third most cited coping strategy. With acceptable and positive reinterpretation and growth, being the second and fourth most used strategies identified by Fennell et al. (2012). It is important to draw attention to the fact that both these task-oriented strategies have been repeatedly identified and used by farmers and farming spouses, being a wide variety of ages as well as in an array

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of different contexts. However, little is given in the way of insight or an explanation as to why farmers identify and utilise positive reappraisal and strategic planning to combat the effects of drought, a clear knowledge gap to be filled. Smith et al. (2016), state that task-oriented coping is positively associated with self-esteem, sense of mastery and self-efficacy, whilst being negatively associated with social loneliness, depression and state anxiety. The coping efficacy of this type of strategy is therefore, considered adaptive for psychological well-being.

Emotion-Oriented Coping

In the second type of strategy, emotion-oriented coping, individuals attempt to regulate the negative emotionality associated with a perceived stressor by engaging in conscious activities related to affect regulation (Smith et al., 2016). Activities such as seeking emotional support or engaging in emotional disclosure (Smith et al., 2016). Given the farmer's identity and stoicism, it is interesting that seeking emotional social support and talking about the problem were identified strategies in both Fennell et al. (2012) and Vins et al.'s (2015), research findings. However, this style of coping was the least to moderately used by farmers. Furthermore, farming spouses were more likely to seek emotional social support, a strategy close to being a significant, negative predictor for psychological distress (Fennell et al., 2012). Bryant and Garnham's (2015), analysis of empirical data from two separate qualitative studies on farmers in the Riverland region of Australia, offers a potential reason and insight as to why farmers seldomly use emotion-oriented coping. Their findings suggest that since farmers' masculinity permeates with pride, "help seeking" is synonymous with shame and farmers are committed to battling on, a culture in which one does not admit defeat (Bryant & Garnham, 2015). Consequently, any expression of the farmer's affective state or emotional experience may be indicative of his shame, and in some cases, failure. One farmer from Bryan and Garnham's (2015) study, is conscious of the fact that this pride may perpetuate negative psychological outcomes, as he states, "... it means that a lot of growers at the moment are probably between a rock and a hard place," (p. 75), referring to the element of pride. This is a noteworthy example. Smith et al. (2016), identified the therapeutic benefits of emotional-oriented coping involving constructive emotional disclosure. However, negative psychological outcomes are equally as likely, should one's negative emotions dominate without constructive affect-regulation efforts.

Avoidance-Orientated Coping

The last type of coping strategy most identified by farmers to deal with the effects of drought is avoidance-orientated coping. Individuals who utilise this type of coping, engage in

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activities and/or cognitive strategies in attempt to deliberately disengage from stressful situations. Substance abuse, seeking distractions and wishful thinking are examples of avoidance-orientated coping (Smith et al., 2016). Smith et al. (2016), propose that these strategies tend to reduce distress, however mainly in the short run, soon after a stressor occurs. Moreover, they are less adaptive for long-term psychological well-being. Findings in Roy et al.'s (2017), study, seems to suggest otherwise as farmers engaging in self-distraction activities, such as physical, leisure, social activities and family time, noted their importance in maintaining balance. Participants further highlighted the role of their families as significant barriers to adversity, especially time spent with their children. Family ties were recurrently positioned as one of the best forms of support possible, thus, greatly contributing to farmers' positive psychological well-being (Roy et al., 2017). In contrast, in Vins et al.'s (2015) research findings, deliberate distraction from the problems resultant from drought as well as taking a break, were the least used strategies by farmers. Instead, there was evidentiary support for alcohol and substance abuse, particularly amongst males. Interestingly, such strategies were somewhat identified by male farmers in Roy et al.'s (2017) study, however, most commonly when participants found themselves at their lowest points, recognising that such coping mechanisms would most likely make things worse. Fennell et al. (2012), confirmed alcohol and substance abuse to be significant, positive predictors of psychological distress, and interestingly, the fourth least used strategy by farmers and farming spouses in this study.

There are a wealth of coping strategies farmers and farming spouses have adopted to combat the effects of drought conditions, some with greater evidentiary support and each influencing positive or negative psychological outcomes. Moreover, there are other factors that contribute to farmers' vulnerability to the effects of drought (Muyambo et al., 2017). O'Brien et al. (2014), found a greater association between drought and the resultant negative impacts on mental health in rural communities as opposed to urban populations in Australia. Social capital is another factor that may contribute to farmers' vulnerability, as identified by Vins et al. (2015).

Social Capital

The concept of social capital has been repeatedly hypothesized in the context of drought, as a protective factor to assist farmers beyond their own personal coping strategies, a way to maintain and develop resilience (Vins et. al., 2015). Albeit this concept has been operationalised in several ways. In Muyambo et al.'s (2017) research, assessing farmers social vulnerability to drought in South Africa, social capital was proposed to be farmers'

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organisations, churches, clubs, stokvels (a rotating savings and credit association, also referred to as an informal group savings scheme (Matuku & Kaseke, 2014)), and family networks. In Bahta et al.'s (2016) study, in which farmers' perception on the role of social networks was assessed in the Eastern Cape, the concept was operationalised as either formal, such as farmers associations or informal. The latter includes church groups, stokvels, burial societies, extended family networks and neighbourhood groups. It, therefore, seems common in the operationalisation of the concept, that social capital is identified as having actual or potential resources which may point toward a durable network of acquaintances (Chen et al., 2014). A network which if made use of, could be a significant factor in farmers' experiences of working and dealing with the long-standing drought conditions of interest in this study.

The value of this capital is evident, as farmers that are a part of social networks have the ability to share knowledge by training each other on topics such as drought mitigation strategies, thus building resilience and reducing vulnerability (Bahta et al., 2016). Supported by findings in Muyambo et al.'s (2017) research, a gain in indigenous agricultural knowledge was found to be an integral factor in assisting farmers to cope with the effects of drought. Moreover, social networks provide mutual assistance and support when required, in the forms of food, knowledge and access to services (Vins et al., 2015). Thus, in times of need, social capital may serve as a significant factor in mitigating the effects of drought (Bahta et al., 2016). This assertion is supported by findings in Vins et al.'s (2015), study, as "social capital and sense of community belonging" (p. 13261) was the protective factor with the most evidentiary support, repeatedly identified by farmers. It is important to note however, that individuals are required to make concerted efforts to collaborate and contribute to social networks, to effectively build resilience and promote adaptation measures (Chen et al., 2014; Wilson et al., 2018). For whilst, social capital may reduce farmers vulnerability to drought conditions, it is only so if the network is strong (Chen et al., 2014).

The most interesting finding, in literature reviewing the role of social capital in the context of this study, was despite evidentiary support for its positive contribution to farmers' resilience and reduced vulnerability, some farmers held the perception that social capital was ineffective in the face of drought. In Bahta et al.'s (2016) study, more than half of the farmers did not consider social networks to be effective in reducing their risk to drought. Moreover, 13% of respondents acknowledged formal institutions that address drought mitigation issues, with only 7% perceiving them as involved with risk reduction (Bahta et al., 2016). One possible reason for this, was the lack of visibility of formal institutions, such as farmers' associations at grass root levels. Finally, two respondents indicated that they did not know about social capital,

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nor did they discuss issues of drought in church or other clubs. Interestingly, in Muyambo et al.'s (2017) research, this unawareness of social capital was also identified by extension officers, who attributed the lack of involvement and use of social capital to farmers unfamiliarity of its potential role. This indicates that perhaps educational resources on factors that contribute to resilience, reduced vulnerability, the ability to cope, amongst other topics, may be vital in assisting farmers to deal with drought conditions and how to effectively take control over their own psychological well-being. It is logical to conclude that the negative social, economic, psychological, and physical outcomes of drought may be exacerbated by a lack of mental health services or educational support structures in these rural areas (Bryant & Garnham, 2015; Vins et al., 2015).

In conclusion, this literature review presents a comprehensive overview of the current state of knowledge of farmers' living and working experiences within the South African context. Thus, providing the basis for the following research questions.

Research Questions

The aim of this qualitative study is to explore farmers' working experiences in drought conditions and how this has affected their psychological well-being. The secondary aim of this study is to explore how farmers have coped with this long standing crisis situation. Consequently, the research questions are as follows;

What are farmers' working experiences in drought conditions and how has this affected their psychological well-being, located in the Karoo region of South Africa?

The secondary question is;

How have farmers coped with this long standing crisis situation?

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Methodology

Research Design

The present study adopted an exploratory case study design, to investigate farmers' working experiences in drought conditions and how this affected their psychological well-being, as well as which coping mechanisms farmers utilised to deal with drought conditions. A case study design allowed me, as the researcher to build an in-depth, contextual understanding of farmers' working conditions, which was in line with the aim, to explore farmers' working experiences (Yin, 2003). The design was exploratory as the case study was used to explore a situation in which the phenomenon being studied had no clear, single set of outcomes (Yin, 2003).

A case study design was appropriate for this study, as the contextual conditions needed to be covered as they were relevant to the case under study (Yin, 2003). The case: farmers' experiences of drought conditions in the Karoo, could not be considered without the context; their surrounding landscapes and ecosystems (Baxter & Jack, 2008). As it was in these settings that farmers worked and experienced the effects of the drought. Furthermore, case study designs are appropriate to answer "how" and "why" questions (Yin, 2003). This study sought to explore how farmers had experienced working in these drought conditions, how this experience effected their well-being and how they had chosen to cope with this long-standing crisis situation.

Research Approach

I applied an interpretivist paradigmatic stance in this study. Based on research conducted by Cunsolo and Ellis (2018), I understood that farmers' working experiences in drought conditions were complex, context specific and differed amongst individuals or groups of individuals. Consequently, I viewed emergent knowledge as subjective as there was no particular right or correct path to this knowledge as it emerged through the various contexts (Thanh & Thanh, 2015). Thus, that which counted as the truth in the data collected were acts of interpretation (Thanh & Thanh, 2015). My approach to knowledge and truth was consistent with the interpretivist approach, as what we (interpretivists) perceive as reality is how a person understands and experiences the world (Thanh & Thanh, 2015). Interpretivism therefore uses an inductive approach to research, making use of qualitative research methods to understand individuals' experiences (Chilisa & Kawulich, 2012; Munyua & Stilwell, 2012). Qualitative methods allow the researcher to understand the world and phenomenon under study, as it is from participants' subjective experiences (Thanh & Thanh, 2015). Thus, the researcher is able to focus on the complexity of the participants' experiences as the situation develops and

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therefore, draw meaningful inferences from constructs that emerge through qualitative collection methods such as interviews (Chilisa & Kawulich, 2012; Thanh & Thanh, 2015). Against the exploratory nature and research aim of this study, my interpretivist paradigmatic stance was well aligned with a qualitative approach, which was deemed well suited to answer the research question. As this allowed for an in-depth exploration of the outlined case and the context in which this study occurred (Creswell et al., 2007).

Single Case Study and Unit of Analysis

The case under study was farmers located in Laingsburg and Matjiesfontein areas of the Karoo region of South Africa. Their working experiences and coping mechanisms were specific to their surrounding landscapes, ecosystems and chosen type of farming. Furthermore, this case study was particularly concerned with farmers who retained close living, working and cultural relationships to their natural environments. The experiences of farmers were explored. Consequently, the unit of analysis in this study was the individual (Baxter & Jack, 2008).

Sampling Procedure and Participants

I utilised a purposive sampling strategy in this research study. In this strategy, the researcher deliberately selects participants with specific qualities relevant to the study (Etikan et al., 2016). Purposive sampling was an appropriate strategy for this study, as it is typically used in qualitative research as it allows for information-rich participants to be identified. Thus, potentially leading to greater insight and understanding into the phenomenon under study. (Etikan et al., 2016).

The selection criteria for participants in this study, was that they had to retain close living and working relationships to their natural environments, should belong to a generational farming family and have grown up in the Karoo region. Therefore, participants who met these criteria would have been more likely to share information-rich accounts of their living and working experiences in the drought conditions of the Karoo region, over an extensive period. Thus, potentially offering greater insight into the phenomenon under study and being appropriate to the exploratory nature of this study.

Participants

A total of eight participants were recruited for this study, ranging from age 30 – 64. All participants lived on their farms or within proximity. All participants came from generational farming families, who had also grown up on farms in the Karoo region. Participants one and two were husband and wife, participants three and four were siblings, who lived and worked on separate farms. Participants five and six were also siblings who farmed together, and finally,

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participants seven and eight were husband and wife. All eight participants considered themselves as farmers and a part of their farms.

Table 1

Participant Demographics

Participant	Gender	Age	Type of Farming / Occupation	No. Generation Farmer
1	Female	Missing	Black sheep	3 rd generation family
2	Male	46	Black sheep	3 rd generation farmer
3	Male	30	Onion seeds	3 rd generation farmer
4	Female	32	Social worker, agricultural association member, church committee member and farmer	3 rd generation family
5	Male	52	Onion seeds and dried fruit	2 nd generation farmer
6	Male	51	Onion seeds and dried fruit	2 nd generation farmer
7	Male	64	White sheep	4 th generation farmer
8	Female	Missing	White sheep	4 th generation family

Interview Schedule

I constructed a semi-structured interview guide to collect data in this study. The interview questions consisted of both open- and closed-ended questions. The former provided participants with the opportunity to have a voice in the interview, and therefore, in-depth, rich data was collected from which I could draw meaningful conclusions. This data collection tool is therefore, in line with the exploratory nature of my research study.

The interview guide consisted of seventeen main questions, based on the literature review conducted prior to the data collection. The first six questions were aimed toward gaining a general understanding of the participants farming history. Questions seven through fifteen were aimed toward the exploration of the effects of the drought on various aspects of the participants life and relationship with farming (See Appendix A). Whilst the last two questions were aimed toward gaining an understanding of the participant's approach to coping with the effects of the drought. Furthermore, I used probes and follow-up questions in the interview where appropriate. I used the former to deepen an interviewees response to a question and therefore, add richness to their responses. Additionally, I used them as cues to indicate to interviewees the level of response I desired (Patton, 2015). Whilst probes were used to gain

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additional information relevant to the aim of this study, I used follow-up questions for more exploratory purposes. I asked these questions in response to cues offered by the interviewee that their statement, comment, or body language was worth following up on (Patton, 2015). Some of the follow up questions I asked in earlier interviews were used in later interviews. This was because early participants had spoken to experiences that I deemed relevant to the aim of my study and I hoped that the later participants would be able elaborate on or provide an alternative view.

The guide was translated by Professor Conradie into Afrikaans, to be available during interviews (See Appendix B). The reason for which, being that residents in the Laingsburg and Matjiesfontein areas are predominantly Afrikaans speaking. Whilst I intended for all of the interviews to be conducted in English, it was necessary to have the questions available in the participants' first language should any individual not understand the questions in English. The semi-structured interview schedule provided me the opportunity to gain insight into this phenomenon through exploratory, in-depth questions as demonstrated above (Creswell et al., 2007; Patton, 2015). This was valuable given this area of inquiry is relatively under studied in current climate change literature and the South African context. It is for this reason that Yin (2003), recommends interviews as one of the data collection methods to be used in case study research. Therefore, this also indicates the appropriateness of this method to the research design of this study.

Data Collection Procedure

The development of my interview guide used in this research study was an iterative process that occurred in part, concurrently with the development of my literature review, as my guide was based on the literature reviewed for this study. My initial interview schedule had five main questions (with a total of 46 sub questions), which were structured around recurring constructs the repeatedly emerged. Topics concerning farmer's occupational history, their children's experiences and relationship with farming, the farmers' experiences of drought conditions, as well as constructs pertaining to ecological grief and their chosen coping strategies were initially included. I developed a further five iterations of the interview guide after consulting with Professor Beatrice Conradie and Professor Suki Goodman, who reviewed my interview schedule separately. The pilot schedule was finalised with nineteen questions. Subsequent to which, the final interview guide had three different sections, consisting of seventeen, exploratory questions.

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The literature review I conducted was also an iterative process, with the initial aim to gain an understanding of the effects of drought on farmers' psychological well-being. Professors Conradie and Goodman identified this topic as underexplored in current South African research. I extensively reviewed topics pertaining to social vulnerability, mental health outcomes and ecological grief, with the latter emerging as the most significant to this study. I deemed the extenuating drought conditions in South Africa as likely to result in farmers' potential experiences of ecological grief. However, given that this area of study was almost entirely absent in the South African context, an exploratory approach to farmers' working experiences in drought conditions emerged as the primary aim. I appropriately chose an exploratory case study design to aid in uncovering farmers' discourse around drought conditions.

Once I submitted and obtained ethical clearance from the Commerce Faculty Ethics in Research Committee, I could begin the data collection procedure. However, due to the COVID-19 pandemic, when ethical clearance was obtained in June 2020, level three lockdown was implemented. Therefore, my field research was not permitted by UCT, and I was to pilot the interview guide via online platforms. I utilised a purposive sampling strategy to identify five participants located in the Ceres and Victoria West region, of which four were willing to participate, however, only via written responses over email as they were uncomfortable with online interviews. Two of the four participants completed the interview guide, yielding surface level results that offered little insight into the area of investigation under study. After which, I decided that the data collection procedure would be placed on hold until both the lockdown level and UCT permitted my travelling to the Karoo to conduct face-to-face interviews with participants.

The data collection procedure resumed at the beginning of October as I completed and received approval of UCT's Human Participant Fieldwork Checklist that ensured all COVID-19 regulations would be maintained throughout the duration of my fieldwork. The data collection procedure took place in Laingsburg and Matjiesfontein, under the supervision of agricultural economics researcher Professor Beatrice Conradie. Professor Conradie, who was already conducting research in the area, set up and organised a programme of seven interviews for me to conduct over three days.

My interview process began with an introduction detailing the purpose of this study, introducing myself as the researcher and what the study and interview process entailed, leaving room for any questions participants may have (See Appendix C and D). I then asked participants to read the consent form and if they would permit the recording of the interview,

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all of whom signed and consented (See Appendix E). The interviews were conducted on each participant's farm or working premises, and ranged from 20 minutes to an hour, with an average of 35 minutes. All eight participants were first language Afrikaans speaking, however, were all willing to respond to me in English. It is important to note, that this was a limitation during the data collection process, as I conducted the interviews alone. Participants often struggled to find the correct English word for what they wanted to say, and therefore, either said it in Afrikaans which I sometimes understood or missed or they didn't say what they wanted to. This at times, inhibited my ability ask follow-up or probe questions as I could not pick up on all the important markers, therefore, resulting in lost opportunities to gain further insight.

Data Analysis

Braun and Clarke's (2006) Thematic Analysis was the chosen approach to analyse the data, which consisted of 6 phases: familiarizing myself with the data, generating initial codes, searching for themes, reviewing potential themes, defining and naming themes, and producing the report (Braun & Clarke, 2012). In order to familiarise myself with the data, I transcribed all of the interviews, as suggested by Braun and Clarke (2012). I then printed these transcripts and read through them, highlighting key points that had emerged in the data, which had been previously identified in the literature review. Simultaneously, I annotated the transcripts, making observations, commenting on points I deemed interesting and/or relevant to the research questions. I completed this process twice, as outlined by Braun and Clarke (2012), to become fully intimate with my data. The second phase; generating initial codes, I again, went through my annotated transcripts and started to generate both semantic and latent codes. (Braun & Clarke, 2012). A total of 19 codes were identified, with a greater number of semantic codes emerging. This process was conducted again, however, using the qualitative software, Nvivo. The software enabled me to look at the data with a fresh pair of eyes, free from previous codes and annotations. This round of analysis yielded a total of 27 codes, with a greater number of latent codes emerging. My search for themes began as I compiled key points that emerged within each code. These points captured things that were important or relevant to answering the research questions, as well as patterns that repeatedly emerged (Braun & Clarke, 2012). A total of four themes emerged; "Then and Now", "This is the Farmer", "It's Not Effective", and "Attempts to Remain Resilient". Upon entering phase four, when reviewing the initial four themes against the coded data and data set as a whole, I returned to phase three. The two themes of "This is the Farmer" and "Attempts to Remain Resilient" were collapsed into one, with the former being a main theme, and the latter emerging as a sub theme, called "Community Support

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towards Resilience”. The third theme “It’s Not Effective” was discarded, as this theme was not useful in answering the research questions and the coded data was too thin, not yielding significant data to draw meaningful conclusions from. The second round of phase 3 resulted in the three themes; “Then and Now”, “Our Biggest Challenge,” and “This is the Farmer”. Upon reviewing these themes in phase four, each question outlined by Braun and Clarke (2012) to ask in relation to each theme was answered. I was satisfied with the conceptualisation of these themes and defined and named them as outlined above. Phase six was completed to produce the results chapter. This chapter was reviewed, edited and in part, rewritten to produce a proficient report.

The data was analysed using an inductive approach, which means the thematic analysis was data driven (Clarke et al., 2015). Braun and Clarke’s (2006) Thematic Analysis aligned with my interpretivist theoretical paradigm, as it allowed myself as the researcher, to theorise the farmers’ experiences and the meaning of the data in a straightforward manner, as the relationship between meaning, experience and language is assumed to be unidirectional when adopting an interpretivist stance (Braun & Clarke, 2006). Furthermore, this data analysis approach aligns with my theoretical paradigm as it also facilitated an inductive data analysis approach. An inductive approach is integral to attending to my research question, as this is the process of coding data without analytic preconceptions or trying to fit the data in a pre-existing coding frame (Braun & Clarke, 2006). Given the exploratory nature of my research question, with the aim being to explore farmer’s current working experiences in drought conditions and the subsequent effects on their psychological well-being, this data analysis approach facilitated a data driven analytic process.

Rigour

The quality of a qualitative study is established by the degree of trustworthiness or rigour (Connelly, 2016). This rigour is determined by assessing the degree of confidence in data, interpretation, and methods used. The criteria outlined by Lincoln and Guba (1985), including credibility, transferability, dependability, and confirmability are widely accepted and used (Anney, 2014; Connelly, 2016; Shenton, 2004). These criteria will be used to assess the rigour of this study.

Credibility (truth value)

Credibility is concerned with the confidence that can be placed in the truth of the research findings; the truth value (Anney, 2014; Connelly, 2016). Credibility establishes whether the findings are indicative of plausibly drawn information from the original data and

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if the interpretation of participants original views are accurate (Anney, 2014). According to Krefting (1991) and Shenton (2004), this criterion is equivalent to internal validity in quantitative research. The credibility of this study was established through peer debriefing.

To represent the multiple realities revealed by informants as adequately as possible, I used peer debriefing. Peer debriefing establishes credibility, as scholarly guidance is acquired from other academic professionals with experience in qualitative methods (Krefting, 1991). This allows for a feedback process to occur on the literature review, data collection methods, process, data analysis procedure and research findings. This process should result in a deeper reflexive analysis by the researcher as insights and problems are discussed as a way of debriefing from the supervisor or peer (Anney, 2014). In this research study, Associate Professor Suki Goodman, provided extensive feedback, input and guidance throughout. This guidance was continuously available and maintained at a proficient academic level, resulting in valuable insights provided for each chapter. Therefore, I reviewed and reproduced each section several times. Moreover, Professor Beatrice Conradie, also provided extensive input and assistance in the data collection process.

Transferability (applicability)

The criterion refers to the extent to which findings of a study are transferable or useful to persons in other contexts or populations (Connelly, 2016). Transferability is considered the equivalent of generalizability in quantitative research. It is, therefore, my responsibility as the researcher to provide an adequate database of the research process for others to make transferability judgements (Anney, 2014; Krefting, 1991). This is achieved through the provision of a thick description and the use of purposive sampling.

Thick description is the provision of detailed information describing the context of the area under study and methodology undertaken (Anney, 2014). This should include a rationale for the chosen method, a detailed outline of the research process and documents to fully support the data collection method and data analysis process (Curtin & Fossey, 2007). I provided a detailed description and rationale for my chosen research design, approach, sampling procedure, data collection method and procedure, and data analysis. Moreover, I conducted and provided an extensive literature review outlining and exploring the context of the area under study and constructs pertinent to my research. Therefore, this criterion has been met, as it is likely that from these descriptions, one would be able to ascertain whether the overall findings were “transferable.” Additionally, the use of purpose sampling, as I used in this study, allows the researcher to identify key informants who are particularly knowledgeable about the

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area under investigation (Anney, 2014). The use of this technique will allow researchers to determine why this specific category of informants is important to their research study. If it isn't, the study's findings may not be transferable.

Dependability (consistency)

The stability of the data over time and the conditions of a study, is referred to as dependability (Connelly, 2016). This criterion may be established using an audit trail (Anney, 2014). The former, requires me as the researcher, to account for all research decisions and activities to validate the inquiry process and data. An audit trail details these processes, including documents of raw data, interview and observation notes, reflexivity journals and records collected from the field (Anney, 2014). An audit trail is available of this research study, consisting of instrument development information, interview notes, interview recordings, transcriptions, annotated transcriptions, and reflexive notes made throughout.

Confirmability (neutrality)

This criterion refers to the neutrality of the data. Confirmability is present to the degree by which the results of a study can be confirmed by other researchers (Connelly, 2016). Confirmability is present when extensive steps are undertaken to ensure that as far as possible, my findings are as a result of the experiences and ideas of the participants. Rather than my own experiences or reflections (Shenton, 2004). Confirmability can be achieved through reflexivity.

Reflexivity. The practise of reflexivity is the attempt to ensure neutrality as the researcher. This was achieved through explicit reflection upon my interactions and thoughts during interviews with participants, that informed my approach toward analysing my research findings (Curtin & Fossey, 2007; Krefting, 1991). Albeit, I will upfront my personal background, perceptions and interest of this area of enquiry to demonstrate how I attempted to remove the influence these factors could have had on the research process.

I am a 23 year old, white, female. I grew up in Cape Town, South Africa from an early age. My first language is English, and I have a limited ability to understand and speak Afrikaans. My acute awareness of this limitation made me nervous to engage with participants, as it was expressed to me that these white Afrikaans farmers were hesitant to agree to speak to me in English. Upon reflection of this insecurity, I realised how it could cause me to miss cues and avoid asking follow up questions, as I wouldn't want to ask if my understanding of their Afrikaans expressions were right or for the correct English translation in fear of offending participants. By acknowledging this fear, I was better equipped to deal with my own insecurities and ask for assistance with the Afrikaans term when necessary. However, this fear

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still influenced my ability to ask follow up questions in one interview, as the participant had a dominating, masculine, demeanour that intimidated me. I attempted to control the influence of my insecurity by asking the participant to express himself in Afrikaans regardless and I would follow up via email or call if necessary.

Moreover, my interest in this area of study, also had the potential to influence the research process. At the beginning of this study I expressed interest in exploring research in the agricultural domain. I thought this was a context outside of the norm for organisational psychology research and felt it was an opportunity to give voice to those who had not been heard before. I realised I had a “soft spot” so to speak for these participants due to the extenuating drought conditions they were living and working under, which had started to affect the lifestyle of those living in the city centre of Cape Town. My reflection on my affinity toward these participants prior to engaging with anyone, made me aware of potentially placing these individual’s at the “mercy” of the drought during interviews and the subsequent data analysis. I attempted to remain respectful and create rapport with participants by acknowledging their difficult experiences, albeit I tried to refrain from being overly sympathetic. This affinity toward the sample did emerge in the data analysis, through themes that were of little consequence to answering my research questions. This was corrected through an iterative data analysis approach that aided in creating a more balanced recount of the farmers’ working experiences in drought conditions. Additionally, my subjective experiences were rather used to enrich the conclusions I drew from my findings (Curtin & Fossey, 2007).

Ethical Considerations

I obtained ethical clearance from the University of Cape Town’s Commerce Faculty Ethics in Research Committee before the data collection procedure commenced. Upon attaining ethical clearance, I strictly adhered to APA ethical research guidelines throughout the research process.

Confidentiality and informed consent.

In addition to the introductory letter, I provided participants with an informed consent sheet. This stipulated that participation was voluntary, should participants choose to take part in the study they may refuse to answer any question and have the right to leave the interview at any time. I asked participants to consent to the interview being recorded. In order to ensure confidentiality, the interviews were conducted on the participants private premises, to ensure no one outside of the study would hear the participants responses. I safeguarded participant’s

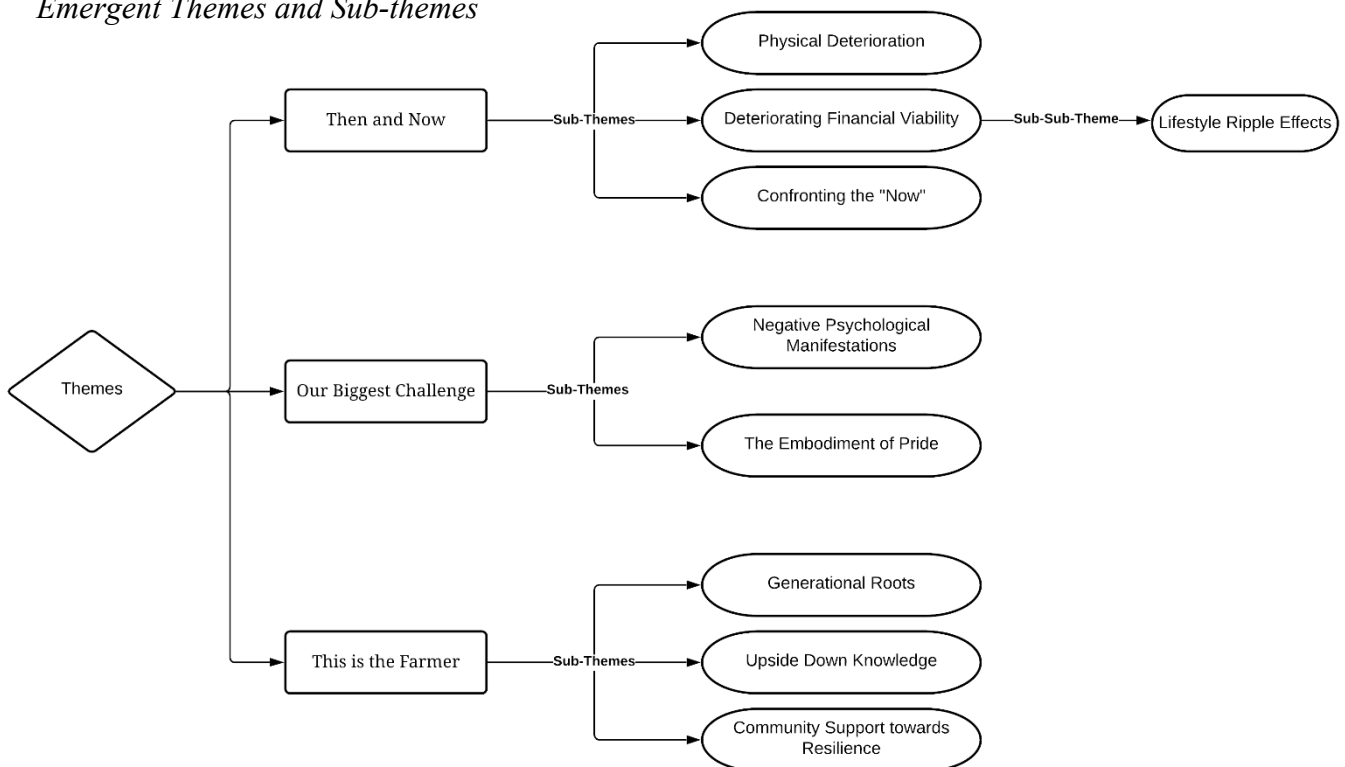
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anonymity through the use of assigned participant numbers in the transcripts and final dissertation write up.

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Results

The following chapter presents the findings drawn from the thematic analysis conducted on the data derived from the seven interviews held. The analysis yielded three main themes; “Then and Now”, “Our Biggest Challenge” and “This is the Farmer”. A total of eight sub themes were found, as can be seen in Figure 2 below, with only one sub-sub theme arising. A theme was deemed significant to include when at least half of the participants had brought up elements pertinent to the theme’s development during the interview discourse. Moreover, each theme was required to be relevant to answering the research questions of this study. During the course of the interviews much interesting data were raised by participants, however, not all of this data could be included in the thematic development due to the misalignment with the specified research questions. The theme, “Then and Now”, is presented first to provide insight into the more explicit effects of the drought on the participants, the overall conditions these farmers live and work in, as well as to lay the foundation to understand the second theme. “Our Biggest Challenge”, presents the more implicit effects and resultant challenges from the drought. Whilst the theme, “This is the Farmer” is presented last, as this illustrates how both the explicit and implicit effects are directly relevant to this occupational group and their well-being.

Figure 2*Emergent Themes and Sub-themes*

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Note. A visual representation of the findings derived from the Thematic Analysis conducted. Three main themes emerged, as well as a total of eight sub-themes and one sub-sub theme.

The physical state of the Karoo region, seen in Figure 3 below, serves to set the tone of this chapter, as it accurately depicts the physical landscape during the current drought period.

Figure 3

A Farm in the Karoo



Note. An image taken of one of the participant's farms, situated in Matjiesfontein, the Karoo, on the 6th October 2020, during the data collection period.

Then and Now

The theme of "Then and Now" characterises significant changes resulting from the long standing drought conditions. This theme speaks to the drought's intensity and magnitude of these effects, as negative impacts on participants' physical environments and financial positions are highlighted. In the interviews, participants both consciously and unconsciously, drew comparisons between how some of these factors were "then", before the drought, and how they are "now" after witnessing the impact of this climate condition. The significance of these comparisons are illustrated by the participants' awareness of how they are forced to confront these changes on a daily basis.

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Physical Deterioration

Participants brought attention to the physical deterioration of their landscapes and in the health of their livestock. This was one aspect in which four of the farmers drew comparisons between the “then” and “now”. The comparisons were also drawn between how this physical deterioration had influenced their farming practises. Participant 1 first drew this comparison, noting how the nature around her was changing, and as a result “*Everything is new at the moment.*” Participant 5 and 6, brothers farming apricot trees, hybrid onion seeds and other fruit together, noted how their farm had physically gotten smaller and smaller. They too identified that their physical landscape in which their crops grew, was also new, commenting on how these changes required them to adapt their farming practises,

I mean, the way we used to plant that onions and how you would irrigate them and how to fertilise them. That has all changed quite dramatically because of the drought. The plants didn't grow like they used to. (Participant 5).

Participant 5, also noted that the previous year was the worst they had experienced in the onion business, for the bees did not work on the flowers due to the deterioration of water quality, as a result from the drought. This demand on farmers to change their practises due to drought conditions was also identified by participant 7, a sheep farmer. He noted that he had to give extra feed to his sheep every two to three days, as the animals could not survive in the veld alone. If he did not assist in maintaining their immune systems, the sheep would get sick. Four participants also drew a direct “then” and “now” comparison, between the intensity of the drought over time. Participant 7 expressed this comparison, by drawing attention to the fact that despite the Karoo being a periodic drought region, the current drought they were experiencing was the worst in many years. Participant 1 described the “then” of both her parent’s and her in-law’s experiences of drought. She stated that even in their time of farming, they had never experienced a drought as her and her husband, were “now”. That the current drought was in fact, a “*disaster.*”

The physical deterioration resultant from the increased intensity of the drought was further highlighted by the comparisons that five participants drew from the visual changes in their landscapes. These comparisons drew attention to the lack of water, the increased dryness of their farms, as well as the fact that this decay has been a slow and gradual process. Participant 2 highlighted the fact that this physical deterioration is slow, as he recounts in 2003 already, the visual landscape had changed.

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Yeah. I can't tell you a date, although... a old, a oomie van [inaudible], well he's not that old... He said from 2003, the whole thing, was more, visually, visually changed from 2003. And that's when I came there. Lucky for me... because I don't know. I don't know any better. (Participant 2).

Participant 3 also highlights the visual changes in his landscape and how drought is a slow and gradual process, as he reflected on how the hardest thing about the drought for him, has been the amount of vegetation that has died. He draws a comparison between a photograph taken three years ago of his farm and how the same landscape now appears. He stated that now he notices these changes a lot, but *“wow, if you see it daily you don't realise it.”* (Participant 3). Participant 1 also highlights the physical deterioration of her and her husband's farm. In her comparison she states, *“...at that stage we thought it is as dry as can possibly be. It cannot get drier. And since then, it got a lot drier. If you look back now that was quite wet.”* (Participant 1). Thus, showing how the intensity and frequency of drought conditions have progressed over time. It seems a common opinion held amongst the farmers that these effects would not abate soon. Participant 7 highlights this opinion, by stating that the physical deterioration resultant from the drought is getting worse and worse, that the conditions of their farms in their current “now” may only deteriorate further.

An additional aspect in which this deterioration is highlighted, is in the decay of the health of the livestock. Participant 2, comments on how he can see his ewes dying, and how in hindsight, these changes, both in his landscape and livestock, is quite a thing to have borne witness to.

We always thought it was dry. Now we know, it wasn't dry. Five years back it wasn't dry. [...]. If you look at your ewes and it looks, and they look like they're dying. That's not nice. If you start you, you, obviously see the veld, daars fokol. Taal [inaudible] daars niks. That's... that's quite a "dingese"... you... and from hindsight, you remember how that veld looked, and the grass pastures and so on, that isn't there anymore... (Participant 2).

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Deteriorating Financial Viability

The sub-theme of deteriorating financial viability was raised by every participant during the interviews conducted, either concurrently or subsequent to the physical deterioration they identified. As the deterioration of their landscapes and/or livestock gave rise to and compounded the already precarious positions of these farmers. Comparisons were also made by participants as to how the feasibility of farming had diminished over time, resulting in several ripple effects. The sheep farmer and his wife, participants 1 and 2, commented that, “*the financial is a huge battle.*” (Participant 1). They attributed the fall of their financial viability to the poor feeding conditions, causing their sheep to pass on. Participant 2 explained that he no longer received the same returns from his sheep, that his father used to. In his comparison, he stated that, now he gets “*in a good year, 90%, maybe 100%.*” whereas his father used to get 120%. This indicates the knock-on effect of drought on the physical landscape to the farmer’s ability to earn an income. Participant 3, who used to farm sheep, also identified the deteriorating financial viability of livestock farming. He commented that sheep farming is no longer sustainable in such conditions, that it is a “*hand to mouth*” business, which requires capital to buy feed. This highlights, that nowadays, without such resources, it is difficult to see the feasibility of sheep farming, as the best alternative to keeping the sheep alive is entering into debt. Participant 4, expressed that this “best alternative”, was unfortunately, a reality for many of the farmers, as she saw them working “*backwards.*” That many of the farmers were always in debt, hoping that by the end of the season they would be able to pay their accounts, but there was not always something coming in. This struggle and the deteriorating financial viability were further expressed and highlighted by both participant 5 and 7, the onion-seed/fruit and wool sheep farmer, respectively.

Participant 5 relayed the difficulty in making a decent living and keeping his business alive was more difficult each year. Whilst participant 7, felt that even if drought conditions did improve, the financial recovery period would be years on end, as he felt for normal grazing conditions to recover and return, the recovery period would be between 50-100 years.

Lifestyle Ripple Effects. Participants brought attention to the ripple effects resultant from the deteriorating financial viability of their farming practises, on various lifestyle and farming productivity aspects. Two participants highlighted that, as a result of their farms struggling to be financially viable, they were required to change their spending habits due to a decrease in budget over time. Food they previously purchased; they could no longer afford. Participant 1’s expression of “*...you can live without butter, you can live without this, you can live without that,*” perfectly encapsulated her new approach to spending as the incremental

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effects of the drought worsened. Participant 4, noted that when farmers received food parcels, with “*blikkies (tins)*” and “*flour things and stuff*”, they would accept whatever they could get. The most extenuating of these circumstances, expressed by participant 7 and 8, that “...*when there is no money in the bank, you don't buy. We are used to that. But now we are far beyond that.*” (Participant 7).

Further ripple effects resultant from the farmers deteriorating financial viability, was identified in the restrictions placed on the farmer's ability to conduct farm maintenance. This is evident in participant 2's admission that he “*turns a blind eye*” to broken fences when he could not afford to repair them. An additional restriction on farmers' movements, was highlighted by participant 4, 7 and 8 who noted, a decrease in visits to town. Those who lived long distances from the main town, were restricted to visiting only when absolutely necessary, as diesel was too expensive. Moreover, where possible, Participant 4 noted that some of the farmer's wives would look for work for the first time, as the income from the farm was no longer sufficient to support them.

Confronting the “Now”

This sub-theme illustrates how the farmers' experiences of physical deterioration and deteriorating financial viability have to some degree been unrelenting. Four of the participants highlighted in their individual interviews, how they were forced to deal with the effects of this crisis condition, which had resulted in negative emotional experiences, that they found very difficult to continuously endure. Participant 2 was forced to confront both the physical deterioration of his landscape and his own deteriorating financial viability. He stated, “*You see it, constantly reminded, constantly see it, constantly see your feed going, constantly see that the bank account is not supporting this.*” (Participant 2). He further described his farm as a “*misery*” which he had to look at every day, so when he returned home, he wanted to forget about it. Moreover, these were not experiences these farmers could run away from. Participant 5 highlighted this, and how this in turn forced him to confront his own continuous financial battle. He stated, that when he left the farm and put a lock on the gate, the farm did not stop running. It was still constantly tapping his reserves. Participant 6, was forced to confront his “*now*” through the state of his livestock. He stated that sometimes, it was not nice to go to work,

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To see the sheep and to see them suffer. Yes, there are some days that I don't like to come anymore. I want to work in the mall, away from the sunlight. Just sit the air conditioner. There's days like that. (Participant 6).

Participant 7, also shared the same sentiment, that it was very difficult to see his animals suffering, and how sometimes, “*When the veld is bad that is also bad medicine.*” Highlighting, how this experience had a negative emotional effect on him.

The Biggest Challenge

The second theme demonstrates one of the farmers’ biggest battles, the battle to maintain their psychological well-being against the negative mental and traumatic emotional experiences resultant from the drought. The farmers’ responses during their individual interviews, indicated that with the end of the drought nowhere in sight, the difficulty of this battle was compounded as it seemed the struggle to remain positive and hopeful was unending. Moreover, this theme highlights how the pride attribute of the farmers’ identity, unintentionally exacerbates this challenge further.

Negative Psychological Manifestations

This sub-theme explores the major battles identified by participants in the interviews that they ascribed to experiencing the continuous presence of the drought, leading to experiences of subsequent negative psychological manifestations. Albeit these manifestations were experienced in different forms by each farmer.

The first manifestation was a mental battle two participants experienced and struggled to deal with as a result of the drought. Participant 1 referred to this struggle as a “*mind game*”, as the battle to remain positive. This was a game not only because the farmers were dealing with the effects explored in the first theme, but because sometimes there was no explicit reason to be continuously fighting this battle. These effects were not necessarily always present, but rather in some instances, engaging in this “game” had almost become a habit.

We’ve come to realise, money is less of a factor than mentally. It is a mind game. If you can get your mind around it and start being positive, then you survive. But as soon as you got into the depression [...] you’re stuck. Like one guy told me the other day, he knows he’s wrong. You know, he had no reason to feel like he is feeling but he still feels like that. He still has his farm. He still has food on the table. You don’t have money, but they’re still fine. They’re still surviving. No

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reason really to feel this depressed, but he's still feeling this depressed. He cannot get himself out of it. And that is our biggest fight. (Participant 1).

The extract above, demonstrates that participant 1 felt as though their mental battle was the most significant fight as a result of the drought and that it was the drought's continuous presence that detracted from the farmer's ability to remain positive. For participant 2, the impact of the drought's presence was embodied in his feelings of anger, as just as the farmer in the extract above, participant 2 felt as though this fight was "*hopeless*", one he could not win. He shared that, he fell apart once a week, and that he wished he could fight a "*a nice big angry bull*" just to have something to "*bliksem (fight)*." However, he still noted that what he needs is to change his mind, "*you've got to find it somewhere inside of you.*" This indicates that he too felt that dealing with the drought was a mind game. The continuous presence of which is evident as Participant 2 relayed, that two years before, he could not shift his mindset for the better. He could not see the positive and had given into this battle, yielding his farming responsibilities to his farm engineer. He told him, "*I don't want to see, I don't want to hear, you come tell me if there's big problems. For the rest I don't want to know.*"

These negative psychological manifestations emerged over and above the mind game, and around participants' specific concerns. These experiences were more incident specific in response to the impacts of the drought, rather than a sustained negative feeling. For Participant 5, the impact of the drought's presence manifested through feelings of worry about the viability of his farm, which led to experiencing the fear of failure. He expressed that his nerves were not as relaxed as they used to be, that they had significantly increased in the last five to ten years, that he was "*more worried about tomorrow than ever before.*" (Participant 5), openly admitting, that even if the farm was only required to provide a living for him and his wife, as opposed to for his mother and brother's family, "*still failure would be a worry, I think.*" The farmer concluded, that "*...to be positive is probably the biggest challenge. I was quite a positive person. But nowadays, it's an effort to be positive about this property.*" Perhaps this is his biggest challenge because he cannot see an end in sight, as he describes his current situation, below;

But as we sit here now in the drought, you can do nothing. It's like wanting to build a house, but you're waiting for the bricks and the bricks is not arriving here. So you just sitting here. The few bricks you had you, you built your little whatever

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you did with that. And the rest must wait, and that is how farming is now. So, it's not fun because we've got all this fields that lying there just waiting for water. And I've got a lot of plans still. But I mean you can't... [...]. No money can fix it. Nothing can fix it. So I can't fix it. (Participant 5).

For Participant 7, the negative psychological experiences also manifested through worry, tied to his accountability to other parties and embodied in his inability to sleep. He too felt the drought was inevitable, describing the current conditions as something he could not stop, that there was no clear end to the drought period.

And then you don't sleep and when you don't sleep you got problems. And you can't sleep because the manager of the bank is there, the manager of the co-op is there and you must tell him... and you've got people to look after who is working for you. This is not easy. And sometimes you act strange. It is not normal, not a normal thing that happens and you can't stop it. (Participant 7).

However, he remained somewhat positive as he gestured to his head and stated, "*I think the best medicine is on top.*" In order to survive living and working in the Karoo region, you are required to be "*bright on top, you must know what's going on.*"

Moreover, participant 1, 3 and 4, highlighted that this mental battle was also felt by those in the town's community. A collective experience where at times the whole community felt negative, consumed by the drought's presence. Participant 4, noted that people within the community tried to remain positive, but every year, the rain did not fall.

The Embodiment of Pride

In this category, the role of the farmers' pride is explored, as this attribute unintentionally exacerbates their negative mental and traumatic emotional experiences in their battles against the drought. This pride emerged through half of the participants' reflections on how talking about their emotions was not a coping mechanism used by this occupation group. Participant 3, noted, that farmers are "*proud people,*" which means they do not talk about their emotions. Participants 5 and 6, as well as participant 2, expressed similar sentiments. They highlighted that they too did not share their emotions with other farmers, friends or even their wives. Participant 6, attributed this fact to his upbringing saying his father was the same way,

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albeit his father was also a farmer. Participant 2, expressed that farmers did not talk about their emotions, because it would not assist in dealing with the effects of drought.

Farmers don't talk to each other like that. No, no, no, no, no. We're hard, we [inaudible]. We don't go... We don't talk about our emotions and that dingese. You can see in the okes eyes. You can see he's close to cracking. But we don't talk about it. We talk about the shit that the ram did this morning... [...] we laugh, or you laugh with him and him with you... and so on. [...] But we don't talk about, we don't support each other like that. We don't... it's not gonna make a difference. So why? (Participant 2)

Participant 4, also expressed the opinion that farmers are just “*too proud*,” highlighting how this exacerbated the negative effects of the drought. She relayed, how in her own personal experience, her family struggled to get her father in law to discuss whatever was happening on the farm, the factors that he was stressing about. As the main male farmer in the family, he felt “*too proud and feeling too responsible to ask for even his children's assistance*.” As a result he would struggle on his own, unable to address the situation as things progressed for the worse. Participant 4, relayed that when dealing with farmers in the community, the same pride interfered with farmers asking for assistance. Participant 4 relayed, “*The woman will call us and they'll tell us listen, we also need a food parcel, never, men will not do. No, they just too proud*.” However, the community respected this pride, as services rendered to assist farmers was done so, “*subtly*.” They were conducted in such a way that farmers were not made to feel as though *they* were being assisted, but rather the farming community as a whole.

This is the Farmer

This theme demonstrates the degree to which living and working in drought conditions has resulted in a loss of key components of these farmers’ identities. These losses within their identities are intangible, tied to their farming practises, generational practices and attitudes towards the farming occupation. This theme highlights how despite the drought conditions and losses incurred; the participants’ love for the farming lifestyle is maintained throughout. As well as the important role the farming community plays in these individuals’ fight against the drought.

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Generational Roots

This sub-theme demonstrates how the farming occupation is part of the farmer's identity, a part of these individual's roots. This sub-theme further illustrates how when these generational practises are disrupted, this results in these participants experiencing intangible losses.

Two of the participants were second generation farmers, four participants were third generation farmers, and the remaining two were fourth-generation farmers. The significance of which is that farming is a generational occupation for all participants. As a result, farming was highlighted by all farmers, as an integral part of their children's upbringing, and for some, an occupation which had already been passed down to their sons. Given the high esteem in which participants held passing this generational occupation down to their children, for those who expressed the discontinuation of this tradition or difficulty in its realisation coming to pass, it was evident that these participants had experienced an intangible loss. When participant 2 was asked if his attitude toward farming had changed, he gestured toward his kids and stated, "*Yeah, they're not coming farming,*" attributing this to the fact that farming is no longer viable for them anymore. His wife shared the same sentiment, expressing, "*We would love to pass the love for nature and for land on to them. I just don't think farming here... they would have the opportunity to survive.*" (Participant 1). For participant 6, his 20 year old son, was already farming. He expressed the desire to join his father, yet participant 6 relayed that his son would have to wait about 10 years before he could take up work on their farm. It could not sustain another person. Participant 5, stated that his nephew would have been on the farm already, if the drought was not at the intensity it was. Participant 4, highlighted this situation as a common occurrence in the Karoo region. That often, when it was time for the next generation to start farming, the farms were not generating enough income to sustain the father and son at the same.

Participant 7 and 8's son was already farming in another province. However, his father stated, that he would not tell any young person to come and farm in "*...farming conditions like it is in this country. Everything changed.*"

Upside Down Knowledge

The sub-theme of "upside down knowledge", highlights another important aspect of the farmer's identity, their knowledge of their physical landscapes and livestock. This sub-theme illustrates how the negative effects of the drought on this knowledge has resulted in intangible losses. Participants highlighted their general knowledge of their land and ability to navigate their physical landscapes as important aspects of being a "farmer", and when these aspects

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were disrupted by drought conditions, participants indicated that this was a loss of skills inherent to their farmer identity. Skills which they had developed through years of experience. Both participant 2 and 7, noted that their farming experiences in current drought conditions had rendered their knowledge “upside down.” (Participant 2). That they could no longer assume the same assumptions they used to, with participant 7 noting how despite the area being in his roots, “*things change wrong*” and farming was difficult.

You get a feel for it. It's not that somebody tells you, you should do this and this and this. No, you can get a feel for it, you understand your animals, and you understand your situation. You understand the weather. So, it's not, you don't have to do something. (Participant 2).

I think it is in your blood in the first place and years of experience. If it not in your system, in your jeans, you can't survive in this area. (Participant 7).

Participant 5 commented that his knowledge had definitely changed and gone through learning phases, whilst participant 3, did not note a change in his knowledge. He attributed his ability to navigate his land to his entire upbringing being on the farm which he now resides and owns, which he described as “*I know it like the palm of my hand and as it goes, I think my knowledge of the environment on the farm, as a farmer is very good.*” (Participant 3).

In light of these intangible losses reported by the participants only one farmer expressed a total loss of enjoyment for the farming occupation, which he attributed to the drought's occurrence. When asked if he had thought about packing it all up, he responded, “*Yes. If someone walks through that gate with a chequebook, and I can fill in a number. He can have it all. Today. Really. I've got no... sentiment. I would go, for sure.*” (Participant 5). When asked if five years ago, would he have said the same thing, he responded, he probably would not have even thought about it. This farmer relayed that that which he enjoyed about farming, he was no longer really able to do, “*Life was fun and it's not fun anymore.*” Moreover, it appeared as though this loss of enjoyment was related to a loss of confidence in his ability to farm, “*I've never felt that I've, I'm not capable. Yeah, the drought has made me more vulnerable, is probably the right word. But in not believing in myself. I'm doubting myself more than ever before, this year 2020.*” (Participant 5). Whilst the other participants had expressed difficulties in dealing with the effects of drought, none had relayed the desire to leave.

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Instead, the overall sentiment expressed by six of the other participants, was that they could not see themselves anywhere else. As participant 4 highlighted, “*You know, once you're a farmer, you're a farmer, it's like, it's like a culture as well. It's like you live to farm, it's the only thing you know, is the only thing you want to do.*” (Participant 4). Despite, three of the participants exploring alternative options, they all maintained the same sentiment expressed by participant 2, that whilst “*...there's a lot of stuff that you sacrifice to be able to live here [...] there's a lot of joys as well.*” (Participant 2). These participants felt they would be better off on a farm, in the open veld, with no money, as participant 2, refers to it as an “*idyllic lifestyle.*”

Community Support towards Resilience

This sub-theme discusses the farmers’ attempts toward coping with the effects of the drought and the role community support plays in assisting them in this battle, it’s contribution to building the farmers’ resilience to the current, long standing conditions. Based on the participants’ answers, the predominant approach includes various activities to keep their minds and bodies distracted and otherwise occupied from the drought and the resulting effects. Activities that include farmers’ various communities, which demonstrates they are accepted allies in attempting to cope with drought conditions.

The use of physical and social activities was repeatedly highlighted by participants as ways to deal with the effects of the drought. Participants noted that these coping strategies served as distractions rather than ways to directly address these impacts. All eight participants highlighted the value of social interaction. Particularly participant 1 and 2, identified friends visiting them as one of the most beneficial activities, as their interactions gave these individuals new stories to discuss and engage with. The wife also noted, that in times of great financial difficulty, their friends left food for them for the weekend, and at times enough until their next visit. She noted, that without them, “*they wouldn't have survived.*” (Participant 1). The husband suggested that whilst these interactions also occurred between him and his neighbours, interactions with individuals with whom he did not have important relationships, were less beneficial than seeing his long-standing friends. This indicates that social engagement was only helpful in distracting him from drought conditions, when he engaged with those he had significant relationships with.

Participant 5,6, 7 and 8, also identified social engagements as beneficial. As participant 6, highlighted that their weekly Wednesday braai with their friends, allowed them to experience other people’s problems and talk about nonsense. It was good for him and his wife, keeping them motivated for the following Wednesday. Moreover, participant 5 and 6 identified cycling

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as an instrumental mechanism in dealing with the effects of drought. Participant 5 identified this as his “*me time*,” in which he had the most fun, engaging with different people, being a part of a different lifestyle. The brothers relayed that they cycled three to five times a week. Participant 2 also identified the benefit of physical activities. When he felt as though he had his back to the wall,

I worked like a miner and that helped me because I didn't have time to think. And when I did drive in the veld, I did something else or I tried to weld and run and milling work and so on. Which got me away from it all, sort of. (Participant 2).

As indicated in the extract above, in each activity identified by the participants, whether social or physical, the success of the mechanism is measured by the degree to which they engage farmers in topics beyond the effects of the drought. Participant 3 also briefly mentioned social engagements as a potential positive activity for farmers and the farming community to engage in, also noting that he tried to remove the daily confrontation of the physical impacts of the drought in his own, personal environment, “*I try to make the farm, the space where I live - green trees, green grass. So that you don't look at the cold face of it every day.*” (Participant 3). Participant 7, also identifying the value of engaging with his natural environment as he stated, “*And you must stay busy, don't sit and do nothing. And when you stay busy you haven't got time to think about bad things. You talk to your animals and they talk back to you. I think that's the only way.*” (Participant 7).

In addition to the physical and social activities identified, community support was offered in the forms of knowledge sharing and addressing the implications resulting from physical and financial effects, together, providing a sense of unity.

They sell Lucern on a Saturday and you haven't got petrol to fetch. And then you only get a little bit when they get the full amount in, then you divide between the farmers and everyone gets three bins on his bakkie. Now the farmers stand together, and I help him, my neighbour and he help me. This week, month is my turn and next month is his turn to go. So, there's ways to try and solve the problem but we're still short. (Participant 7).

The extract above demonstrates that farmers shared the financial burden of large petrol expenses, as they alternated travelling to town. Participant 7 further noted that the sharing of

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financial burdens was extended to sharing extra feed. If not for when he was sent extra feed from farmers in other areas, "...*many years ago we would be gone. They help us to stay on.*" Participant 4, reinforces this opinion as she commented how farmers started to coordinate amongst each other, developing a culture of assisting one another where possible. This assistance was further extended to the sharing of knowledge. Participant 1, commented how the farmers in their area, worked extremely well together, sharing information, "...*not a lot of areas will, we farmed together, we helped each other.*" The support provided by other farmers and farming neighbours, gave rise to what participant 4 identified as a feeling of, "*I'm not alone in this, I still have other farmers going through the same as I'm going through.*" Creating a sense of community and hope, which seemed to assist farmers in dealing with drought conditions.

The emergence of these three core themes, aimed to document the results from the interviews conducted and present the sample's working experiences in drought conditions, as well as their chosen coping mechanisms. The findings of this study present the opportunity to engage in a discussion around these emergent themes, against the literature initially review and context of this study. This discussion will follow in attempt to facilitate and develop an understanding of the significance of these results.

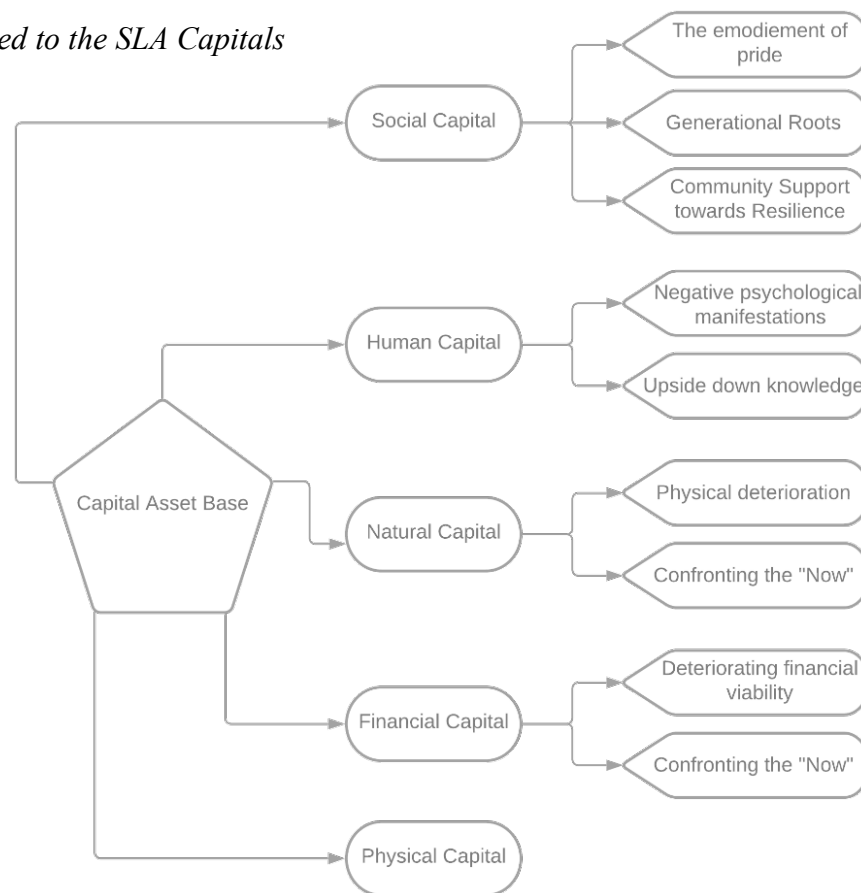
Discussion

This study aimed to explore the as yet undocumented experiences of farmers working in protracted, extenuating drought conditions and how this has affected their psychological well-being. The primary findings suggest that farmers in the Karoo region have lived through experiences of ecological grief, facing some losses of identity, knowledge and physical ecological deterioration. As a result, the psychological well-being of these individuals has been negatively impacted. Moreover, findings indicate that the unrelenting presence of this drought period, compounds the impacts of these negative experiences. This research also aimed to understand how farmers have coped with this long-standing crisis situation. Findings showed that the farmers' various communities are instrumental in assisting them to cope with the effects of the drought. This chapter will provide interpretations of the results and themes of this study, against the existing literature initially reviewed as well as within the context of this research. These interpretations will be presented in three main sections, experiences of ecological grief, lost financial capital and coping strategies. This discussion will make use of the SLA framework in attempt to bring about some organisation of the results of this study (see figure 4 below). There are many different approaches that could be used to facilitate this discussion. However, the SLA framework is the chosen theoretical underpinning used to think about the literature initially reviewed. This framework promotes the assessment of the sample's livelihood; their capabilities, assets and activities used to cope with and recover from the shock of drought, a livelihood that in turn, influences how the sample experiences living and working in these drought conditions. In addition to this discussion, the limitations of this study as well as the implications for and contributions to future research will also be considered.

Physical Ecological Loss

The derived theme *Then and Now*, and sub-themes of *Physical Deterioration* and *Confronting the "Now"*, map onto the work of Cunsolo and Ellis (2018). The sample described experiences of ecological grief associated with physical ecological loss as a result from drought conditions in the Karoo region. This is the first climate-related context outlined by Cunsolo and Ellis (2018) in which ecological grief could arise. Cunsolo and Ellis (2018), proposed that this grief would more likely be felt by those who retained close living, working and cultural relationships to their natural environments, such as farmers, which is replicated amongst this sample. All the interviewed farmers either resided on their farms or close to and engaged with their natural environments on a daily basis.

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Figure 4*Themes Mapped to the SLA Capitals*

Note. A visual representation of the results of this study. The sub-themes mapped to the five capital assets of the Sustainable Livelihoods Approach.

Experiences of ecological grief in relation to ecological loss, is a dominant theme in this study as every participant brought attention to the deterioration of their physical landscapes and/or health of their livestock, discussed in the sub-theme of *Physical Deterioration*. Expressing emotions of sadness, anger, negativity, hopelessness, and difficulty in being faced with these changes' resultant from the drought, was evident in the results presented in the sub-theme *Confronting the "Now"*. Moreover, the sample indicated that they did not feel as though they could distance themselves from these effects. Their experiences are that the drought and its impacts are ever present. These findings align with those of Tschakert et al. (2013), where farmers expressed similar emotions in response to the deterioration of their agricultural sites, as well having little opportunity to distance themselves from the issues of their environment. This helps explain the experiences of the farmers in this study, many of whom have formed place attachment to their farms, which may account for why they experienced ecological grief in relation to physical ecological loss. According to Counted (2016), when individuals

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experience emotions that resonate with their natural environments resulting in meaningful bonds being formed, place attachment develops. According to Ellis and Albrecht (2017), the connection between an individual and this place, may result in experiences of attachment security, a sense of belonging, enhancing identity and self-esteem, and career support. Therefore, individuals may place their sense of health and well-being in the values they attribute to the place in question.

Place Attachment as Social Capital

According to the SLA framework, the farmer's health and well-being is considered as human capital, whilst their place attachment is a form of social capital (Serrat, 2017). This social capital is in the form of a value, an affiliation or association. Both capitals contribute to the farmer's livelihood strategies to achieve and maintain well-being, against the impacts of drought (Morse et al., 2009). Thus, when the value of an individual's place attachment is disrupted, feelings of loss and grief over this attachment occur, which is the loss of their attributed value. This loss leads to negative psychological outcomes and a decrease in human capital (Tschakert et al., 2017). The results discussed in sub-themes *Physical Deterioration* and *Confronting the "Now"*, describe the sample's experiences of negative psychological outcomes. Experiences that occurred in response to the ecological losses within the physical landscapes of these farmers' farms, the places they had formed an attachment to. These findings are similar to those of Ellis and Albrecht's (2017), in which the well-being of farmers working in extensive drought conditions, was significantly impacted as the values they attributed to their farms had been extensively disrupted.

It is interesting to note, that despite the severity of the drought and the resultant negative psychological impacts, the majority of the sample of this study expressed that they would not leave their farms. These results were presented in the theme of *This is the Farmer*. This finding further reinforces the strength with which the sample has formed place attachment bonds to their farms. According to Counted (2016) and Dandy (2019), individuals with these kinds of deep bonds are more likely to remain on their farms and attempt to rebuild and restore that which they value. However, as is evident in the results that one of the farmers of the sample would leave his farm, one's place attachment does not imply that they will always choose to stay and protect their place of value, especially when the perceived value is compromised, the loss of which may be too difficult to endure (Dandy, 2019). The majority of the sample's willingness to stay on their farms in the current extensive drought conditions, raises the concern as to how long these individuals will remain behind to ensure their place attachments aren't

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fully lost or compromised. Place attachment is generally viewed as positive, as the meaning it gives individuals results in positive psychological well-being (Counted, 2016; Dandy, 2019; Tschakert et al., 2017). However, the sample's desire to stay on their farms could counteract the positive impacts of the place attachment bond, should they insist to continue to live and work under such drought conditions. The SLA highlights that an individual's livelihood is made up of more than one capital asset (Serrat, 2017). Whilst place attachment is a form of social capital, it could be that some of these individuals do not have the financial capital or capital mix that affords them the opportunity of choice, to stay or leave (Dandy, 2019). This highlights an area of inquiry for future research in the South African context.

Tschakert et al. (2017), draws attention to the fact that the values and meanings individuals identify and attribute to their places of attachment, are based on their day-to-day activities, encounters and engagements. The significance of which, is that the severity of the drought the sample of farmers in this study experience, inhibits their ability to engage in the day-to-day activities that give them value, as these activities are fundamentally dependent on their ecological systems. Consequently, the results of this study in the sub theme of *Physical Deterioration*, indicate that the farmer's farm, their natural capital as defined by the SLA, is their most important capital asset (Serrat, 2017), as it is the building block upon which their social, financial and human capital is dependent upon. Given the precarious structure of the farmers' capital base, the sample may experience greater intensities of ecological grief experiences, as Bahta et al. (2016), highlight that the climate event of drought is occurring with increased frequency and intensity in the Karoo region. This increase in grief experiences is likely as their physical landscapes (natural capital) deteriorate further, through the unrelenting, cumulative and compounding effects of drought, leading to the slow deterioration of their place attachment.

Disruptions to Identity and Environmental Knowledge

Marshall et al. (2019), propose that the degree to which grief is felt in relation to environmental disruptions is dependent upon the specific meanings or intrinsic values the individual attributes to the place in question. Whilst the findings of this study indicate that the sample values the aesthetic conditions of their land, the results also indicate that they attribute other values to their place attachments. The sample identified values of identity pertaining to generational practises as well as their environmental knowledge, in the sub-themes of *Generational Roots* and *Upside Down Knowledge*, respectively. These results also map onto Cunsolo and Ellis' (2018) work, as these farmers' experiences of ecological grief were

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associated with disruptions to environmental knowledge and loss of identity, the second climate-related context of ecological grief. The implications of these experiences for the sample are further losses to their social and human capital, as participants expressed undergoing negative psychological outcomes in response to these losses. These results were described in the theme *This is the Farmer*.

The sample indicated that the ability to pass down farming as a generational occupation was an important tradition to them, presented in the sub-theme *Generational Roots*. The high regard in which they held this tradition, indicates that this is one of the standards through which these individuals measure the strength of their identities (McGuire et al., 2013). Similarly, to the findings of Brandth (2016) and Bryant and Garnham (2015), this inheritance and succession is a key aspect of the farmer's identity, often associated with the patriarchal characteristic of farming families. Consequently, when farmers' hard work and struggle results in the passing of agricultural practises to their children, especially sons, their pride, self-worth, and esteem are heightened leading to positive psychological well-being. However, the physical ecological losses that the sample of farmers endured in this study, also resulted in the discontinuation of this tradition or disruption in its realisation. Four farmers of the sample expressed their unwillingness to allow their children to farm or to promote farming to younger men, under such conditions. Results presented in the sub-theme *Generational Roots*, therefore, demonstrated that these farmers, experienced ecological grief in relation to a loss of identity. This loss may again be tied to the place attachment the sample formed. Counted (2016) proposed that the individual-place connection may enhance identity and career support. This may be evident in the farmers' hope that the years spent developing their skills, knowledge, the land itself and their home, would come to fruition in passing this occupation to their children. In terms of the SLA, this loss of identity is a further decrease of the sample's capital asset base and an increase in their internal defencelessness against the shock of drought (Morse et al., 2009).

In the sub-theme, *Upside Down Knowledge*, the sample identified their environmental knowledge of their farms and the subsequent ability to navigate their physical landscapes, as an important aspect of their farming identities. The results within this sub-theme indicated that the drought conditions had turned this environmental knowledge upside down. Thus, farmers experienced a loss of local and traditional knowledge, as the sample identified this knowledge as deeply embedded in their familial history, inherent to being a farmer and cultivated through years of experience. The implications of this upside-down knowledge are the negative affects on their psychological well-being, as the sample not only experienced loss in terms of their

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identity, but a loss in the ability to navigate their landscapes and generational practises. These results align with Cunsolo and Ellis (2018) and Ellis and Albrecht's (2017) work, in which farmers struggled with losses of identity tied to their indigenous knowledge. Individuals who lost confidence in their ability to know seasonal rhythms as well as parameters for prediction and risk, affected their ability to deal with the effects of drought conditions. The significance of this is that each added experience of ecological grief increases the farmer's internal defencelessness. As Muyambo et al. (2017) highlighted, within the South African context, farmers' extensive indigenous knowledge assisted them in dealing and reducing the impacts of drought. This research finding indicates that inherited knowledge is an asset.

The SLA framework further assists us in making meaning of these results in its classification of knowledge as human capital (Morse et al., 2009). Cumulatively, not only are these farmers experiencing greater losses of social capital with each additional experience of ecological grief, but also losses of human capital in the form of knowledge and health. The working experiences of farmers in drought conditions in the Karoo region thus far, demonstrates that this climate condition is gradually and relentlessly crippling these individuals' asset bases. The ability of these farmers to sustain their livelihood activities in such drought conditions, is unlikely to last without the elimination of the shock of drought or the replenishment of their capital assets. The importance of which is evident in the one participant who expressed little to no experiences of ecological grief, as he managed to maintain his asset base through financial capital. The strength of his asset base highlights the importance of maintaining one's capital assets to combat the impacts of drought, as this individual's financial capital contributed to protecting his place attachment, identity and fight against drought conditions.

Lost Financial Capital

The results in the sub-theme *Deteriorating Financial Viability* indicated that farmers also experienced a loss of financial capital as a result from working in drought conditions. These losses arise due to a decline in agricultural production, crop failure and livestock loss. The financial consequences result in *Life-Style Ripple Effects*, including changes in spending habits and restrictions placed on farm maintenance. Botai et al. (2017), suggested that the insufficient rainfall in the Karoo region of the Western Cape would affect agricultural production, leading to socio-economic impacts that would reverberate months to come, thus, supporting the results of this study. Moreover, these results were in line with Vins et al.'s (2015), in which farmers also experienced a decline in agricultural production as a result from

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drought periods, leading to subsequent financial restrictions. The significance of these findings lies beyond the immediate and explicit impacts of these financial losses. Rather, this loss in financial capital resulted in implicit impacts, compounding participant's ecological grief experiences previously explored. These impacts led to additional negative psychological outcomes, presented in the sub-theme *Negative Psychological Outcomes*.

Farmers within the sample of this study, without the financial capital required to address the physical deterioration of their landscapes or health of their livestock, experienced feelings of psychological distress, presented in themes *Then and Now* and sub-theme *Negative Psychological Outcomes*. They could not stop or reduce the decline of their landscapes and/or livestock health, in which their historical patriarchal lineage, valued rural lifestyle and occupational opportunities for future generations were placed. The majority of the sample did not have the financial reserves required to address the subsequent financial impacts of the drought. According to Dandy (2019), a farmer's ability to withstand and endure the impacts of drought conditions, will fluctuate as a function of the characteristics of this individual. The individual's financial capital is one such characteristic. The SLA framework proposes that a lack of capital, such as financial assets, causes internal defencelessness and the inability to deal with a shock such as drought (Serrat, 2017). This SLA tenet supports the assertion made by Dandy (2019) above. Consequently, this lack of capital, may lead to negative livelihood experiences and outcomes.

The loss of financial capital resulted in one farmer expressing his fear of failure in his ability to look after the financial welfare of his family. Whilst another was concerned with his ability to meet his financial responsibilities to his workers, and institutions he was in debt to. Participants linked their worry about their financial viability to the unrelenting presence of drought, rendering them unable to address their current situations. These results were presented within the sub-theme *Negative Psychological Outcomes*. These experiences are similar to those expressed by farmers in Jones's (2018) research. In Jones' (2018) study farmers reported becoming fearful for their economic future, as their learned expectations of ecological conditions were no longer valid. Consequently, they were unable to address their current situations. This continued experience of uncertainty, a characteristic that has become synonymous with drought, affected these individual's psychological well-being over time (Staniford et al., 2009). This supports the results of this study, as the sample expressed negative psychological experiences as a result of the uncertainty surrounding the drought. The significance of this characteristic, as outlined by Altig et al. (2020) and Bloom et al. (2020), is that uncertainty is integral to the decision-making process. This characteristic influences the

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expectations one may have as well as the choices and plans one is able to make. Given, that the sample of farmers are unable to eliminate this uncertainty, the effectiveness of their decision-making processes are restricted. According to Tschakert et al. (2017), farmers who found themselves with little to no locus of control over the future of their farms, were likely to experience negative psychological outcomes, due to the unending, daily disruptions to the environment and activities which they drew value and meaning from. Disruptive experiences which they could not control or reduce. This literature supports the results of this study, as the sample working in these drought conditions are negatively impacted by their continued experiences of uncertainty surrounding this drought period.

These disruptions to the sample's day-to-day activities and engagements, also resulted in the loss of generational practises. The loss of financial capital and uncertainty surrounding financial recovery contributed to farmers' unwillingness to allow their children to farm or to promote this occupation to younger men. These results are presented in the sub-theme *Generational Roots*. The only participant who expressed his excitement at passing his love for farming onto his son, had the capital to maintain financial stability. Thus, the loss of identity that the majority of the sample experienced in relation to a loss of patriarchal practices of inheritance and succession previously explored, therefore, also arose due to a loss of financial capital. Both Brandth (2016) and Bryant and Garnham's (2015), research findings suggest that the degree to which a farmer may maintain these aspects of his identity, may inform his psychological well-being. The sample of farmers in this current study who felt as though they could not ensure the continuation of economic security and keep their valued rural lifestyle intact, thus experienced a loss of identity as a result of the discontinuation of generational practises. The experience of which negatively impacted the sample's psychological well-being.

The results presented within the sub-theme *Negative Psychological Outcomes*, indicates that some of the farmers within the sample, highlighted the drought's unrelenting presence as the primary pathway of negative psychological outcomes. Therefore, the impacts resultant from their precarious financial positions, as secondary. This differs from the findings of Vins et al. (2015), who's research identified the economic effects resultant from drought periods, as the primary causal pathway of negative psychological outcomes. A potential reason for this alternative finding, may be attributed to the fact that the sample of farmers are used to working and living in these drought conditions, as expressed by some of the farmers in the theme *Then and Now*. This potential reason is in line with research conducted by Bahta et al. (2016), that droughts occur frequently in the Karoo region of South Africa. Moreover, the farmers within the sample may be used to experiencing financial difficulty as Muyambo et al.

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(2017), classified the areas in which these farmers reside and work, as vulnerable socio-economic contexts. However, the sample has not experienced a drought of this intensity and length before, and therefore, nor the degree of impacts resultant from this drought period. According to the SLA framework, one's asset mix will vary amongst individual's according to that which they are dependent upon (Serrat, 2017). The difference in participants' asset mix, could account for the difference between Vins et al.'s (2015) findings and those of this study. However, a greater exploration as to why some of the sample considered the impact of financial losses, secondary to the impact's resultant from the unrelenting presence of the drought and other psychological experiences is required. This difference may be attributed to the sample's ability to cope with the effects of drought, and the various coping strategies and capitals available in dealing with these impacts.

Coping Strategies

The results presented in the sub-theme *The Embodiment of Pride and Community Support towards Resilience*, demonstrates various coping strategies were utilised by the sample to deal with and ameliorate working under such drought conditions. These strategies included their engagement with different communities, and the use of personal coping mechanisms. According to the SLA framework, the former coping mechanism is also a form of social capital. This is social capital in the form of networks and connections, which are built on relations of trust and mutual understanding. The latter, personal coping mechanisms, are considered as human capital as it pertains to the individual's capacity to adapt (Serrat, 2017). The effects of drought have resulted in various decreases within the farmer's asset mix, increasing their overall internal defencelessness. However, this social capital and human capital in the form of community support and personal strategies respectively, predominantly increases these individuals' abilities to sustain livelihood outcomes, which positively contributes to the psychological well-being of these individuals.

Personal Coping Strategies

The results presented in *Community Support towards Resilience* demonstrated that cognitive and behavioural efforts used by participants to deal with the effects of drought included physical and social activities. The sample utilised these activities to distract themselves from the drought. The farmers measured the success of these coping mechanisms by the degree to which they were engaged in topics beyond the impacts of this climate condition. These results align with research findings by Roy et al. (2017), in which farmers identified self-distraction activities as important to maintaining balance. The sample of this

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study highlighted the effectiveness of these strategies, as well as the positive impacts they had on their overall psychological well-being. However, the results indicated that the positive impacts seemed short lived until the next physical or social engagement. Smith et al. (2016), confirms that the effectiveness of these strategies are temporary, as they reduce stress in the short term. Avoidance strategies are, therefore, adaptive for psychological well-being, albeit less so in the long run (Smith et al., 2016).

This avoidance is further evident in the sample of this current study, as farmers actively chose to avoid the topic of drought when engaging in conversation, whether it be with friends, family, other farmers, or their partners, results which are discussed in the sub-theme *The Embodiment of Pride*. Participants reflected that individuals in the farming occupation do not talk about their emotions and difficult experiences. This differs from the findings of Fennell et al. (2012) and Vins et al.'s (2015), research as seeking emotional support and engaging in emotional disclosure were identified coping strategies from farmers, albeit the least to moderately used. However, findings by Alston and Kent (2008), Bryant and Garnham (2015) and Roy et al. (2017), all propose that farmers refuse to engage in help-seeking behaviours due to the "stoicism" and "self-sacrifice" attributes of the farmer identity. Moreover, Bryant and Garnham (2015), propose that help-seeking behaviours are synonymous with shame, due to this pride and stoicism. This substantiates the results of this study, as the sample highlighted their pride as one of the reasons for which farmers do not seek to engage in emotional disclosure. Additionally, they identified the pressure to unwaveringly maintain the position of the breadwinner and protector. Whilst the physical and social activities were used by the sample to disengage with the effects of drought, these strategies positively contributed to their overall well-being and adaptive capacity of these farmers. However, the farmer's pride unintentionally exacerbates the negative impacts of drought, as this form of avoidance hinders these individuals' adaptive capacity for psychological well-being.

Community Support

Social capital emerged as the most significant mechanism that contributed to farmer's psychological well-being and adaptive capacity, presented in the sub-theme *Community Support towards Resilience*. The sample highlighted that a culture of assisting one another had formed in their surrounding communities. Farmers shared knowledge to deal with and address the implications of drought, as well as financial assistance in the form of feed and transport where possible. Consequently, the farming community emerged as significant social capital to assist farmers in dealing with drought conditions. This is in line with Vins et al.'s (2015),

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research, in which social capital was identified as a protective factor beyond individuals' personal coping strategies, to build resilience against the drought. As assistance and support was provided in the forms of food, knowledge and access to services. Moreover, Bahta et al. (2016) and Muyambo et al. (2017), identified farmers' organisations, churches, stokvels, family networks and neighbourhood groups as social capital reducing these individuals' vulnerability to drought conditions in the South African context. Bahta et al. (2016) also highlighted how knowledge sharing contributed to building resilience and reducing vulnerability as farmers shared drought mitigation strategies. One possible reason for the development of this social capital, may be attributed to the values and identity shared amongst these individuals, as Tschakert et al. (2017) propose these shared values and identity may promote a sense of community. Consequently, this social capital may be a key factor in promoting this sample's positive psychological well-being, as this durable network enhances these farmers' adaptive capacity in the face of the drought. It is important to note, however, that this social capital may only significantly reduce farmers' vulnerability if their network is strong (Chen et al., 2014). Therefore, whilst this social capital emerged as a key factor for adaptive capacity, the farmers of this study were still significantly impacted by drought conditions, unable to fully deal with and address certain impacts at all. This may be attributed to the impacts of the drought on the various capitals within the sample's asset base, as previously discussed, which prevents these individuals from providing support to one another, that is required to fully deal with the effects of the drought.

Consequently, the sample's internal defencelessness caused by the drought's impact on their capital assets, may be one reason as to why these farmers did not use task-oriented coping strategies. As previously explored, the uncertainty synonymous with drought, rendered farmers unable to plan. This is a strategy repeatedly identified and extensively used by farmers in Fennel et al. (2012), Roy et al. (2017) and Vins et al.'s (2015) research. Problem solving and planning enabled these individuals to reconceptualise the impacts of the drought and find appropriate solutions. The sample's inability to plan due to the uncertainty surrounding current drought conditions, is indicative of a continuous cycle in which this drought characteristic decreases these farmers' adaptive capabilities. Therefore, this characteristic increases their internal defencelessness, as the sample's existing capital assets are unable to mitigate these effects. This defencelessness exacerbates these farmers' vulnerability to the shock of drought (Serrat, 2017). Moreover, Smith et al. (2016), propose that task-orientated coping strategies positively contribute to psychological well-being as these strategies are associated with self-esteem and self-efficacy. The struggle to remain positive and emerge from difficult emotional

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periods, identified by three participants in the theme *The Biggest Challenge*, may not only be attributed to the direct impacts of the drought. They may also be as a result of their inability to deal with these impacts, as a lack of adaptive capacity is identified with depressive and anxiety related states (Smith et al., 2016).

Having attempted to engage in a meaningful discussion of the core themes that emerged in exploring this sample of farmers working experiences in drought conditions, there are several implications of these results. Which are both practical and academic for future work within the organisational psychology and climate change domains. Albeit, the next step, is to explore the limitations of this study, as taking into account these weaknesses are important to discuss for future work.

Limitations

The limitations of this study pertain to the methodology of this research, some of which have already been addressed in the methodology chapter as they were relevant to the data collection procedure and practise of reflexivity. These weaknesses are important to acknowledge in consideration of future research conducted in this area of inquiry, noting, that measures were taken to mitigate these limitations where possible.

The first limitation to acknowledge lies within the pilot process of the interview schedule. Young et al. (2018), states that the pilot of an interview schedule is important to establish the length, language suitability and potential sources of bias. Moreover, the pilot interview can be transcribed to assess whether the data produced is relevant to answering the research questions (Young et al., 2018). The pilots in this study yielded two surface level written responses and one in person interview shortly before the official data collection period. It was difficult to assess whether the questions being asked yielded data relevant to the study. The end results from the data collection period did in fact produce in-depth, quality responses, relevant to the research questions. Additional questions could have been added to engage the sample in aspects of their working experiences in drought conditions that individuals highlighted in subsequent interviews. These were questions that were not explored in the initial interview schedule, nor identified due to the unsatisfactory results of the pilot process. These additional questions would have aided in furthering the exploratory nature of this study.

Due to the COVID-19 pandemic travel restrictions, time restraints were placed on the data collection process. Consequently, this led to the second limitation of this study, the sample size. According to Vasileiou et al. (2018) sample adequacy in qualitative research pertains to sample composition and size. There is no straight forward answer as to what size a sample

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should be, as this is dependent upon a number of factors and varied opinions (Vasileiou et al., 2018). However, the most widely used principle for determining sample size is saturation. Saturation is achieved when no new data is elicited by sampling more units. This gold standard was difficult to reach, due to the COVID-19 pandemic travel restrictions and subsequent, time restraints place on the data collection process of this study. However, this does not negate it from being a principle all qualitative standards should try to achieve. The results of this research saw new and common threads of data emerge from every participant. Therefore, saturation was not achieved. A larger sample could have yielded greater insights into the working experiences of farmers in the Karoo region. The quality of the composition to some degree mitigated the size of the sample. Purposive sampling was used to select information rich participants, with extensive experiences of the phenomenon under investigation (Vasileiou et al., 2018). The findings of this study were therefore, significant and relevant to answering the research questions, resulting in contributions to the OHP and climate change domains.

Contributions and Implications for Future Research

The contributions of this study emerge in both the occupational health psychology and climate change domains, in a number of ways. In the latter domain, the results of this study support the work of Cunsolo and Ellis (2018), on ecological grief. The results contribute to this body of knowledge as the sample's experiences of ecological grief emerged in a new context, the South African context. This is significant for research conducted within the South African context, as the findings of this study contribute to a greater understanding and awareness of the psychological impacts of drought. Moreover, this may contribute to a step away from the knowledge biases toward the economic and physical sciences in the climate change discipline, and a step toward supporting the psychological effects (O'Neill et al., 2010).

Additionally, the sample experienced this grief in relation to the first two of three climate related contexts identified by Cunsolo and Ellis (2018). The sample's experiences of physical ecological loss, lead to losses of identity and environmental knowledge. Based on these findings, the implications for future research, may be to investigate how likely experiences within the first context will lead to experiences within the second. This could be significant in developing mitigation strategies against the negative effects of climate conditions on psychological well-being.

The contributions of this research to the OHP domain, lies in eliciting and resultant documentation of the negative effects of these experiences to these individuals' psychological and work well-being. The results demonstrated that the sample is living in a continuous cycle.

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A cycle in which the impact of the shock of drought decreases these individuals' base capitals, which are already too low to protect them against these impacts. Subsequently, the shock increases these individuals' internal defencelessness. This lack of resources continuously and perpetually prevents the sample from forming adaptive capabilities to cope with the impacts of the drought effectively. These findings contribute to the OHP domain, by highlighting that future research needs to ascertain which capitals these individuals require to build their adaptive capacity in the face of an unrelenting climate condition. The sustainable livelihood outcomes of income and well-being is currently, almost unreachable for the farmers of this study (Serrat, 2017). Moreover, the results highlight how the sample cannot remove themselves from the drought's impacts, as their living and working conditions are inseparable. These results further contribute to the OHP domain, as this study was conducted in a context beyond the traditional corporate spaces found within OP research. The significance of these findings for these individuals' well-being, highlights the importance of moving beyond traditional corporate spaces.

Finally, the results of this study highlight the significance of certain attributes of the farmer's identity. Attributes are tied to their responsibility and sense of pride and stoicism, as they fight to maintain the protector role within his family. These characteristics presented as barriers to the sample's ability to cope with the impacts of the drought. OP practitioners and researchers could undertake to explore and understand why farmers feel as though help-seeking behaviours are indicative of weakness. This is significant to the OHP domain, as this sense of pride and stoicism hinders and prevents the development of adaptive capacity that could lead to these individuals' work well-being (Smith et al., 2016). Furthermore, OP practitioners could explore the role of government in assisting farmers to deal with drought conditions. Whilst the role of this institution was not explored in this research study as it did not pertain to the research questions, part of the sample expressed opinions about their role in drought recovery. This could further this research in understanding the work well-being of this sample, under the long-standing crisis conditions of drought.

Conclusion

This study aimed to explore the yet undocumented experiences of Karoo farmers' working in extenuating drought conditions. This study sought to understand how these experiences have affected these farmers' psychological well-being and the coping mechanisms they utilise to deal with the impact's resultant from the drought. The main findings of this study indicate that the sample has undergone extensive physical ecological losses, as well as losses

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to aspects of their farming identity. Losses which have arisen from disruptions to the sample's place attachment, generational practises and inherited environmental knowledge. Thus, these results indicate experiences of ecological grief, and contribute to the body of work started by Cunsolo and Ellis (2018). These experiences have resulted in negative psychological impacts that have severely affected the sample's psychological and work well-being. The reality of these individual's work environment is that they cannot remove themselves from these unrelenting conditions. They experienced generalised habitual feelings that negatively affected their well-being on a daily basis, that they attributed to the continuous presence of the drought. The findings of this study, mapped onto the Sustainable Livelihoods Approach, demonstrates the importance of this work to the occupational health psychology and climate change domains. The reality of these farmers' working conditions is that they do not have the adaptive capacity, effective coping strategies and required capital asset base to ameliorate the effects of drought.

The sample of farmers in this study, demonstrated incredible resilience despite their continuous experiences of living and working in these extenuating conditions. The farmers put forth positive attitudes in hope that they would continue to live what they deemed an idyllic lifestyle. The resilience of this occupation group is evident in their determination to survive these drought conditions, conveyed in their overall hopeful dispositions and approach to protecting that which they value. These farmers were willing to engage with me and appeared to enjoy the opportunity to discuss their experiences. Albeit, holding reservations toward emotional disclosure. The emergence of this empirical data under the circumstances of the COVID-19 pandemic, again, speaks to the resilience of these individuals. Despite the added pressures of the restrictions of the pandemic, they still maintained their determination and desire to look after their lands, families, traditions and farming lifestyle. As an aspiring organisational psychologist, the key personal takeaway of this study, is that the role of organisational psychology is pertinent to contexts and individuals, far beyond the corporate space. That the work well-being of individuals such as farmers, are equally significant, and greater attention could be paid toward research in under-researched contexts in our field.

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Appendix A

Research Questionnaire



Karoo Farmers Living and Working Experiences in Protracted Drought Conditions: A Case Study

Farmers Interview Guide

1. How long have you/your family farmed?
2. Is this your farm? And how long have you owned this land?
3. Did you grow up on this farm or any farm?
4. Do you live on a farm?
5. What are you farming and how did you learn to farm?
6. How old were you when you started farming?
7. How long have you lived in this area?
8. Do you visit your crops/livestock on a daily basis?
9. How would you describe your knowledge of the land? Or the region or the long-term environmental conditions in which your farm is located?
10. How did you develop that knowledge?
11. How long have you experienced drought conditions, and can you describe how these have affected you personally or your business?
12. What do you think the most significant changes have been to your experience of farming or the farming industry in this area since the beginning of the drought?
13. Has the drought affected your attitude towards farming?
14. How do you measure the impact of the drought on your family or on your livelihood?
15. What lifestyle changes have you experienced as a result of the drought?
16. What support structures do you use to cope with some of the negative consequences of drought?
17. What coping strategies have you employed to manage the challenges associated with this drought?

Appendix B

Afrikaans Research Questionnaire



Karoo Farmers Living and Working Experiences in Protracted Drought Conditions: A Case Study

Farmers Interview Guide

1. Vir hoeveel geslagte boer jou familie al? Het julle nog altyd hier geboer?

How long have you / family farmed? Is this your farm?

2. Het jy op n plaas grootgeword?

Were you raised on a farm?

3. Woon jy by tye in die dorp?

Do you live on the farm permanently or are you sometimes based in town?

4. Waarmee boer jy? Waar het jy leer boer?

What do you farm with? Where did you learn to farm?

5. In watter jaar het jy begin boer? Hoe oud was jy toe?

In what year did you begin farming? What age were you?

6. Hoe gereeld sien jy jou vee / lande?

How often do you see/visit/inspect your livestock or crops?

7. Hoe goed ken jy jou plaas? Is jy in die droogte besig om nuwe dinge van jou plaas te leer? Waaruit leer jy die meeste?

FARMERS WORKING EXPERIENCES IN DROUGHT CONDITIONS

How would you describe your knowledge of the land? Or the region or the long-term environmental conditions in which your farm is located?

8. Wanneer het die droogte by julle begin en hoe beïnvloed dit jou en jou besigheid?

When did the drought start and how does it affect you and your business?

9. Wat het sedert die begin van die droogte verander? Noem enkele van die belangrikste veranderinge.

What has changed for you during the drought? Name some of the major changes.

10. Hoe beïnvloed die droogte jou houding teenoor die boerdery?

Does the drought change your attitude toward farming? Give examples.

11. Is die invloed van die droogte op jou en jou gesin meetbaar? Hoe behoort dit gemeet te word?

How do you measure the impact of the drought on your family or on your livelihood?

12. Moes jy en jou gesin julle leefstyl by die droogte aanpas? Noem enkele voorbeelde van maniere waarop julle moes aanpas.

What lifestyle changes have you experienced as a result of the drought?

13. Wie of wat help you die meeste om die droogte te hanteer (om daarmee te cope)?

Who or what helps you most to cope with the drought?

14. Hoe benader jy self die droogte om daar deur te kom? Noem enige “*coping strategies*” wat op die oomblik vir jou werk en selfs die wat nie meer werk nie.

Describe your own coping strategies, include those that no longer work.

FARMERS WORKING EXPERIENCES IN DROUGHT CONDITIONS

Appendix C

Research Cover Letter



Department of Organisational Psychology

School of Management Studies

Upper Campus

Office 4.32 Leslie Commerce

University of Cape Town, South Africa

Tell: 021 650 5218

Dear Sir/Madam,

I am a student completing the Organisational Psychology Masters programme in the Commerce Faculty at the University of Cape Town (UCT), South Africa. It is a requirement of this course curriculum to complete a dissertation. The research topic and data collection method has been approved by the UCT's Commerce Faculty Ethics in Research Committee.

The purpose of this research is to explore farmers experiences working in drought conditions, and how this has affected their well-being. There is an explicit aim of understanding the ways in which farmers have coped while dealing with the crisis situation. The data collected will be used to gain valuable insight into the lived experiences of farmers experiencing in a long-standing crisis situation.

Your participation in the research would be greatly appreciated. Any participation in the data collection process is voluntary and all information provided as part of the research will be treated with the utmost confidentiality. Your anonymity is ensured, as no individual names will be recorded or published, and you are not required to provide any identifiable information. Should you choose to participate, the survey will take approximately 60minutes to complete. During the interview, you are free to withdraw at any time, with no negative consequences. Please understand you are not under any obligation to answer every question in the interview. However, I would be grateful if you would assist me by participating and answering the questions in the interview.

FARMERS WORKING EXPERIENCES IN DROUGHT CONDITIONS

The findings obtained from the research process will be compiled in a dissertation and presented to the Organisational Psychology department of UCT, for academic purposes. Your private details will not be published in any part of the paper. Should you have any queries regarding this research, please feel free to contact me on 079 634 6889 or email: rynmeg002@myuct.ac.za.

Thank you for your time, consideration and participation.

Sincerely,



Megann Reynolds

Masters Student
Department of Organisational Psychology
University of Cape Town
rynmeg002@myuct.ac.za

079 634 6889

Suki Goodman

Research Supervisor
Department of Organisational Psychology
University of Cape Town
suki.goodman@uct.ac.za

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FARMERS WORKING EXPERIENCES IN DROUGHT CONDITIONS

Appendix D

Afrikaans Research Cover Letter



Department of Organisational Psychology

School of Management Studies

Upper Campus

Office 4.32 Leslie Commerce

University of Cape Town, South Africa

Tel: 021 650 5218

Geagte voornemende deelnemer

My naam is Megann Reynolds. Ek is besig met 'n M.Com in Bedryfsielkunde (*Organisational Psychology*) aan die Universiteit van Kaapstad. Hierdie navorsing is vir my tesis, 'n projek wat reeds deur die Etiese Komitee van die Fakulteit goedgekeur is. My studieleier is ons Departementshoof, Professor Suki Goodman (suki.goodman@uct.ac.za) met die projek berus deels op die insigte van Beatrice Conradie (beatrice.conradie@uct.ac.za) wat al amper 'n dekade lank in u streek werk. Kontak die persone gerus indien u verdere inligting oor my projek verlang.

Ek probeer uit werk hoe die boeregemeenskap die huidige droogte ervaar, hoe dit u welstand raak en hoe u die krisis hanteer. Dit kan ons almal help om in die toekoms die effek van langdurige krisisse beter te verstaan.

U deelname is vrywillig en ek waarborg dat u anoniem sal bly. Ek wil trouens geen identifiseerbare inligting insamel nie. Ek reken dit sal ongeveer 'n uur neem om al die vrae te beantwoord. As u sou deelneem, kan u deelname in enige stadium gestaak word en / of enige vraag kan uitgelaat word. Volledige altwoorde sal my egter baie help.

My bevindinge sal in 'n tesis vervat word wat intern gepubliseer gaan word. Wees egter verseker daarvan dat u kontak besonderhede nersens in die dokument sal verskyn nie. Indien u dit verkies, stuur ek graag 'n elektroniese afskrif van die verhandeling aan u.

U deelname word hoog op prys gestel!

FARMERS WORKING EXPERIENCES IN DROUGHT CONDITIONS

Groete

Megann Reynolds



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FARMERS WORKING EXPERIENCES IN DROUGHT CONDITIONS

Appendix E
Consent Form

Department of Organisational Psychology

School of Management Studies

Upper Campus

Office 4.32 Leslie Commerce

University of Cape Town, South Africa

Tel: 021 650 5218

Dear Sir/Madam,

I am a student completing the Organisational Psychology Masters programme in the Commerce Faculty at the University of Cape Town (UCT), South Africa. It is a requirement of this course curriculum to complete a dissertation. I am inviting you to be a part of my research to explore farmers experiences working in drought conditions, and how this has affected their well-being. The research topic and data collection method has been approved by the UCT's Commerce Faculty Ethics in Research Committee.

To participate, I would like to ask you a series of questions about your experiences. Please note, should you agree to participate in the data collection process, this is voluntary, and all information provided as part of the research will be treated with the utmost confidentiality. Your anonymity is ensured, as no individual names will be recorded or published, and you are not required to provide any identifiable information. Should you choose to participate, the survey will take approximately 60minutes to complete. During the interview, you are free to withdraw at any time, with no negative consequences. Please understand you are not under any obligation to answer every question in the interview and can end the interview at any time.

Should you have any concerns or questions about participating in this study please feel free to contact me, the researcher, Megann Reynolds at rynmeg002@myuct.ac.za or the research supervisors Associate Professor Suki Goodman (suki.goodman@uct.ac.za) or Beatrice Conradie (beatrice.conradie@uct.ac.za).

FARMERS WORKING EXPERIENCES IN DROUGHT CONDITIONS

Do you agree to have the interview recorded?

Yes

No

Participant Signature:

Date:
