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The Utility of Mindfulness Training to Reduce Stress in South African Organisations

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The Utility of Mindfulness Training to Reduce Stress in South African Organisations



Masters Dissertation in Organisational Psychology

June 2023

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A research report submitted in partial fulfilment of the requirements for the degree of Masters by coursework and research report in Organisational Psychology in the faculty of Humanities, University of the Witwatersrand, Johannesburg.

Declaration

I, Alexia Szabo, declare that this research report is my own, unaided work. It is submitted for a Master of Arts Degree in Organisational Psychology at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination at this or any other university.

Signed:



Date: 28 June 2023

Acknowledgements

Mindfulness is a way of befriending ourselves and our experience.

- Jon Kabat-Zinn

Firstly, I would like to give a special thanks to my supervisor Prof. Karen Milner for her ongoing support and guidance throughout this research paper. I would also like to extend my gratitude to the University of the Witwatersrand for allowing me the opportunity to complete my Masters. It has been a privilege.

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To my classmates – we did it! Thank you to all of you for your friendship over the past few years. I wish you all the best in your careers.

Finally, to everyone who took part in my research, this quite literally would not have been possible without you. I thank you.

Abstract

Mindfulness training has become popular within organisations as a strategy to reduce stress amongst employees. The overarching aim of this study was to investigate whether mindfulness training should be considered in the South African workplace to assist in reducing perceived stress. The research was underpinned by the *mindful coping model* developed by Garland et al. (2009), developed from the *Transactional Model of Stress and Coping* (Lazarus & Folkman, 1984).

A sample of 103 working South Africans responded to a self-reported questionnaire which measured their mindfulness levels (MAAS), and perceived levels of stress (PSS-10). In addition, the questionnaire assessed whether they have participated in mindfulness training and actively engage in a mindfulness practice. Correlational analyses showed a significant, inverse relationship between mindfulness levels and perceived stress. However, the research found no statistically significant difference between the mindfulness or perceived stress levels of employees who have participated in mindfulness training or who currently have a mindfulness practice. The theoretical and practical implications of these findings are discussed.

Keywords: *stress, mindfulness, mindfulness training, South African organisations, South Africa, employees.*

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Introduction

The world of work is currently experiencing a heightened level of volatility and unpredictability, seen with the Covid-19 pandemic (Agba et al., 2020), as well as increasing technological advancement which is causing rapid changes across society (Cascio & Montealegre, 2016). Elevated job demands, job insecurity, the use of technology and a lack-of work-life balance due to remote working have all led to high levels of stress amongst employees (Galanti et al., 2021; Brougham & Haar, 2020). As a result of the negative impact that stress can have, and the rising number of antecedents leading to stress; extensive research has focused on ways in which stress can be combatted in the workplace. In the organisational space, there are a range of stress reduction strategies that have been considered to assist employees. Some of the strategies include job re-design (Demerouti et al., 2019), better job performance management (Foy et al., 2019) and increasing awareness around mental health and the need for social support (Giauque et al., 2019). However, although these stress mitigating strategies are important to note, an increasing number of organisations are considering a more individualistic approach through the improvement of employee mindfulness (Reb & Choi, 2014).

Mindfulness research has increased significantly in recent years. In fact, according to Baminiwatta and Solangaarachchi (2021), as of 2021 there were 16,581 publications pertaining to mindfulness with 67% of that the literature having been published after 2015 (Baminiwatta & Solangaarachchi, 2021). To further illustrate its growth as a topic in the research community, the researcher searched for the term ‘mindfulness’ on the Google Scholar search engine and obtained over 1 million search results. A major contributing factor to the increasing popularity was the introduction of mindfulness into a Western context by pioneer in the field, Jon Kabat-Zinn. Kabat-Zinn’s understanding of mindfulness and its utility gained momentum with his development of a mindfulness training programme known as Mindfulness-Based Stress Reduction (MBSR). The MBSR, although developed in 1979 (Kabat-Zinn, 2003), has gained popularity in the occupational setting as an effective intervention to improve mindfulness and reduce employee stress levels (Walach et al., 2007; Fries, 2009; Janssen, 2018). Improving the mindfulness of those in leadership positions has also gained traction, with research suggesting that ‘mindful leadership’ is the way forward in navigating the volatile nature of the current working world (Levey & Levey, 2019). Given the increase in interest, the question arises as to whether the heightened popularity of mindfulness in the occupational space is justified?

As of 2020, South Africa is ranked as the second most stressed country in the world (Chothia, 2020), with more than 40% of work-related illness being due to stress levels (Carrim et al., 2020). Given the increased investment in mindfulness training in organisations within developed countries and the rising interest in mindfulness as a stress reduction strategy, there is the need to consider whether mindfulness may have utility in South African organisations. Therefore, the overarching aim of the present study is to assess whether mindfulness training reduces employee stress across different South African workplaces. To respond to the overarching aim, the research first needs to assess whether mindfulness levels may impact an employee's level of stress. Following this, it will then need to determine whether mindfulness can in fact be taught. Finally, given the increasing research pertaining to 'mindful leadership' (Wells, 2015; Levey & Levey, 2019; Hougaard et al., 2016) this study will also be providing a specific consideration of the mindfulness and stress levels of the leaders in the sample.

By situating the research within the *Transactional Model of Stress and Coping* (Lazarus & Folkman, 1984), the present research seeks to contribute to the emerging literature on mindfulness, mindful leadership and workplace stress reduction in the South African context. Given the current statistics on the prevalence of stress within our workforce, the practical implications of the research to follow may assist South African organisations in making a more informed decision about investing in mindfulness training as a tool to assist their employees.

Literature Review

The literature review to follow will first outline and conceptualise stress in the present study, before situating the research in *the transactional model of stress and coping* Lazarus and Folkman (1984) and the *mindful coping model* (Garland et al., 2009). After establishing the theoretical foundation, research pertaining to mindfulness and stress will be discussed. First, a consideration will be presented for how mindfulness can be understood, followed by the stress-related outcomes that have been observed when mindful practices have been adopted. Finally, research pertaining to the utility of mindfulness training in contemporary society and within organisations will be considered before outlining the rationale of the study and its hypotheses.

Stress

Stress is a concept which has been defined in various ways within the literature. In the context of the present study, the definition to be used to understand stress is '*a perceived dynamic state involving uncertainty about something important'* (Schuler, 1982, p. 6). This definition was chosen as the dynamic state in which stress can be understood includes both the opportunities is one's life, as well as potential constraints and demands (Schuler, 1982). Thus, broadening the understanding of what causes stress. Furthermore, the transactional nature of stress as understood by the definition was developed in reference to how stress was conceptualised by Lazarus (1978). Lazarus and Folkman (1984) later developed the model of stress that will be used as the theoretical foundation for the present study.

The research on stress is vast and encompasses how stress develops, how our responses adapt to it overtime and what the impact is on individuals. The consequences of stress on the physical body can be dire, specifically if the level of stress that can cause physical damage to the body is experienced over an extended period (Bowers & Yehuda, 2016). Some of the consequences that may present because of prolonged levels of stress include: an increased likelihood of contracting certain illnesses (Yaribeygi et al., 2017), high levels of cortisol which can affect memory (Vogel & Schwabe, 2016) as well as increased inflammation, affecting the immune system (Kemeny, 2003). Apart from the impact on the physical body, there are also severe psychological consequences that can result from heightened levels of stress.

The psychological consequences of stress vary. According to the American Institute of Stress (AIS), stress may manifest itself in mood swings and irritability, or it may cause an inability for one to make decisions, relax and feel joy (Heckman, 2021). The AIS further note that the physical and psychological consequences of not addressing one's stress may then result in the deterioration of one's interpersonal and collegial relationships, in turn heightening the

stress that an individual experiences (Heckman, 2021). Given the ramifications that stress can have on a personal level, the section to follow will be considering how these consequences may impact an individual in their work environment and the effect of this at a broader organisational level.

The Impact of Stress in the Workplace

The section above discussed the consequences of stress on an individual's health and well-being. The purpose of this section is to contextualise that understanding to the present study by considering the impact of stress on employees, as well as the organisational consequences. Stress within a workplace setting does not necessarily need to be caused by the work environment itself. However, in instances where the work environment causes an employee stress antecedents may include job role, organisational structure, organisational culture and climate (Bashir & Ramay, 2010), the physical work environment, job demands and interpersonal relationships at work (Baker, 1985). The issues that are described above are examples of how stress can be both related to the personal life of an individual, as well as their professional life. However, the focus within the present study is how organisations are impacted by employees who are experiencing high levels of stress and what can be done to mitigate this impact.

Empirical research has shown that stress in the workplace can result in a lower level of job performance (Imtiaz & Ahmad, 2009), decreased productivity as well as increased absenteeism and presenteeism (Colligan & Higgins, 2005). According to Gosselin et al. (2013), presenteeism can be understood as the act of an employee coming to work despite being in a state that requires rest, such as physical illness, resulting in decreased productivity. This definition was further validated by research conducted by Fernando et al. (2017). Organisations have in recent times begun to consider these consequences and how best to address the stress levels of employees to mitigate the risk of these issues manifesting (Murphy et al., 2007). Many of the interventions that have been considered pertain to job role re-design (Demerouti et al., 2019), an attempt to address work-life balance (Kellher et al., 2019), as well as interventions that simply create awareness about the negative impact of stress (Giauque et al., 2019). One such intervention that is currently gaining popularity in the context of the workplace is mindfulness training. By incorporating the role of mindfulness, research has been done which considers how the coping strategies of employees can be enhanced. This consideration has led to the development of a model which outlines the utility of mindfulness training in developing healthy coping strategies, known as *mindful coping.* With the *transactional model of stress and*

coping developed by Lazarus and Folkman (1984) forming as the foundation of the *mindful coping model* (Garland et al., 2009), both will be discussed in detail in the section to follow.

The Transactional Model of Stress and Coping

To provide a theoretical framework for stress in the present study, the framework to be utilised, as mentioned above, is the *Transactional Model of Stress and Coping* as developed by Lazarus and Folkman (1984). This model has been widely utilised in stress-related research, across different samples and within varying contexts (Park & Sung, 2016; Sharifabad et al., 2020; Kim et al., 2019; McGowan et al., 2006). According to Lazarus and Folkman (1984), stress can be considered a transactional process which is driven by factors that include the individual's perception of the situation rather than just the situation itself. This is explained through outlining how threats are perceived differently based on the interaction between the broader environment and the individual make-up of the person (Lazarus & Folkman, 1987).

The personal judgement of the threat that is determined undergoes two different stages, better known as *appraisals* (Dewe, 1997). The first, or primary, appraisal relates to how the situation is perceived by the individual based on their stake in the engagement and whether they believe there is a potential threat which may harm or challenge them (Folkman, 1982). More specifically, Lazarus and Folkman (1984) categorise events according to whether they are *positive-benign* meaning that they either have no effect or may improve a person's well-being or *threatening/stressful* meaning the individual is presented with a challenge. The secondary or cognitive appraisal is concerned with how the individual processes and plans on coping with the given encounter (Folkman, 1982). This stage of the transactional process is concerned specifically with the resources the individual perceives themselves to have available to them, and how useful these resources are in the situation (Lazarus & Folkman, 1984).

The cognitive appraisal process is vital in the individual's understanding of the threat which may assist in mediating their reaction (Lazarus & Folkman, 1984). And thus, the primary and secondary appraisals are dependent on one another making stress a dynamic process that involves constant assessment and, based on the outcome of the event, may re-enforce or diminish the individual's perceived stress (Dewe, 1997). One of the coping mechanisms that has been noted in the literature, and an additional reason as to why this model has been considered as a framework, is mindfulness (Kim, 2017; Garland et al., 2009). According to Garland et al. (2009), mindfulness training and the practice of meditation can be utilised as a coping tool when presented with a stressful situation. More specifically, they consider how mindfulness assists in promoting positive reappraisal as part of the coping mechanism

developed by the individual (Garland et al., 2009). Thus, they developed the *mindful coping model* which will be elaborated on below.

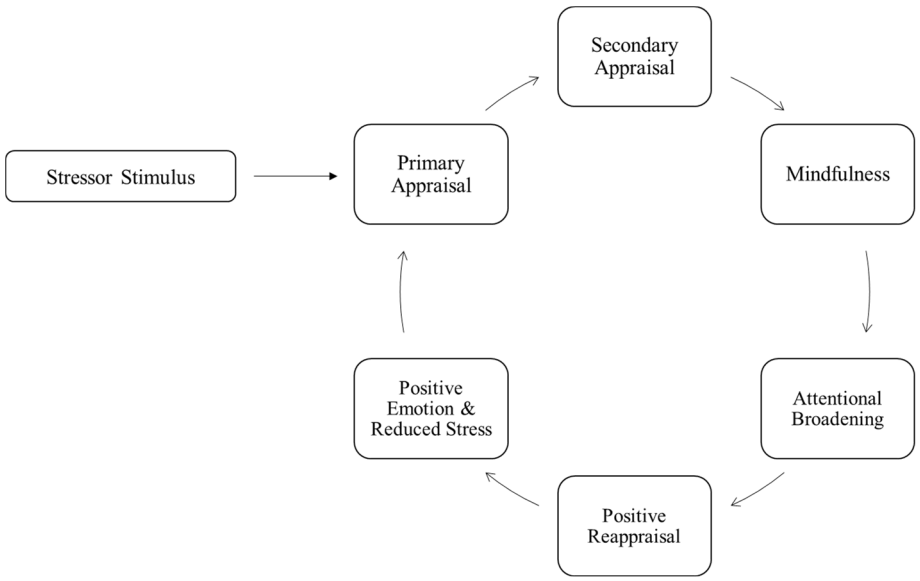
The Mindful Coping Model

The *mindful coping model* developed by Garland et al. (2009) is based on research underpinned by a clinical investigation that was conducted to analyse the impact of mindfulness in positive reappraisal. To re-iterate, the appraisal process outlined by Lazarus and Folkman (1984) is a central element to how the stress is perceived by the individual based on the situation itself, as well as the coping resources that the individual has available to them. According to Garland et al. (2009) when an individual experiences an event that leads to a form of positive growth, even if the event did not result in a positive resolution, there is still the development of positive reappraisal. Positive reappraisal forms part of what is known as 'meaning-based' coping (Garland et al., 2009; Kim, 2017), and once developed can often be the first step towards re-engaging with the event (Garland et al., 2009).

The concept of mindfulness, to be discussed in more detail below, has been studied as a buffer between the individual and the stressor in allowing a sense of detachment from the situation to reflect and create a shift in perspective (Herbert & Forman, 2011). Thus, Garland et al. (2009) conducted their clinical investigation into understanding the role of mindfulness in positive reappraisal. Their research was considered on the premise that mindfulness promotes a sense of detachment from emotion (Garland et al., 2009). And so, their research involved the use of mindfulness training in a stress management programme to consider how positive reappraisal levels were impacted (Garland et al., 2009).

The findings of the research showed that after the completion of a mindfulness intervention, those who reported higher mindfulness levels, also reported a higher level of positive reappraisal (Garland et al., 2009). Based on these findings, although the authors note that they are not entirely conclusive, the *mindful coping model* was proposed. The model, which is visually represented in Figure 1 below, exhibits that an individual may incur a lower level of stress if the individual initiates an internal response to a stressor that is characterised by a heightened level of consciousness and attention (Garland et al., 2009). In other words, there is a level of reflection before there is action which shifts how the individual perceives the event and thus may lead to a reduced level of stress.

Figure 1 The Mindful Coping Model (Garland et al., 2009)



The *mindful coping model* (Garland et al., 2009) has been defined and outlined to provide a foundational understanding of how mindfulness can play a role in the coping mechanism when one experiences stress. It also lays the foundation for a discussion around whether mindfulness is something that can be taught, which will be explored later. Using this model as a theoretical framework, the following section will discuss the research pertaining to how mindfulness has been studied in relation to stress and the related outcomes.

Mindfulness and Stress

Mindfulness and stress have been researched extensively over the years, with over half a million search results obtained from Google Scholar when the words 'mindfulness and stress' are placed in the search bar. Select research also indicates that the relationship between these two concepts has been studied across different populations to consider how mindfulness, mindfulness training and stress can be considered within a range of samples (Chin et al., 2019; de Vibe et al., 2013; Messer et al., 2015; Vesa et al., 2016). The model that has been discussed above is further evidence to the increasing interest in the relationship between stress, mindfulness levels and the utility of mindfulness training. Given that it is situated in a well-established stress framework, with some evidence of how improving one's mindfulness impacts stress levels suggests that there is a plausible argument for further research. The section to follow will thus be focusing on the outcomes that have been previously obtained regarding mindfulness and how it has been studied in relation to stress. However, before reviewing the stress-related outcomes, an overview of what mindfulness is and how it originated will be discussed.

Mindfulness

A complete and comprehensive analysis of the ancient conceptualization of mindfulness is beyond the scope of this study. Thus, this section will provide a simplified overview of its origins and contemporary critiques, as well as how the concept has been defined and the development of measures in the modern setting.

Origins. Mindfulness, in Western society, is still in its infancy compared to how and when it originated. The origins of mindfulness are rooted in Eastern tradition and date back to Buddhist philosophy originating over 2000 years ago (Siegel et al., 2009). This indicates that our conquest to control our emotions and embrace a more peaceful and mindful existence was recognised by ancient Buddhists long before its popularisation in contemporary society. Buddha's teachings, known as the '*dharma'*, are understood as a set of practices to assist people in developing their spirituality in the pursuit of happiness (Bodhi, 2011). According to the ancient Buddhist text known as the *Abhidharma* (Rosch, 2007), mindfulness, translated from *'Sati',* is said to form the cornerstone of meditation and is considered the seventh factor in the eightfold path of Buddhism (Bodhi, 2011; Rosch, 2007). The Pāli word '*sati'* is said to jointly refer to being in a state of *awareness, remembering* and *attention* (Siegel et al., 2009). It is further understood that *sati* represents an understanding of the impermanence of life and all living things to bring our attention to the present moment (Bodhi, 2011).

Given its origins, there has been criticism towards the integration of mindfulness into a modern, Western society. Scholars who have studied the ancient practice suggest that it has been oversimplified to cater for a contemporary audience with little attention paid to understanding and paying respect to the origins of the practice (Sun, 2014; Williams & Kabat-Zinn, 2011; Wilson, 2014). Given the complexity of its history and the way in which it should be traditionally practiced, there is a concern that due to a lack of understanding and thus a 'dilution' of tradition, the effectiveness of the practice may come into question (Schmidt, 2011; Wilson, 2014). To note, the integration of Eastern practices into a Western context is not novel, as seen with the likes of Yoga, Tai-Chi and Qigong. These practices have all been introduced to assist in specifically improving the physical, psychological, and emotional well-being of Western populations (Askegaard & Eckhardt, 2012; McCall, 2014; Klich & Milert, 2018). On that basis, it is necessary we remain cognisant of the origins of a practice such as mindfulness as not to appropriate it to the extent that its benefits can no longer be observed.

Schmidt (2011) also notes that Western society has chosen to move certain Eastern practices into the scientific domain (Paulson et al., 2013). Due to this, researchers have

expressed concern that the over investigation of the practice in a scientific context may reduce the efficacy of the practice as it begins to detach from its spiritual and philosophical origins (Bodhi, 2011). It is recommended that a balance needs to be struck between both caution and appreciation (Bodhi, 2011). Lastly, the rate at which literature on mindfulness is published, and the extent to which its positive outcomes are reported has led to some resistance within the field towards how the practice is being utilised. With over 500 studies published each year pertaining to mindfulness, the range of contexts in which it is studied continues to expand (Nisbet, 2017). Nisbet (2017) also notes that the research being published is generally biased towards positive outcomes. Therefore, it is recommended to remain cautious of the positive bias towards the practice when interpreting mindfulness research. The section to follow will consider, given its roots, how mindfulness has been defined within the modern setting.

Definition. The ancient origins of mindfulness and the practice of mindful meditation means that the complex and contemplative understanding of the practice and how it can serve us as humans has had to be re-considered for contemporary consumption (Quaglia et al., 2015). Thus, researchers who have studied the integration of such a practice in a Western setting have needed to review how the definition of mindfulness is framed to both respect its origins but ensure its accessibility. Given its complexity, the way in which mindfulness is defined varies within the literature. On that basis, although a brief definition was provided in the introduction, the table below will provide an outline of commonly used definitions in the available literature.

Table 1 Definitions of Mindfulness

Source	Definition
Kabat-Zinn (2015, p. 1481)	*"moment-to-moment, non-judgmental awareness, cultivated by paying attention in a specific way, that is, in the present moment, and as non-reactively, as non-judgmentally, and as openheartedly as possible"*
Garland et al. (2009, p. 37)	*"A mode of awareness characterized by a present-centered attention to raw experience liberated from cognitive abstractions and preoccupations."*

Brown et al., (2007, p. 272)	*"...waking up to what the present moment offers."*

It can be seen that although there is variety in how authors choose to define the concept, there is similarity. In essence, mindfulness can be understood as a state of mind or being in which one is acutely aware of the present moment in a way that is non-judgmental, non-reactive and undistracted from thoughts pertaining to the past or future. Considering this, and the way in which the concept is understood within contemporary literature, the following section will be considering how the construct is measured.

Measuring Mindfulness. Given the varied understanding of what mindfulness is, there are numerous scales that have been developed to measure the mindfulness levels of an individual. One of the most commonly used scales that has been developed, and which will be utilised in the study, is the 15-item *Mindful Attention Awareness Scale* (MAAS; Brown & Ryan, 2003). The MAAS was developed to measure specific qualities pertaining to one's self-awareness and consciousness in relation to well-being (Brown & Ryan, 2003). The scale aims to understand the level of awareness an individual has, pertaining to how things in the environment are noticed but without the individual paying any specific attention to it (Brown & Ryan, 2003). In addition, the attention component of the scale refers to how engaged one may be in interacting with something in the environment (Brown & Ryan, 2003). The measure was piloted within a clinical setting and was shown to demonstrate consistent and valid results (Brown & Ryan, 2003). The pilot study participants demonstrated lower levels of mood disturbance and stress, with increasing levels of mindfulness (Brown & Ryan, 2003). Considering that one of the targeted variables in the piloting of the scale was stress indicates the appropriateness of utilising the measure within the present study. In addition to this, the MAAS has also been considered within the South African workplace (Kotzé, 2018; Kotzé & Nel, 2016). According to research conducted by Kotzé and Nel (2016), when comparing the MAAS with the Freiburg Mindfulness Inventory, which will be discussed below, the MAAS was found to have stronger validity in measuring employee related outcomes. Further justifying its use in this research.

Although the MAAS is a widely used measure of mindfulness, other scales have been developed and consider the construct slightly differently. One such scale is known as the *Kentucky Inventory of Mindfulness Skills* (KIMS; Baer et al., 2004). This scale was developed with a specific focus on 'mindful behaviour' that is commonly considered within Dialectical

Behavioural Therapy (DBT; Baer et al., 2004). The scale developers broke mindfulness down into different behavioural components: observing, describing, acting with awareness, and accepting without judgement (Baer et al., 2004). These four behavioural components are what the developers of the scale referred to as 'mindfulness skills' - and how well developed each of those skills are will determine an individual's level of mindfulness (Baer et al., 2004). Given that the scale was developed based quite specifically around principles pertaining to DBT, the researcher concluded that this scale would not be suitable for use within the present study.

Following on from the KIMS, was the development of the *Freiburg Mindfulness Inventory* (FMI; Walach et al., 2006). Although originally developed in 2001, the scale was further validated five years later in an attempt to measure mindfulness in a way that the developers deem as 'holistic' (Walach et al., 2006). The scale measures the construct according to different components which include a cognitive and processing component as well as how individuals accept experiences and their ability to do so non-judgementally (Walach et al., 2006). The developers involved in validating this scale found that subsequent measures did not fully incorporate all the aspects that can be measured when determining an individual's level of mindfulness (Walach et al., 2006). However, given the complexity of the concept and its many components, the 'holistic' understanding of mindfulness according to the FMI can be understood as subjective as it based on how the researchers who developed the scale perceived it should be measured. The scale was not considered as a suitable measure for the present study, as the authors noted in their research that an individual requires a level of background knowledge of the ancient Buddhist practice (Walach et a., 2006). Given the target sample of the current research, this knowledge cannot be assumed by the researcher.

Attempting to measure the mindfulness levels of an individual is not simple. Even though scales have been developed, fully understanding the level of one's present moment awareness has been a challenge. Thus, researchers have developed a range of different scales, with each measuring the construct differently to one another and for varying purposes. The scales discussed above are not the only measures of mindfulness that exist. However, the three aforementioned measures are among the most utilised within the contemporary setting (Baer et el., 2004). The section to follow will be considering the research that has been published pertaining to mindfulness and stress related outcomes.

'Mindful Coping' and Stress Related Outcomes

The research discussed above provided an overview of what mindfulness is, its origins and how it is currently measured. Although researching the practice has been challenged in the

literature, there is still a significant number of studies that provide evidence to suggest the positive impact that a mindfulness practice and mindfulness training can have on an individual (Chin et al., 2019; de Vibe et al., 2013; Bestock et al., 2019). One of the positive outcomes that has been specifically highlighted in the literature, and which was briefly mentioned above, is how mindfulness has been studied in relation to stress. The model introduced by Garland et al. (2009), has laid the foundation for understanding the utility of the ancient practice of mindfulness in reducing stress levels, and how it can assist the coping strategy of the affected individual. In addition, the definition and review of mindfulness and its origins has provided an understanding of how the practice has been adapted for Western consumption. This section will be analysing the research that has prevailed in contemporary settings with regards to how stress levels are impacted according to an individual's level of mindfulness.

The research that has been conducted on mindfulness levels in relation to stress is vast and has been predominantly studied in the European, American and South-East Asian contexts. Donald and Atkins (2016), researched mindfulness and stress in relation to the way in which mindfulness impacts coping mechanisms, in line with the *mindful coping model* (Garland et al., 2009). Their research was conducted using a quantitative methodology on a student sample (n=204; Donald & Atkins, 2016). Their analyses yielded positive results, with more mindful students exhibiting a more positive coping mechanism which was correlated to a lower level of stress in their daily lives (Donald & Atkins, 2016). Further research on student samples have also exhibited a negative relationship between mindfulness levels and stress (Costello & Lawler, 2014; Warnecke, 2011; Wu & Buchanan, 2019), although not specifically relating to their coping ability.

Much of the literature in this area has been dominated by student samples, however, research conducted on non-student samples have shown to yield similar results. Atanes et al. (2015) conducted correlational research amongst 450 nurses which found a strong negative correlation between mindfulness levels and stress. This result was also obtained amongst a sample of 52 Hatha yoga practioners. (Brisbon & Lowery, 2011). Brisbon and Lowery (2011) divided the sample up into beginner and advanced yoga practioners and found that the more advanced they were in the mindful practice of Hatha yoga, the higher their mindfulness levels and the lower their perceived levels of stress. To note, even though advanced practioners were found to yield a strong relationship between the two variables, beginners still yielded a significant, negative relationship between their mindfulness and stress (Brisbon & Lowery, 2011). Another sample that has been researched is within the sporting industry. Gustafsson et al. (2015) conducted research on 233 athletes and found that those with higher levels of

mindfulness generally had lower levels of stress, reducing their risk of burnout. Finally, Nezlek et al. (2016) decided to determine how stressful events impact individuals differently by considering the mindfulness levels of a sample open to the general population. Yet again, the researchers found a negative relationship present (Nezlek et al., 2016). Therefore, those who had higher levels of mindfulness did not perceive events to be as stressful as those with lower mindfulness levels.

To critique, Tang et al. (2015) notes that methodological rigour is something to remain cognisant of when interpreting mindfulness related research. Sample size was indicated as an issue for some researchers (Wu & Buchanan, 2019; Costello & Lawler, 2014; Warnecke, 2011), as well as their cross-sectional approach, which researchers acknowledge was limited (Gustafsson et al., 2015; Brisbon & Lowery, 2011; Atanes et al., 2015). However, from a relational perspective, the results of the research above were relatively conclusive that the higher one's mindfulness, the lower one's level of stress. Based on the positive results that have been shown above, it is understandable that mindfulness in the corporate sector is beginning to be considered as a determinant for stress levels.

In addition to research that has focused on mindfulness and stress in the broader organisational context, more specific attention has been paid to mindfulness and stress outcomes in relation to leadership (Gonzalez, 2012; Levey & Levey, 2019; Hougaard et al., 2016). To unpack this further, the section to follow will be considering the concept of 'mindful leadership' and what impact it has been shown to have on leadership stress.

Mindful Leadership and Stress. The positive outcomes of higher mindfulness in relation to stress have, as mentioned, resulted in an increased level of interest in the benefits of mindfulness in the workplace. This interest has translated to an area of research that has expanded significantly over the years and which pertains specifically to leaders known as, 'mindful leadership'. Mindful leadership has been studied in relation to how those in positions of power react to situations, which can impact the treatment of subordinates (Pinck & Sonnentag, 2018). Researchers have found that leaders are more likely to experience stress such as 'power' stress (Hopper, 2010), as well as stress caused by having to make executive decisions within short spaces of time due to the volatile and fast-paced nature of modern business (Hougaard et al., 2016). On that basis, there has been a focus on studying mindfulness within leader samples to determine how it impacts their behaviour (Verdorfer, 2016; Lange et al., 2018) and decision-making ability (Eisenbeiss et al., 2014). Lange et al. (2018) conducted research that showed a positive relationship between more mindful leaders and

transformational leadership styles. Furthermore, it has been found that a higher level of mindfulness in leadership samples have also produced a positive relationship to humble and authentic servant leadership (Verdorfer, 2016). Both studies indicated positive organisational outcomes as a result.

Mindfulness in leaders is not novel as an area of research. However, no specific research could be found which specifically considers mindfulness and stress amongst leaders. Given that stress has been considered a more prevalent phenomenon amongst leaders than subordinates (Harms et al., 2017), this research aims to explore mindfulness and leader stress. Although not the primary focus of the research the purpose behind this exploration is to determine whether mindfulness training, if effective, is something to be studied further amongst South African leaders. Given the economic and political instability of the country, if the mindfulness levels of leaders are shown to significantly correlate with stress, then more attention on 'mindful leadership' may be beneficial.

The research discussed above specifically speaks to levels of mindfulness and the relationship to stress levels. However, what the research above does not mention, is whether each of the samples above learnt how to become mindful or if their mindfulness was simply dispositional. On that basis, the section to follow will be exploring the research that pertains to whether mindfulness is something that can be taught by discussing the various methods of mindfulness training.

Mindfulness Training

Throughout the literature, significant focus has been placed on how mindfulness and stress are correlated within varying samples. However, the key issue for evaluation is whether mindfulness can be taught, and thus whether mindfulness training may be of utility within South African organisations. The section to follow will be outlining the different forms of mindfulness training that have been developed, sometimes referred to as Mindfulness-Based Programmes (MBPs), and their effectiveness in the modern context. The outcomes of the various mindfulness training that exist will provide a foundation for understanding the need for investigating it as a potential tool for stress management in the South African workplace.

Types of Mindfulness Training. The complexity of mindfulness has led to different approaches towards the development of mindfulness training. Pioneer in the field, Jon Kabat-Zinn, was amongst the first in a Western setting to develop a mindfulness training programme (Kabat-Zinn, 2003). The Mindfulness-Based Stress Reduction (MBSR) training developed by Kabat-Zinn forms the foundation for many of the contemporary mindfulness training

interventions that are used today. The training is centred around the practice of mindfulness meditation and hatha yoga, with the aim to assist people in relieving their suffering and instilling a sense of holistic well-being by addressing the ways in which individuals cope with everyday demands and stressors (Santorelli et al., 2017). Over the course of 8-weeks, the MBSR programme is generally split into 10-sessions and covers a total of 31 hours of training (Santorelli et al., 2017). However, versions of the training that have been adapted to cater to varying audiences which range in the number of sessions, number of hours training and structure (Dorjee, 2010).

Drawing on the MBSR programme mindfulness practioners and even those in the field of psychotherapy have developed interventions that, although share the basic structure of MBSR, are formulated to address more specific issues (Creswell, 2017). In the clinical setting, healthcare professionals have developed an intervention known as Mindfulness-Based Cognitive Therapy (MBCT) to specifically address issues such as clinical depression and anxiety (Dimidjian, S., & Segal, 2015). Interventions have also been developed for drug addiction (Bowen et al., 2014), eating disorders (Mantzios, 2018) as well as assisting in the functioning of interpersonal relationships (Carson et al., 2004). In more generalised contexts, mindfulness training has also been considered in the form of retreats, smartphone applications as well as shorter interventions that range between 2-3 weeks (Creswell, 2017). In the contemporary setting, mindfulness training can take on many different forms and thus may impact participants differently. Therefore, the section to follow will be addressing the empirical evidence that has been found regarding the outcomes of mindfulness training.

Mindfulness Training Outcomes. The popularity of the MBSR and related interventions has resulted in the utilisation of mindfulness training across a variety of contexts. Some of these contexts include amongst healthcare professionals (Kriakous et al., 2021), within clinical settings (Zhang et al., 2019), student samples (Polle & Gair, 2021) as well as within organisations (Thierstein, 2019; Rupprecht et al., 2019; Reb & Choi, 2014; Vonderlin et al., 2020). The research that has been conducted has revealed mainly positive outcomes for individuals, specifically in relation to their well-being. In a systematic review conducted by Zhang et al. (2019), which explored research involving cancer patients, those who participated in mindfulness training were seen to have improved levels of mindfulness, as well as a reduction in depression and fatigue. Similarly, a systematic review of research conducted on medical students revealed that mindfulness training interventions also led to a reduction in depression and had positive effects on mood and student well-being (Polle and Gair, 2021).

Amongst samples in the workplace, Vonderlin et al. (2020) conducted a meta-analysis of the available literature to determine the impact amongst employees. It was found in the analysis that overall, mindfulness training and related interventions were shown to assist in increasing mindfulness and job-satisfaction, as well as assist in reducing burnout (Vonderlin et al., 2020). The synthesised results above as depicted in the various reviews have shown that at a broad level, improving an individual's state of mindfulness through training has shown to be effective in assisting with burnout, depression and improving overall well-being. However, there are other factors that have been studied in relation to mindfulness training and its impact. One specific area of research being stress. In line with the present study, the empirical evidence pertaining to mindfulness training and the outcomes related to stress will thus be discussed.

Research conducted by Kriakous et al. (2021) involved a systematic review of mindfulness training across a range of healthcare professional samples. A synthesised interpretation of the results showed that overall, after the training was conducted, increased levels of mindfulness and decreased levels of stress and anxiety was observed (Kriakous et al., 2021). Eighteen of the thirty studies reviewed investigated the impact on stress specifically (Kriaskous et al., 2021). These studies include research conducted by Hallman et al. (2017) and Geary and Rosenthal (2011). In line with previous research, the results indicated a significant decrease in stress levels (Kriaskous et al., 2021). This finding provides some insight into whether mindfulness can be taught and its utility in reducing stress in a given sample.

However, similar to the research outlined in the previous section, the researchers noted that although the methodology was relatively robust across the systematic review, the issue of sample size was prevalent (Kriakous et al., 2021). In a study conducted by Krusche et al. (2012), a sample of 100 individuals based in the United Kingdom had their stress levels measured both before and after participation in a paid online mindfulness course. Upon completion, the researchers found a statistically significant difference between the perceived levels of stress of participants (Krusche et al., 2012). Although the findings appear conclusive, and the methodology robust, the sample size is too small to determine if the mindfulness course was in fact the cause for the reduction in stress. Furthermore, the authors note that there was no 'control' group in the research to compare the results of the participants to given the preliminary nature of the study (Krusche et al., 2012).

Additional research conducted which focused on how a mindfulness training intervention may assist in reducing the stress of teachers reported that the training was found to assist the teachers in developing their coping skills (Taylor et al., 2016). This is line with the *mindful coping model* (Garland et al., 2009), and thus the research suggested that mindfulness

training is something to be considered within the teaching profession to assist with stress reduction (Taylor et al., 2016). Again, although the study followed a robust methodology through the form of a pre-test post-test analysis, only 59 teachers participated (Taylor et al., 2016), signalling a sampling issue that may have affected the validity of the results obtained. Felton et al. (2015) is another study which conducted research on a mindfulness intervention looking specifically at stress within a student sample. Unlike the previous two studies, Felton et al. (2015) interviewed the students after their involvement in a 15-week mindfulness course. The researchers found that an increased level of awareness developed as a result of their training, which assisted in how they perceived their stress (Felton et al., 2015). However, although the findings were positive, only 41 students participated in the study. In addition, the qualitative element of the research makes it challenging to obtain a robust and accurate depiction of the effect of the training. In the organisational setting, mindfulness training in relation to reducing stress has been previously considered. Chin et al. (2019) found that after a 6-week mindfulness intervention overall perceived stress significantly decreased amongst employees. The research design in the study can be considered robust in nature, with a pre-test post-test analysis approach which elicited positive results (Chin et al., 2019). However, only 58 individuals participated in the intervention (Chin et al., 2019) which was a limitation in the study.

The aforementioned research has been conducted almost exclusively amongst either American, Canadian or British populations. These areas, as previously mentioned, alongside South-east Asia dominate the research available on mindfulness. In the South African context, mindfulness training research is significantly limited in comparison. Those which have been conducted have found that online training may reduce stress in healthcare professionals (Osman et al., 2021), and that the stress of medical students was also found to decrease after the introduction of online mindfulness training (Boyd & Alexander, 2022). Both studies were only able to recruit a sample size of 47 (Osman et al., 2021), and 45 (Boyd & Alexander, 2022) respectively.

The research that has been conducted on mindfulness training and its impact on mindfulness levels and thus perceived stress appears conclusive according to the various systematic reviews and meta-analyses that have been conducted (Khoury et al., 2015; Polle & Gair, 2021). However, what can be seen above is that the sample size appears to be a recurring issue in the literature, and the robustness of methodology varies. This limitation of mindfulness training research has also been noted by Zhang et al. (2021), who commented on the fact that higher quality studies with larger sample sizes are required to gather more conclusive evidence.

In addition to the sampling limitation and methodological approach of the existing literature, another issue to note is that the research appears to be dominated by student, healthcare professionals and clinical samples. Although stress is a prevalent issue within the workplace, the limited number of studies in this regard exhibits a gap in the literature to be addressed. Furthermore, the limited literature available in the South African context pertaining not only to mindfulness training in the workplace but specifically how mindfulness training may impact stress amongst employees, including leaders, indicates an even bigger gap that requires consideration.

Research Rationale

Research on mindfulness in contemporary contexts has expanded, and will continue to, as interest in the practice and its utility grows. However, after analysing the available literature, it is apparent that sampling and contextual setting has shown to be a limitation. For example, the literature that was examined which researched mindfulness and stress related outcomes, as well as the utility of mindfulness training has shown that sample size, appears to be a concern. In addition, when considering the concept of 'mindful leadership', no research could be found which specifically considers how the mindfulness levels of leaders may impact or correlate with their stress levels. Finally, there is a gap in the literature pertaining to the analysis of mindfulness training in the South African workplace and its impact on stress.

Given the socio-economic context of South Africa and the heightened levels of stress within the country, this research seeks to further analyse if mindfulness training may be of utility to the South African workforce. Furthermore, this research will attempt to approach a larger sample size, as it aims to broaden the understanding of the utility of mindfulness training and whether mindfulness does in fact have a relationship with the stress levels of employees in South Africa. Broadening this research within the organisational context of South Africa will not only expand the available literature, but will also explore how workplaces across different industries may consider approaching mindfulness training as a tool that can be leveraged to assist the stress levels of their employees. Considering both subordinates, leaders and to address the overarching aim of the research being whether mindfulness training reduces employee stress across different South African workplaces, the following hypotheses were developed:

Mindfulness and Stress:

To first address whether mindfulness levels can be correlated with perceived levels of stress, the following hypotheses were developed:

H1: *Mindfulness levels of employees is negatively related to their perceived levels of stress.*

H2a: *Mindfulness levels of employees who currently have a mindfulness practice compared to those who do not will be significantly different.*

H2b: *Stress levels of employees who currently have a mindfulness practice compared to those who do not will be significantly different.*

Mindful Leadership and Stress:

The gap in the literature, both internationally and locally, outlines the need to further study 'mindful leadership' and stress related outcomes. Based on the positive behavioural and organisations outcomes of leaders with higher levels of mindfulness as shown by Verdorfer (2016) and Lange et al., (2013), the following hypotheses were developed:

H3a: *Mindfulness levels of leaders who currently have a mindfulness practice compared to those who do not will be significantly different.*

H3b: *Stress levels of leaders who currently have a mindfulness practice compared to those who do not will be significantly different*

Stress levels have been shown to differ between leaders and subordinates. On that basis and given that leaders have also been studied and compared to non-leader samples (Verdorfer, 2016), the following hypothesis was developed:

H4: *Job position moderates the relationship between mindfulness and stress levels.*

Mindfulness Training:

The literature pertaining to mindfulness training presented positive outcomes in relation to enhancing mindfulness levels and have negative relationship with stress levels. Given the lack of research in this area in the South African context, as well the lack of research that has been done on mindfulness training outcomes, the following hypotheses were developed:

H5a: *Mindfulness levels between employees who have completed mindfulness training compared to those who have not will be significantly different.*

H5b: *Stress levels between employees who have completed mindfulness training compared to those who have not will be significantly different.*

H6a: *Mindfulness levels between leaders who have completed mindfulness training compared to those who have not will be significantly different.*

H6b: *Stress levels between leaders who have completed mindfulness training compared to those who have not will be significantly different.*

Methodology

The section below will outline the methodology of the research conducted. This section will cover the design of the research, the sample and sampling strategy, the scales which were utilised to collect the data as well as how the data was collected for analysis. This section also discusses how the data was analysed and the ethical implications that were considered.

Research Design

The initial design of the research was due to be a pre-test post-test analysis which would have analysed the impact of a mindfulness-based intervention at a specific organisation amongst its employees. However, due to a change in the logistics of the mindfulness training, it was not possible to proceed with this methodology. Instead, a broad-based survey was developed for distribution amongst South African employees. The questionnaire was used to investigate whether individuals have ever participated in mindfulness training; engage in mindfulness practice and what their levels of mindfulness and perceived stress are (See Appendix A). On that basis, the research design can be considered quantitative and cross-sectional. Cross-sectional research is understood as non-experimental, given that there is no control or experimental group that is considered during the data collection (Levin, 2006). The use of a cross-sectional survey is advantageous in that it is inexpensive and takes a short of amount of time to both compile and complete (Levin, 2006). However, the disadvantages of this type of research also need to be noted. Cross-sectional, non-experimental research means that no causal inferences can be made from the results obtained and results may differ depending on the moment in time in which the data is collected (Levin, 2006). This will be further noted as a limitation of the research later in the paper. The following section will discuss the sample and the sampling strategy used to collect the data.

Sample and Sampling

The initial research design, as mentioned above, involved a specific financial institution in South Africa who granted me access to their employees in the beginning stages of the research. Even though the research design was altered, the organisation still agreed to distribute my survey to a sample of staff members. This sample comprised of 15 employees who currently work within that financial institution. The sampling strategy utilised in this instance is non-probability and would further be considered a convenience sampling method within a targeted organisation who granted permission to the research prior to the undertaking of the study. Given that this sample comprised of only 15 employees, a second sample was obtained by uploading the survey link on social media platforms, namely, LinkedIn, WhatsApp and

Instagram. On that basis, the strategy utilised in this instance can also be considered non-probability and is convenience sampling. A final sample size of 103 was obtained. Given the nature of the sampling strategies that were utilised, the response rate cannot be determined as the number of people that the survey reached is unknown. The demographic characteristics of the employees who participated has can be seen in Table 2.

Table 2 Demographic and Job-Related Characteristics of the Sample (n = 103)

		Frequency (*n*)	**Percentage (%)**
Gender			
	Male	36	35
	Female	67	65
Race			
	Black	13	12.6
	Coloured	0	0
	Indian	21	20.4
	White	68	66
	Unknown	1	1
Age			
	18 – 24	30	29.1
	25 - 34	39	37.9
	35 - 44	20	19.4
	45 - 54	7	6.8
	55+	7	6.8
Marital Status			
	Married	30	29.1
	Divorced	3	2.9
	Unmarried	68	66
	Prefer not to say	2	1.9

Number of Children			
	0	78	75.7
	1	8	7.8
	2	11	10.7
	3	5	4.9
	4+	1	1
Educational Level			
	High School Diploma or Equivalent	13	12.6
	Bachelor's Degree	62	60.2
	Master's Degree	26	25.2
	PhD or Higher	2	1.9
Tenure			
	0 – 1 Year	29	28.2
	1 -3 Years	23	22.3
	3 – 5 Years	16	15.5
	5 – 8 Years	13	12.6
	8+ Years	22	21.4
Leadership Position			
	Yes	44	42.7
	No	59	57.3

Measuring Instruments

Mindfulness Practice Questionnaire

The Mindfulness Practice Questionnaire was self-developed to gain insight into the participant's history with mindfulness, including their participation in training as well as their individual mindfulness practice. Some of the questions that were asked included '*Have you ever attended a mindfulness-based training programme*?', '*Do you still engage in a mindfulness practice*?' and '*How likely are you to recommend a mindfulness programme and practice*?'. Furthermore, a question pertaining to whether the individual holds a leadership position in their organisation was included to address 'mindful leadership' within the study.

The questions related to the individual's mindfulness practice came after the demographic questionnaire, but before the scales, which will be outlined in detail below.

The Mindful Attention Awareness Scale (MAAS)

The Mindful Attention Awareness Scale (MAAS) was first developed by Brown and Ryan (2003) and aimed to measure mindfulness in a way that assesses specific differences in the prevalence of states of mindfulness over a period of time. Brown and Ryan (2003) state in their research that the '*person-centred attention-awareness'* (p. 824) forms the foundation of mindfulness and thus, their research and the development of the MAAS. The current research used the self-reported 15-item version of the MAAS. An example of an item is *'I forget a person's name almost as soon as I've been told it for the first time'* and the scale uses a 6-point Likert type scale with 1 being '*almost never'* and 6 being '*almost always'* (Kotzé & Nel, 2016). To calculate an individual's level of mindfulness, the score for each item is added together and divided by the number of items (Brown & Ryan, 2003). Final scores range between 1 and 6, with a higher score representing a higher level of mindfulness (Carlson & Brown, 2005). The Cronbach Alpha score which represents the internal validity of the scale ranges between 0.82 and 0.87 (Brown & Ryan, 2003). This is considered excellent validity. Furthermore, the scale has been used within the South African context (Kotzé & Nel, 2016; Nell, 2016). Kotzé and Nel (2016) tested the internal validity within their South African sample and reported a Cronbach Alpha (α) of 0.89 (Kotzé & Nel, 2016). Therefore, it can be said that this scale is appropriate for use within a South African context.

The Perceived Stress Scale-10 (PSS-10)

The Perceived Stress Scale-10 (PSS-10) is one of the most widely used instruments to measure the levels of stress individuals perceive themselves to be experiencing (Cohen, 1994). The PSS-10 has been designed to capture information on how predictable and controllable individuals perceive their life and therefore, whether or not the participant feels overwhelmed by their perceived stress (Cohen, 1994). In addition, the validation of the scale has taken into consideration that major events which occur in a person's life may impact the way in which they respond and so it has been noted that the predictability of the scale is expected to decrease after two months (Cohen, 1994). In addition, the items in the scale are considered more general in nature to account for major events and daily hassles (Cohen, 1994). The scale consists of 10 items, which are self-reported, and are measured using a 5-point Likert-type scale (Makhubela, 2020). An example of a scale item is, *'In the last month how often have you felt that you were on top of things?'*, with the item scores ranging from 0 being '*never'* to 4 being '*very often'*

and items 4, 5, 7 and 8 are to be reverse scored when calculating the total scale score (Makhubela, 2020).

The measure has been used in various contexts, both globally and locally (Pau et al., 2007; Makhubela, 2020; Stubbs et al., 2017). In the local context, the instrument's validity was recently tested on a sample of South African university students from different universities across the country (Makhubela, 2020). The internal consistency of the scale was measured in the study by calculating the Cronbach Alpha score ($\alpha = .79$) which was found to be at a good level (Makhubela, 2020). Therefore, within a South African context, it can be said that the PSS-10 is appropriate for use.

Data Collection

The data in this research was collected through the online survey platform, Google Forms, that was linked to the Wits student email address of the researcher and which followed two different procedures. The sample who work within the financial institution were sent the survey by a member of staff who operates within a management position and oversees various departments within the organisation. The survey was sent to various divisions chosen by the organisation and unknown to the researcher. Thus, the only involvement that the researcher had in this procedure was to send the survey link to the member of staff with the capacity to distribute the link within the company. The second data collection procedure involved the researcher publishing the link on various social media platforms, such as LinkedIn and WhatsApp. The researcher allowed for the link to be shared or re-posted within those and other platforms to ensure a broader reach. Individuals on LinkedIn re-posted the survey, and others shared separately on the other social media platform including Whatsapp and Instagram. Data collection took place from November 2022 – January 2023, for a period of three months. Once all the data had been collected, the researcher then transferred the results to an Excel spreadsheet where the demographic characteristics were documented, alongside the responses to the mindfulness practice questionnaire and the scores for both the MAAS and PSS. The data was then analysed.

Data Analysis

Once the data from the sample was collected, the results were computed into an Excel spreadsheet and then transferred to the IBM Statistical Package for the Social Sciences (SPSS), Version 28. The data analyses included a range of statistical tests to address the hypotheses that were developed. First, the descriptive statistics of the data was determined. Then, the following statistical tests were chosen to address hypotheses 1-6b:

Table 3 Data Analyses

Hypothesis 1	Pearson's Product Moment correlation
Hypothesis 2a – Hypothesis 3b	Independent Samples T-test
Hypothesis 4	Moderated Multiple Regression
Hypothesis 5a – 6b	Independent Samples T-test

All analyses were conducted with a chosen significance level of 95% ($\alpha = 0.05$).

Ethical Considerations

There are various ethical issues that were taken into consideration during the process of this study. Firstly, ethical clearance had to be obtained from the Human Research Ethics Committee (HREC Non-Medical), with a protocol number being granted (MAORG/22/11). In addition, the researcher obtained a permission letter from the specific financial institution where the data was initially going to be collected from. Then, during the distribution of the survey, each participant was given a participant information sheet (PIS) which outlined: the purpose of the study, why they have specifically been invited to take part, the voluntary nature of the study as well the fact that their data will be confidential and that their identity will be kept anonymous (See Appendix D). The PIS appeared on the first page of the questionnaire and it was noted that participation in the research constituted informed consent. Given the nature of the survey, the research did not have access to any personal or identifying information meaning that participants remained anonymous throughout. Once the data was collected, the researcher then stored the results on a password protected laptop to ensure the security of the data.

Results

The section to follow will be discussing the results obtained by the statistical analyses that were conducted. The first set of results pertain to the psychometric properties of the MAAS and PSS-10, which includes both a validity and reliability analysis. Following this, are the results obtained from the analyses run to test the hypotheses that were developed for the study.

Psychometric Properties of Scales

Validity

To determine if the chosen scales are a valid measure of each variable, an Exploratory Factor Analysis (EFA) was conducted. The overarching purpose of an EFA is to summarise the data that has been collected to understand and interpret the various patterns that are present (Yong & Pearce, 2013). An EFA was chosen over a Principal Component Analysis, as this method is primarily used for data reduction (Costello & Osborne, 2005), which is not the purpose of the current data validity test. The chosen method of factor extraction was Principal Axis Factoring (PAF), as it has been shown to yield the most accurate results even when the distribution of the data is not considered normal (Costello & Osborne, 2005). In addition, a direct oblimin rotation - which is an oblique rotation method - was chosen as it a method which allows for factor correlation (Field, 2017). However, before the EFA could be run, certain assumptions were required to be met.

The first assumption, according to Field (2017), is related to the sample size. A rule of thumb is that there should be a ratio of 10 participants to each item on the scale (Field, 2017). The sample size for the given study was 103, which is low with respect to meeting this given assumption. However, research conducted by Costello and Osborne (2005) shows that the majority of EFA'a conducted in the literature use a ratio of 2-5:1. Therefore, this assumption can be said to be met, noting that strict rules around sample size for EFA's have mainly fallen away (Costello & Osborne, 2005). The next assumption requires an evaluation of the Kaiser-Meyer-Olkin (KMO) measure which measures sampling adequacy. When interpreting the KMO result, the statistic needs to fall between 0 and 1. If the value is close to 1, it indicates a higher factorability of the factor matrix. This assumption can also be said to be met, with the KMO test result for both the MAAS and PSS-10 being above .8 as seen in table 4 below. The third assumption is Bartlett's test for Sphericity (Field, 2017). Again, this assumption was met as the test yielded a significant result (Field, 2017). See table 4.

Table 4 KMO and Bartlett's Test for Sphericity

Scale	Result
Mindful Attention Awareness Scale (MAAS)	
Kaiser-Meyer-Olkin (Sampling Adequacy)	.875
Bartlett's Test of Sphericity	< .001
Perceived Stress Scale (PSS-10)	
Kaiser-Meyer-Olkin (Sampling Adequacy)	.863
Bartlett's Test of Sphericity	< .001

Mindful Attention Awareness Scale (MAAS). The MAAS underwent an EFA using PAF. The concept of mindfulness is considered a unidimensional construct (Osman et al., 2016). Therefore, no rotational method was utilised in the context of this analysis. The scale was subjected to two rounds of PAF. In the first round, four factors with eigenvalues larger than 1 emerged, explaining an accumulative 61,75% of the variance. In addition, Item 6 did not load onto any of the factors whilst items 4, 8, 9 and 12 loaded onto more than one factor.

Table 5 Factor Loadings of Round One PAF for the MAAS

Item	***Factor***			
	1	**2**	**3**	**4**
MAAS_1	.55			
MAAS_2	.51			
MAAS_3	.61			
MAAS_4	.51			.42
MAAS_5	.45			
MAAS_6				
MAAS_7	.807			
MAAS_8	.805		-.29	
MAAS_9	.72	-.66		
MAAS_10	.68			
MAAS_11	.63			
MAAS_12	.68		.35	.26
MAAS_13	.46			
MAAS_14	.79			

MAAS_15	.37

Extraction Method: Principal Axis Factoring

Given the results of the first round, a second round of PAF was conducted to re-run the EFA without items 4, 6, 8, 9 and 12. The remaining 10 items all loaded significantly into one factor. The eigenvalue obtained was 4.22 and which explained 42,24% of the variance. This can be seen in table 6 below. The result after the second round of the PAF thus supports that the MAAS is both suitable for use in this study and is measuring a unidimensional construct. Items 4, 6, 8, 9 and 12 of the MAAS were removed for all further analyses. To note, this type of result has been observed in prior research (Medvedev et al., 2016).

Table 6 Factor Loadings for Round Two of PAF for the MAAS

Item	***Factor Loading***
MAAS_1	.57
MAAS_2	.54
MAAS_3	.59
MAAS_5	.42
MAAS_7	.78
MAAS_10	.66
MAAS_11	.67
MAAS_13	.47
MAAS_14	.81
MAAS_15	.38

Extraction Method: Principal Axis Factoring

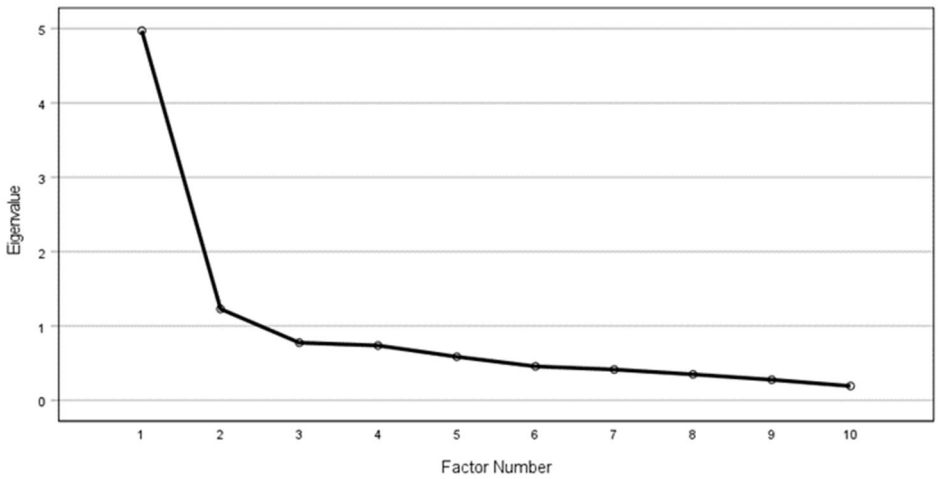
Perceived Stress Scale (PSS-10). The PSS-10 was subject to a PAF with a direct oblimin rotation. The results obtained indicate two significant factors with eigenvalues above 1, with these factors explaining 62.02% of the variance and one factor explaining 49.72%. This finding is in line with research previously conducted to measure the construct validity of the scale across adults in varying populations (Lee, 2012; Liu et al., 2020; Bastianon et al., 2020). The two factors that the PSS-10 consists of is: Perceived Helplessness (PH) and Perceived Self-Efficacy (PSE) (Lee, 2012; Bastianon et al., 2020). Cross-loading was observed for items 2 and 6 as seen in table 7 below.

Table 7 Factor Loadings for PAF for the PSS-10

Item	***Factor Loading***	
	PH	**PSE**
PSS_1	.83	
PSS_2	**.54**	.37
PSS_3	.62	
PSS_4		.51
PSS_5	.45	
PSS_6	.37	**.55**
PSS_7		.64
PSS_8		.64
PSS_9	.82	
PSS_10	.65	

Extraction Method: Principal Axis Factoring with Direct Oblimin Rotation

Figure 2 Scree Plot for PAF for the PSS-10



The results of the EFA conducted provide support that the PSS-10 can be considered to comprise of two factors. However, generation of a scree plot suggests that the majority of the variance is explained by only one factor, given the point at which the line flattens. This is in line with the 49.72% variance that was explained by one factor. In addition, the developers of the original 14 item scale developed the instrument such that stress could be measured as a unidimensional construct (Cohen et al., 1983). Furthermore, previous research conducted has utilised the PSS-10 in a unidimensional manner, (Cole, 1999; Remor, 2006; Ezzati et al.,

2014;). On that basis, the hypotheses remained the same and for the purposes of this research, the PSS-10 was considered and analysed as a unidimensional scale.

Reliability Analysis

To determine the internal consistency of each scale, a Cronbach's Alpha Coefficient was calculated. According to George and Mallery (2018), a Cronbach's Alpha Coefficient of greater than .7 is indicative of high internal consistency within a scale. Further, the corrected-item total correlations were analysed to assess the consistency between the response for each item in relation to the responses given in the overall scale. According to Field (2017), only items that score above .3 should be considered.

As seen in the table 8 below, the internal consistency for both the MAAS and PSS-10 scored above .7 meaning that within the given sample, both scales can be considered to have high internal consistency. In addition, all the corrected-item total correlations were above .3.

Table 8 Internal Consistency Coefficients for the MAAS and PSS-10

	Cronbach's Alpha	Corrected-Item Total Correlations	N of Items
Mindful Attention Awareness Scale	.84	$.36 < r < .71$	10
Perceived Stress Scale-10	.83	$.34 < r < .79$	10

Descriptive Statistics

The scales that were used for the study aimed to measure mindfulness levels and perceived levels of stress. As mentioned in the methodology, the higher the score of either the MAAS or PSS-10, the higher the level of mindfulness (Ryan & Brown, 2003) and perceived stress (Ezzati et al. 2014). For the MAAS, the score range for scale is between 1 and 6 (Ryan & Brown, 2003). The sample in this study had a minimum score of 1.6, with a maximum of 5.6. The mean for the sample was 3.7. The PSS-10 is a scale that ranges from a score of 0 to 40 (Ezzati et al., 2014). The minimum score obtained for the current sample was 3, with a maximum of score of 38. The average score for PSS-10 across the sample was 19.86.

Tests for Normality

The normality of the interval data, namely the average obtained for the MAAS and the sum obtained for the PSS-10 was established. This is illustrated in Figure 3 (MAAS) and Figure 4 (PSS-10). The results of the MAAS exhibit a normal distribution of data, but the PSS-10 appears to have outliers on either extreme and the data does not follow a completely normal

distribution. However, given the sample size (n = 103), we can assume normality based on the Central Limit Theorem (CLT). The CLT states that the higher the number of participants, the greater the chance of a normal distribution of data (Field, 2017). The CLT further states that the sample size should be at least 30 for the distribution of the data to be considered normal (Field, 2017). On that basis, normality can be assumed for the PSS-10 scores.

Table 9 Descriptive Statistics for MAAS and PSS-10

Scale	Min	Max	M	SD	Skewness	Kurtosis
Mindful Attention Awareness Scale	1.6	5.6	3.7	.92	-.15	-.36
Perceived Stress Scale-10	3	38	19.86	8.06	-.02	-.64

Figure 3 Histogram Plot with Normality Line for Mindfulness Levels

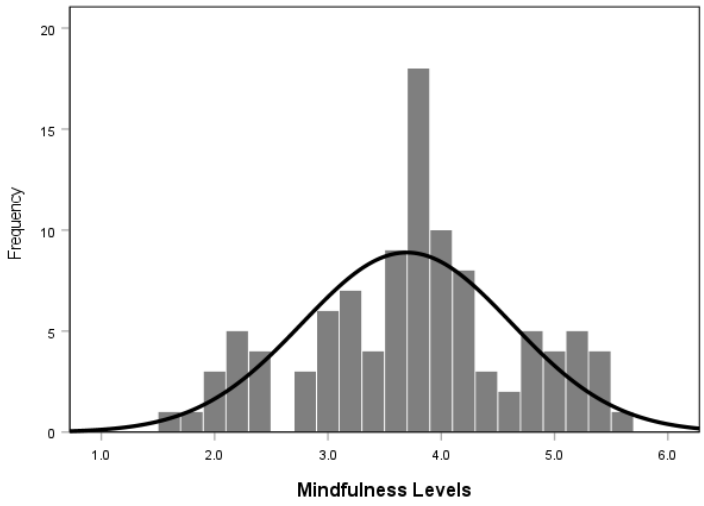
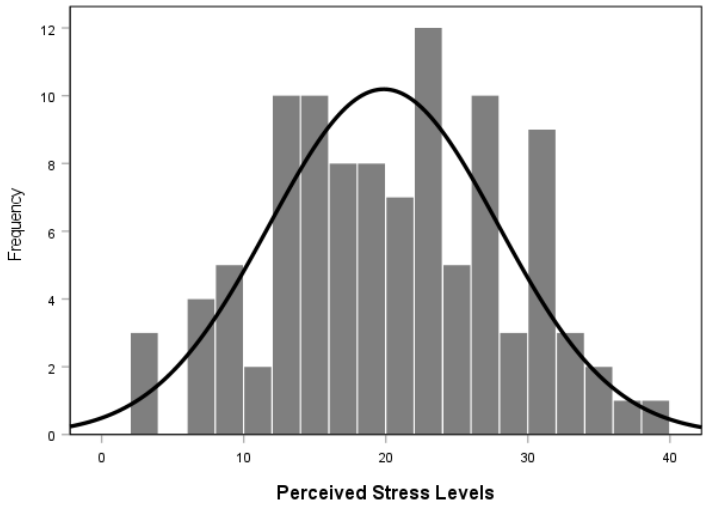


Figure 4 Histogram Plot with Normality Line for Perceived Stress Levels



Hypothesis Testing

Hypothesis 1:

The first statistical analysis conducted was to determine the relationship between mindfulness levels and perceived levels of stress, according to the hypothesis below.

> ***H1:*** *Mindfulness levels of employees are negatively related to their perceived levels of stress.*

To do this, a Pearson Product-Moment correlation coefficient was calculated. The result was statistically significant ($r = -.54$, $p < 0.05$). The nature of the relationship was negative, indicating that increasing levels of mindfulness were correlated with decreasing levels of stress. Given the result, the strength of the relationship between the two variables can be considered moderate.

Table 10 Pearson Product-Moment Correlation Analysis for Mindfulness Levels and Perceived Stress

Variable	**1**	**2**
i. Perceived Stress Levels	-	-
ii. Mindfulness Levels	-.54**	-

*** Correlation is significant at the 0.05 level (two-tailed)*

Hypothesis 2a – Hypothesis 3b:

To address hypotheses 2a-3b, independent samples t-tests were conducted to compare independent group means. Each hypothesis will be stated with the appropriate test to follow.

> ***H2a:*** *Mindfulness levels of employees who currently have a mindfulness practice compared to those who do not will be significantly different.*

Table 11 Active mindfulness practice of employees and MAAS Average Score (n = 103)

Active Mindfulness Practice	***N***	***M***	***SD***
Yes	26	3.8	.95
No	77	3.66	.92

The results obtained show that of the sample (n = 103), 25,2% of employees (n = 23) currently have an active mindfulness practice. Based on the results of the t-test, the mean level of mindfulness for those who currently have a practice was M = 3.8, with a standard deviation of .95. Those who do not currently have a practice were shown to have a mean score of M = 3.66, with a standard deviation of .92. The t-value for the independent samples t-test was t(101)

= .66, with a p-value > .05, indicating that there was no statistically significant difference between the two groups.

H2b: *Stress levels of employees who currently have a mindfulness practice compared to those who do not will be significantly different.*

Table 12 Active mindfulness practice of employees and PSS-10 Average Score (n = 103)

Active Mindfulness Practice	***N***	***M***	***SD***
Yes	26	19.12	8.42
No	77	20.12	7.98

Hypothesis 2b predicted that employees who currently have an active practice will have a significantly lower level of stress compared to those who do not. The resultsfound that the average score for stress for those who currently have a practice was M = 19.12, with a standard deviation of 8.42. This is marginally lower compared to those who do not currently practice mindfulness who have an average score of M = 20.12, with a standard deviation of 7.98. The t-value for the independent samples t-test was t(101) = -.55, with a p-value > .05, indicating that there was no statistically significant difference between the two groups.

H3a: *Mindfulness levels of leaders who currently have a mindfulness practice compared to those who do not will be significantly different.*

In order to determine whether there was a difference in mindfulness levels between leaders who have a mindfulness practice compared to those who do not, an independent samples t-test was run. To note, the leader sample consisted of 44 leaders. Given the CLT (Field, 2017), normality can be assumed as n > 30.

Table 13 Active mindfulness practice of leaders and MAAS Average Score (n = 44)

Active Mindfulness Practice	***N***	***M***	***SD***
Yes	10	4.07	.98
No	34	3.67	.15

Of the leader sample, 23% currently have a mindfulness practice and the results found that the mean score for those leaders was marginally higher. Their mean was above average, with M = 4.07 and a standard deviation of .98. This was compared to those who do not have a practice who obtained an average mindfulness score of M = 3.67 with a standard deviation of .15. However, the t-value for the independent samples t-test was t(42) = .12, with a p-value >

.05, indicating that there was no statistically significant difference between the two leader groups.

H3b: *Stress levels of leaders who currently have a mindfulness practice compared to those who do not will be significantly different*

Table 14 Active mindfulness practice of leaders and PSS-10 Average Score (n = 44)

Active Mindfulness Practice	***N***	***M***	***SD***
Yes	10	18.10	9.74
No	34	19.82	1.38

In line with the results obtained for mindfulness levels, the mean score between the leader groups for perceived stress was marginally different. The average perceived stress levels of those who do currently have a mindfulness practice was M = 18.10 with a standard deviation of 9.74. This was slightly slower compared to those who do not currently have a practice who obtained an average stress score of M = 19.82 with a standard deviation of 1.38. The t-value for the independent samples t-test was t(42) = -.57 with a p-value > .05, indicating that the difference between the two leader groups was statistically insignificant.

Hypothesis 4:

H4: *Job position moderates the relationship between mindfulness and stress levels.*

To determine the moderating effect of job position, i.e being a leader or not, on the relationship between mindfulness levels and perceived stress levels a moderated multiple regression was run. The moderating variable was dichotomous: leader vs non-leader and thus a dummy variable was created. The moderated multiple regression analysis was run in SPSS using PROCESS v4.1 (Hayes, 2013). PROCESS v4.1 creates an interaction variable using the dummy variable which moderates the relationship.

Regression Diagnostics. To run a Moderated Multiple Regression, five assumptions are required to be met.

i. The first assumption tested before the analysis was run was to determine if the sample size was sufficient for a regression analysis. According to Green (1991), there is a rule-of-thumb formula which can be employed to determine if the sample size is large enough. The formula utilised is $N \geq 50 + 8(m)$. M in the formula refers to the number of predictors used in the analysis (Green, 1991). Therefore, according to the formula above, given that

two predictors are present in the analysis the $N \geq 66$. On that basis, given that the total sample size was 103, this assumption was met.

ii. Secondly, the independent and dependent variables need to exhibit a linear relationship (Field, 2009). To test this assumption, scatterplots were developed.

Figure 5 Scatterplot with Mindfulness Levels and Stress Levels

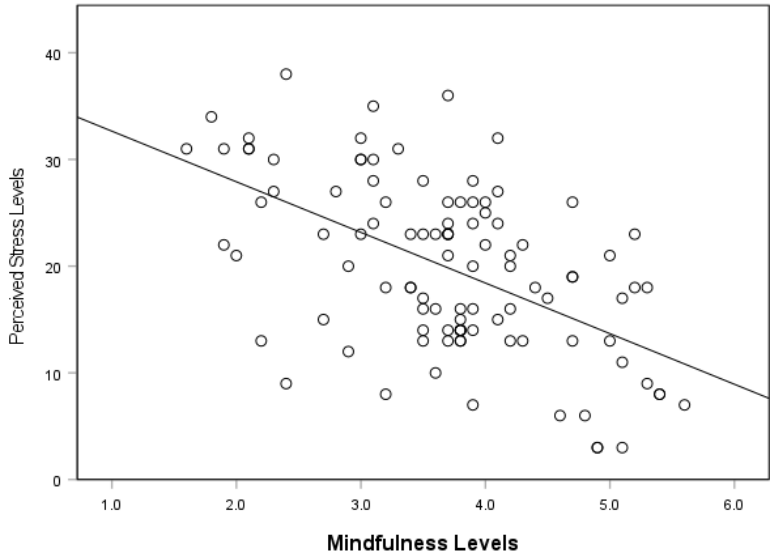
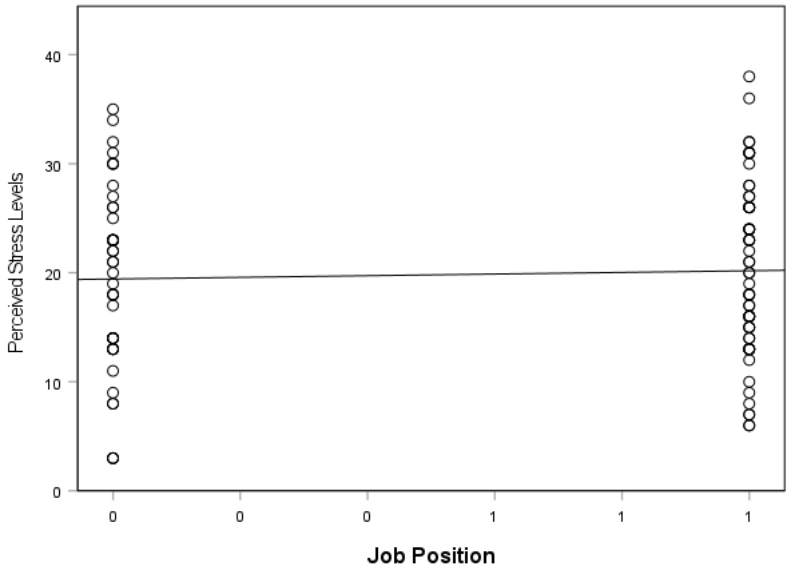


Figure 6 Scatterplot with Stress Levels and Job Position as a dichotomous variable

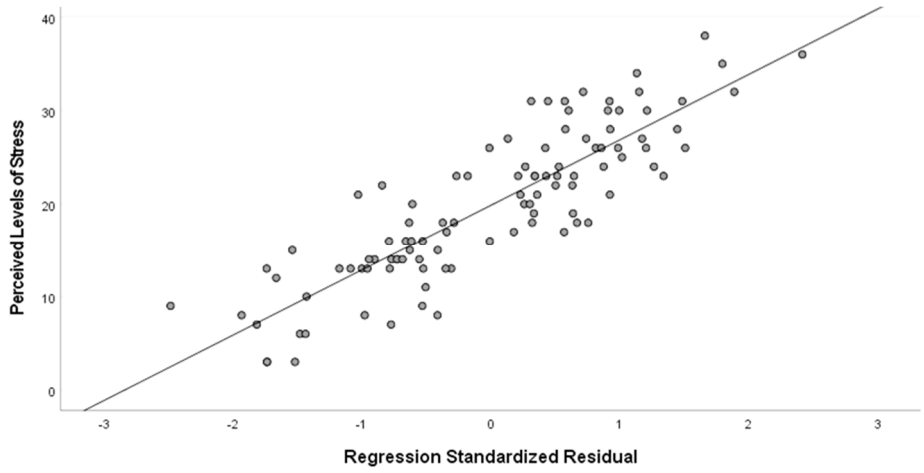


The scatterplot above exhibits the linear relationship, which also provides a visual representation of the correlational analysis conducted previously. Therefore, linearity can be assumed between the independent and dependent variables.

iii. The third assumption of normally distributed residuals can be automatically assumed as PROCESS v4.1 utilises bootstrapping to account for any violations of this specific assumption (Hayes, 2022).

iv. The fourth assumption that needs to be considered is if the data exhibits homoscedasticity, where variables remain similar when plotted along a line of best fit (Field, 2017). As seen in figure 7, it can be said that this assumption has been met given that there is no major variance along the line of best fit.

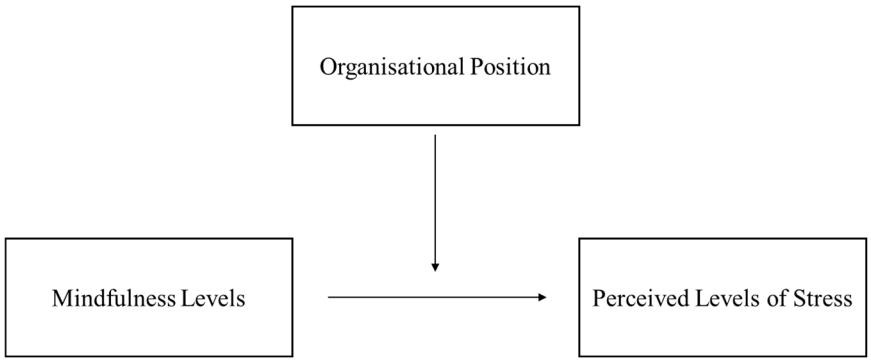
Figure 7 Scatterplot with Line of Best Fit for Dependent Variable



v. Finally, no multicollinearity should be present. Multicollinearity is present when two variables in the data set are highly correlated to one another (Field, 2017). Given the correlation between mindfulness levels and stress was -.54, which is considered a moderate relationship, it can be said that this assumption was met as there were no highly correlated independent or dependent variables with one another.

Once the assumptions were met, the researcher conducted and interpreted the results of the moderated multiple regression. The model for the multiple regression can be seen in figure 8.

Figure 8 Moderated Multiple Regression Model

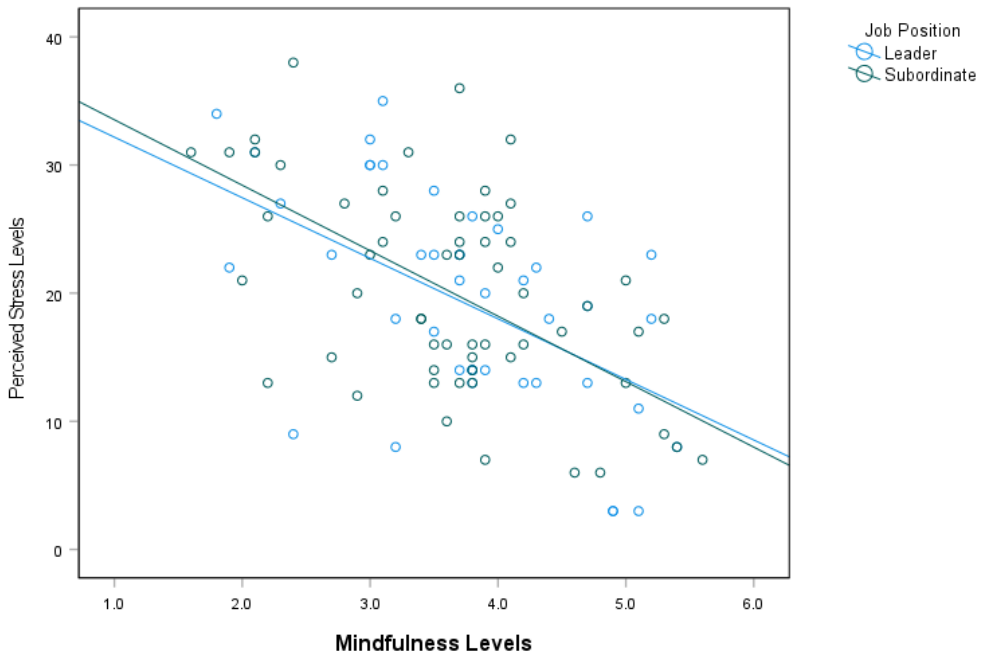


The overall model yielded a significant result ($R^2 = .30$, $F(3) = 13.64$, $p < 0.05$). Given that the first model run in the regression analysis was between mindfulness levels and perceived levels of stress, this was to be expected based on the model 1 result ($\beta = -5.14$, $t_{99} = -3.75$, $p < 0.05$). Model 2 of the regression analysis investigated the predictive nature of job position on perceived levels of stress. This did not yield a statistically significant result ($\beta = .19$, $t_{99} = .14$, $p > 0.05$), indicating that organisational position was not a significant predictor of perceived stress. Finally, the 3rd model that was tested incorporated the interaction term (mindfulness **x** organisational position) to examine whether organisational positional moderates the relationship between mindfulness levels and perceived levels of stress amongst employees. This model also yielded an insignificant result ($\beta = 0.70$, $t_{99} = .43$, $p > 0.05$). On that basis, it can be said that organisational position does not moderate the relationship between mindfulness and stress in this study. The results are represented in table 14 below. Furthermore, a simple slopes analysis was conducted to visually examine the moderation effect. From a visual perspective, there is no significant difference in the slopes between those who hold a leadership position, and those who do not with regards to their mindfulness levels in relation to their perceived levels of stress.

Table 15 Moderated Multiple Regression Results Summary

Model Summary							
	R	**R^2**	**MSE**	**F**	**df_1**	**df_2**	**p**
	.55	.30	47.06	13.64	3.00	99.00	.00
Model							
	β	**se**	**t**	**p**	**LLC1**	**ULC1**	
Constant	19.77	1.09	18.18	.00	17.62	21.93	
Mindfulness Levels	-5.14	1.37	-3.75	.00	-7.87	-2.42	
Organisational Position	.19	1.40	.14	.89	-2.58	2.96	
Interaction Variable *(Mindfulness*Organisational Position)*	.70	1.62	.43	.67	-2.52	3.91	

Figure 9 Simple Slopes Analysis of Moderated Multiple Regression



Hypothesis 5a – Hypothesis 6b:

H5a: *Mindfulness levels between employees who have completed mindfulness training compared to those who have not will be significantly different.*

Table 16 Employee participation in mindfulness training and MAAS Average Score

Mindfulness Training Participation	***N***	***M***	***SD***
Yes	33	3.75	.99
No	70	3.67	.90

Hypothesis 5a predicted that employees who have participated in mindfulness training will have a significantly different average in mindfulness levels compared to those who have not. As seen in table 16, 32% (*n = 33*) of participants in the study had completed a form of mindfulness training. The results obtained exhibited that the mean level of mindfulness for those who had participated in training was M = 3.75 with a standard deviation of .99. For those who did not participate in any mindfulness training, the average was M = 3.67, with a standard deviation of .90. The t-value for the independent samples t-test was t(101) = .41, with a p-value > .05, indicating that there was no statistically significant difference between the two groups.

H5b: *Stress levels between employees who have completed mindfulness training compared to those who have not will be significantly different.*

Table 17 Employee participation in mindfulness training and PSS-10 Average Score

Mindfulness Training Participation	***N***	***M***	***SD***
Yes	33	19.09	8.79
No	70	20.23	7.74

The hypothesis that was developed predicted that the 32% of employees who had participated in mindfulness training would have a significantly different average level of stress compared to those who had not. The results showed that the mean level of stress for those who had participated in mindfulness training was M = 19.09 with a standard deviation of 8.79. For those who had not participated in any mindfulness training, the group average was M = 20.23 with a standard deviation of 7.74. The t-value for the independent samples t-test was t(101) = -.66, with a p-value > 0.05. Thus, the hypothesis was not supported.

H6a: *Mindfulness levels between leaders who have completed mindfulness training compared to those who have not will be significantly different.*

The final two hypotheses that were developed predicted that both the mindfulness levels and stress levels of leaders would be significantly different based on whether the leader has attended a form of mindfulness training. The results for the mindfulness score are as follows:

Table 18 Leader participation in mindfulness training and MAAS Average Score

Mindfulness Training Participation	***N***	***M***	***SD***
Yes	19	3.78	.94
No	25	3.75	.92

Of the 44 leaders, almost half (43%) of the sample had attended some form of mindfulness training. Yet, the mean difference in mindfulness levels between the leaders who had attended training compared those who had not was almost equal. Those who did attend training obtained a mindfulness score of 3.78, standard deviation of .94 whereas those who did not obtained a score of 3.75 with a standard deviation of .92. The t-test result was statistically insignificant with $t(42) = .13$, $p > 0.05$.

H6b: *Stress levels between leaders who have completed mindfulness training compared to those who have not will be significantly different.*

Table 19 Leader participation in mindfulness training and PSS-10 Average Score

Mindfulness Training Participation	***N***	***M***	***SD***
Yes	19	18.47	8.87
No	25	20.16	8.05

The results obtained exhibited that leaders who had completed training had a lower stress score than those who did not, with an average of $M = 18.47$ ($SD = 8.87$) compared to an average of $M = 20.16$ ($SD = 8.05$) respectively. However, the t-test result was insignificant as $t(42) = -.66$, $p > 0.05$. Therefore, the last hypothesis was also not supported.

Summary of Results

To summarise the results of the analyses that were conducted, the following table was developed which states the hypothesis, finding, as well as the statistical analysis utilised.

Table 20 Hypotheses and Findings

Hypothesis	Finding	Statistical Analysis
H1: Mindfulness levels of employees is negatively related to their **perceived levels of stress**.	Supported	Pearson's Moment Product Correlation
H2a: Mindfulness levels of **employees** who currently have a **mindfulness practice** compared to those who do not will be significantly different.	Not Supported	Independent samples t-test
H2b: Stress levels of **employees** who currently have a **mindfulness practice** compared to those who do not will be significantly different.	Not Supported	Independent samples t-test
H3a: Mindfulness levels of **leaders** who currently have a **mindfulness practice** compared to those who do not will be significantly different.	Not Supported	Independent samples t-test
H3b: Stress levels of **leaders** who currently have a **mindfulness practice** compared to those who do not will be significantly different.	Not Supported	Independent samples t-test
H4: Job position moderates the relationship between mindfulness and stress levels.	Not Supported	Moderated multiple regression
H5a: Mindfulness levels between **employees** who have completed **mindfulness training** compared to those who have not will be significantly different.	Not Supported	Independent samples t-test
H5b: Stress levels between **employees** who have completed **mindfulness training** compared to those who have not will be significantly different.	Not Supported	Independent samples t-test
H6a: Mindfulness levels between **leaders** who have completed **mindfulness training** compared to those who have not will be significantly different.	Not Supported	Independent samples t-test
H6b: Stress levels between **leaders** who have completed **mindfulness training** compared to those who have not will be significantly different.	Not Supported	Independent samples t-test

Discussion

The section to follow will be discussing the results that were obtained, in relation to the literature that was previously explored. This will be done by first providing an overview of the study and what it aimed to achieve. Followed by which, this section will go into detail of each of the hypotheses developed for the study to determine a response to the overarching aim of the research. Finally, the implications of the study will be considered before the limitations of the research are listed and what future researchers could consider in this field of study in relation to the findings of this paper.

Study Overview

As noted in the introduction of this study, South Africa is considered one of the most stressful countries to live in. Thus, considerations for reducing stress to ensure a productive and motivated workforce is a common discussion within South African organisations. One of the strategies discussed in the literature is to consider how mindfulness can be harnessed, given the positive outcomes that mindfulness training and having a mindfulness practice have been shown to exhibit. On that basis, the overarching aim of this study was to consider whether mindfulness training reduces employee stress across different South African workplaces.

To build a theoretical foundation, the researcher explored literature pertaining to whether mindfulness impacts stress levels, followed by whether mindfulness training has been shown to effectively improve an individual's mindfulness and in turn decrease their level of stress. The current study was conducted within the South African setting, with a sample that comprised of 103 South African employees who may or may not have received some form of mindfulness training. To address the aim of the study, a range of hypotheses were developed which considered the entire employee sample as well as the impact of mindfulness on leader stress more specifically.

The first hypothesis explored whether mindfulness and stress can be correlated and if so, what the nature of the correlation is. Following this, the researcher ran a range of independent sample t-tests to consider the difference in mindfulness and stress levels of employees who engage in a mindfulness practice and have attended mindfulness training compared to those who have not. The researcher also found literature pertaining to the fact that based on job level, the experience of stress may be somewhat different (Hopper, 2010; Hougaard et al., 2016). On that basis, additional hypotheses were developed which considered the leader sample in the study more specifically. The aim of separating leaders in some of the analyses and determining the moderating effect of job position on mindfulness levels and stress

was to allow for further discussion around the utility of training in a workplace setting. More specifically, given that leaders are understood to have higher stress levels, if deeper consideration should be paid to mindfulness training within leadership.

The general trend that was found within the data was that of the 103 participants, the vast minority had attended any form of mindfulness training. And even less so, currently have a mindfulness practice. More specifically, only 33 people had attended training and only 26 currently practice mindfulness. This trend was also found with the leader population. The types of training that individuals were seen to have attended varied within the sample. Some of the employees who responded had participated in mindfulness interventions at their organisation, such as mindfulness journaling as well as leadership and self-development programmes that incorporated aspects of mindfulness. Other participants in the sample had attended mindfulness retreats within South Africa which were two weeks on average in duration. Other training formats that were found included online training through the form of mobile device applications, or workshops such as an 8-week MBSR programme. Although the training varied across the sample, the majority of participants stated that they would be 'highly likely' to recommend mindfulness training. No specific reasoning was provided but based on the intention of mindfulness training, it can be assumed that these individuals may have felt that their experience was a positive one.

Having provided a broad overview of the study, and given some context as to the results obtained, the section to follow will be discussing the results per hypothesis developed.

Interpretation of Results

The section to follow will be discussing the results obtained according to each hypothesis in relation to the previous research that was conducted. The first two hypotheses to be discussed will be those developed in relation to mindfulness levels and perceived levels of stress. After which, the results pertaining to the hypotheses that were developed to understand the mindfulness and stress levels of employees who currently have a mindfulness practice and/or have attended mindfulness training will be discussed.

Mindfulness and Perceived Stress of Employees

Hypothesis 1. To assist in answering the broader research question, the researcher first hypothesized that mindfulness and perceived stress would be found to have a significant, inverse relationship. This analysis considered all participants across the study. The hypothesis was supported by the results, suggesting that there is a correlation between having a higher

level of mindfulness and lower level of perceived stress amongst South African employees. This finding is in line with research that was previously conducted (Donald & Atkins, 2016; Wu & Buchanan, 2019; Atanes et al., 2015; Gustafsson et al., 2015; Nezlek et al., 2015). An explanation for this finding can be considered based on the *mindful coping model* (Garland et al., 2009), which explores how mindfulness assists in developing an individual's coping skills thus shifting their perception of stressors. This model formed the foundation of the present study, as it provided a theoretical understanding as to why being more mindful may be associated with a lower level of stress. Although the relationship found can only be considered as moderate in nature, it can still be concluded in the present study that higher levels of mindfulness are associated with lower levels of perceived stress in the given sample.

Hypothesis 2a and 2b. The second set of hypotheses posited that there would be a significant group difference in mindfulness levels and perceived stress levels between employees who have a mindfulness practice compared to those who do not. Both hypotheses were rejected in the data analysis that was conducted. The results obtained exhibited only a slight difference in the group means of both mindfulness and perceived stress. Thus, indicating that those with a mindfulness practice were not necessarily more mindful or less stressed. The finding of the present study contradicts what previous researchers have found. Research conducted by Costello and Lawler (2014), and Brisbon and Lowery (2011) found that in samples where mindfulness was practiced, mindfulness levels were higher. In addition, prior research also found a decreased level of stress in individuals with a mindfulness practice (Costello & Lawler, 2014; Warnecke et al., 2011). On that basis, it is necessary to consider why the results that were obtained in the present study were contrary to that which has been found in the aforementioned literature.

On closer inspection, of the 26 individuals responded to having a mindfulness practice within the sample, only 1 employee currently practices mindfulness on a daily basis. The remaining 25 employees do not have a consistent practice, which may mean that the impact of the existing practice is low. Research has suggested that in order to fully feel the impact of having a mindfulness practice, one should form a habit with the practice in order to become more acutely aware of its benefits (Siegel, 2010). Furthermore, the type of practice itself is not considered in the research and thus insight into the mindfulness practice that the 26 participants currently utilise is not available. On that basis, the way in which mindfulness is being practiced may also be a consideration when inspecting the results that were obtained. As noted by critics of mindfulness in contemporary society, the full impact of the practice may not always be

experienced and that only when it is practiced appropriately and holistically may its effects be realised (Wilson, 2014).

A final possibility for consideration beyond the quantity and quality of an individual's practice are the external environmental factors that may play a role. In the South African context, there are a range of economic, political and social stressors that affect the working population on a day-to-day basis. Therefore, it needs to be considered that a mindfulness practice may not be enough to mitigate the stress experienced by the South African workforce until the broader environment is addressed. A consideration for organisations is to look at the macro-environment and determine how stress can be mitigated through a range of interventions to assist employees on both an extrinsic and intrinsic level.

Mindful Leadership

Hypothesis 3a and 3b. Within the organisational space, there has been a level of attention paid to the idea of 'mindful leadership'. This concept is something which the present study aimed to consider in addition to exploring the mindfulness and stress levels of employees more broadly. As was highlighted in the literature review, research has found that the stress levels of leadership are generally higher (Hopper, 2010; Hougaard et al., 2016; Harms et al., 2017). On that basis, the researcher isolated the leader sample to consider the mindfulness and stress levels of leaders who practice mindfulness. Similar to the second set of hypotheses which considered all employees, the results of the two t-tests that were conducted on the leader sample did not yield significant results. In other words, the mindfulness and stress levels of the leaders who do practice mindfulness were not significantly different to those who do not. However, although the result was insignificant, there was still a marginal difference between the means of the two groups. Those with a mindfulness practice had a slightly higher average level of mindfulness, and a lower average level of perceived stress. Therefore, there is some capacity to consider the effect of practicing mindfulness as a leader in an attempt to increase one's mindfulness and in line with the *mindful coping model* (Garland et al., 2009), perceive stressors differently.

Given that no previous research of this nature has been considered, insofar as specific focus being paid to the mindfulness and stress of a leader sample, there is no literature to contrast the results that were obtained. However, similar to the discussion around the results for the broader employee sample, the external environment should be a key consideration when interpreting the impact of a mindfulness practice in South Africa. As a leader, you are faced with carrying significantly more responsibility in the organisation. When considering the socio-

economic and political factors that leaders are expected to contend with in South Africa, mindfulness should not be the only intervention for consideration in improving the stress levels of leadership .

Hypothesis 4. Leading on from the above, the fourth hypothesis that was developed aimed to explore whether or not holding a leadership position can be considered as a *moderating* variable between mindfulness levels and perceived stress. This hypothesis was developed to gain further insight into how mindfulness training may be utilised in the workplace and expand on the exploration of 'mindful leadership'. The finding, however, was that job position did not moderate the effect of mindfulness levels on perceived stress, and the hypothesis was rejected. Given the fact that leaders have previously reported high levels of perceived stress (Harms et al., 2017), the results in the present study suggest that the perceived stress of both leaders and subordinates may be supported by a higher level of mindfulness. In other words, if mindfulness training is to be considered in the workplace, both leaders and subordinates may benefit should it show utility.

Mindfulness Training Participation

Hypotheses 5a and 5b. The fifth set of hypotheses were developed to explore how mindfulness and perceived stress levels differ depending on whether employees had participated in mindfulness training or not. Both hypotheses predicted that there would be a significant group difference. However, this prediction was rejected with results that exhibited only a marginal difference between the mean scores of the two groups for both mindfulness levels and perceived stress. In other words, attendance of mindfulness training in the current study did not have an impact on the reported levels of mindfulness or perceived stress. This finding was contrary to that which had been previously observed (Zhang et al., 2019; Vonderlin et al., 2020; Kriakous et al., 2021; Krusche et al., 2012). Given that mindfulness has an association with stress, the results obtained for these analyses were surprising. Thus, the question as to whether mindfulness is a skill that can be taught remains.

The above finding aligns with the results obtained for hypotheses 2 and 3. There are various reasons that may be considered for why individuals who have attended training have a similar level of mindfulness and stress compared to those who have not. One such reason, which is similar to the reasoning provided for hypotheses 2a and 2b, may be to do with the quality and duration of the mindfulness training. As mentioned, the training varied between participants. Some participants attended retreats and workshops, with others having done an

online course been participants in workplace mindfulness interventions. Given the range of training, the individual effectiveness and impact of each could not be specifically analysed. Thus, further research into how different forms of training impact individuals may be a consideration. Additionally, the context of the South African workplace needs to be considered once more. As mentioned previously, there may be extrinsic factors both within and outside of the organisational setting leading to heightened stress amongst employees. Therefore, the effectiveness of mindfulness training needs to be carefully considered as it should not be seen as a panacea in an environment where greater external factors may be playing a role in stress levels and need to be addressed.

A final consideration, given the aforementioned results, is whether mindfulness is in fact a skill that can be taught and practiced or if it is an intrinsic characteristic. Previous research appeared mostly found support for mindfulness as a malleable phenomenon, with an extensive number of research papers boasting positive outcomes in relation to stress (Kriakous et al., 2017; Krusche et al., 2012; Taylor et al., 2016; Felton et al., 2015; Chin et al., 2019; Osman et al., 2021; Boyd & Alexander, 2022; Khoury et al., 2015; Polle & Gair, 2021). However, as previously noted by Nisbet (2017), there is a prevalent bias in the research towards positive results. Although the *mindful coping model* describes the enhancement of positive reappraisal after the introduction of a mindfulness intervention (Garland et al., 2009), further research is still required specifically in the South African context to determine the if mindfulness can be taught as a skill. To re-iterate, when considering mindfulness training in South African organisations, the broader socio-economic environment needs to be addressed as opposed to only considering mindfulness as a way to improve the coping skills of the South African workforce.

Hypotheses 6a and 6b. The final set of hypotheses looked once more at the leader sample in the study to gather information on whether mindfulness training for leaders has a significant impact on their mindfulness and stress levels. Similar to the other analyses of this nature that were conducted, the results yielded were insignificant. However, some marginal differences were still observed. Those who had completed some form of mindfulness training did in fact have marginally higher average levels of mindfulness and marginally lower stress levels. But, in line with the previous arguments, the broader environment needs to be taken into consideration when looking at mindfulness training for leaders specifically. The results from the questionnaire exhibited that the mindfulness training and leaders often attended was a component that was built into broader leadership development courses. On that basis, it can be

said that even within South African organisations there is an awareness around harnessing mindfulness in leaders. However, given the complexities of the macro-environment in the country, considering mindfulness as the only tool to assist with stress and build resilience may not be as effective. Instead, similar to the consideration provided for the broader employee sample, stress reduction should be considered holistically in the South African work environment. In essence, attention should be paid to a range of strategies that will assist in addressing leader stress without assuming that improving a leader's coping mechanism through mindfulness training will act as the solution.

Theoretical and Practical Implications

In the South African context, there is little to no research on the utility of mindfulness training in the workplace as a way to assist the perceived stress of employees more broadly, as well as leadership. On that basis, this research presents evidence that assists in growing the current literature available pertaining to South African organisations. Furthermore, given the sampling strategy, the research takes into consideration the responses of employees from a range of organisations and industries, as well as considers a range of different mindfulness training techniques that employees across the country have participated in. The theoretical framework that underpinned the study was also found to be supported, as a significant link between mindfulness levels and stress was established.

From a practical perspective, the research has shown that mindfulness training should be carefully considered within organisations to assist employees in stress reduction, since no relationship could be established with mindfulness training or having a mindfulness practice. Perhaps the broader environment needs to be considered by businesses before employing mindfulness training to address the stress of their employees. With that being said, the results do suggest that because mindfulness and stress levels are inversely related, although there were limitations to the current research (see below), there may be an argument for individuals to consider ways in which they can improve their mindfulness. This may even extend to organisations considering how mindful their employees should be based on what the job requires of them and if this is a consideration to be built into hiring strategies. However, more research addressing this topic is needed in the South African context.

Research Limitations

The findings of the research suggest that further interrogation into the subject matter is recommended. And, although the study has contributed to the growing literature in this field and within the South African organisational context, there are limitations to consider. The first

limitation to note was the sample. This includes both the size of the sample as well as its representability. The final sample size for the present study was 103 participants. Although this is considered an acceptable sample size, given the size of the working population a larger sample would have been beneficial for a more accurate analysis (Lakens, 2022). Furthermore, the majority of the sample consisted of white females ranging between the ages of 25 and 34. Given the demographic of the South African population, which has a White population of around 8% and a Black, Coloured and Indian population of around 90%, the sample cannot be considered representative (Statista, 2023). Furthermore, men represent an estimated 49% of the population (Government of South Africa, 2023), whereas the sample only consisted of 36% males.

The second limitation was the cross-sectional nature of the study. Cross-sectional research can be advantageous in that it is easy to conduct and is generally an uncomplicated process for participants (Cummings, 2018). However, the issue with conducting cross-sectional research is that it is conducted at a given point in time which does not consider any longitudinal changes that an individual may experience (Cummings, 2018). In the current study this is relevant because if an individual participated in mindfulness training or had just completed their mindfulness practice before participating in the research this may skew their response. In addition, this type of research design cannot prove or disprove cause and effect (Cummings, 2018; Mann, 2003). An additional limitation to consider, is how mindfulness training is understood by those who participated in the study. Mindfulness training, as described in the body of the study, can come in various forms, and depending on the participant's knowledge of the concept of mindfulness may not be fully understood. Finally, the MAAS did not load as expected during its validity analysis. Taking this into account, this may limit the study's comparability to other research papers. On that basis, and given the various limitations mentioned above, the researcher proposes a range of consideration for future study in this field.

Recommendations for Future Research

The first recommendation for future studies is that a research design that would allow for causation to be proved should be employed. For example, conducting a large-scale pre-test post-test analysis with a mindfulness training intervention across a range of South African organisations. Secondly, given the complex nature of both stress and mindfulness, a battery of stress and mindfulness scales should be considered for each participant to ensure that the various aspects of the concepts can be analysed. In addition, there are a range of variables within the present study that could be further analysed to develop more conclusive results.

A second recommendation is to potentially incorporate a qualitative aspect such as the interviewing of employees to determine the stressors that may be negatively impacting them. A follow-up interview after an intervention may allow for further discussion around how their challenges are perceived after mindfulness training. This approach could also be used to further test the *mindful coping model* (Garland et al., 2009) to determine if positive reappraisal had been enhanced, and thus if their coping mechanisms has improved.

Conclusion

Mitigating stress amongst employees and leadership in the South African workplace is a common topic of discussion. Given the increasing level of popularity around the concept of mindfulness, the present study explored what the utility may be of mindfulness training amongst South African employees. Through consideration of the *mindful coping model* (Garland et al., 2009), based off the *Transactional Model of Stress and Coping* (Lazarus & Folkman, 1984), this research aimed to understand whether the mindfulness of employees can be developed through mindfulness training to reduce stress. The results obtained do not provide a conclusive answer to the overarching aim of the research. Although mindfulness has been shown to have a negative association with perceived stress, there is still room for discussion as to whether mindfulness is a skill that can be taught or an innate characteristic. Prior research has shown that mindfulness training can be a useful strategy to mitigate stress in the workplace, thus the current research does not rule out the possible positive impact of incorporating mindfulness training in South African organisations. However, given the results, it is recommended that the broader organisational and societal context be taken into consideration. Overall, the results from the present study indicate preliminary findings in a research area that is limited in the South African context. This research does not provide a conclusive causal analysis, but rather, lays the foundation for future research to be conducted to further explore whether mindfulness can be harnessed to assist in stress mitigation of South African employees and leaders.

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Appendices

Appendix A: Mindfulness Practice Questionnaire

Question	Response Options
Have you ever attended a mindfulness based training programme? This may refer to either a formal programme or one conducted informally such as through a mobile application. **If no, please skip the following questions and proceed to the next section*	〉 Yes: At my organisation. 〉 Yes: Outside of my organisation. 〉 Yes: Both at and outside of my organisation. 〉 No: I have never attended any mindfulness training.
If yes, what was the name of the programme?	*Open-ended Response*
What was the duration of the programme?	*Open-ended Response*
How frequently were the sessions conducted in the programme?	〉 Everyday 〉 More than once a week 〉 Once a week 〉 Twice a month 〉 Once a month 〉 Other: *Open-ended Response*
How recently did you conduct the mindfulness programme?	〉 0-6 weeks 〉 6-12 weeks 〉 3-6 months 〉 6-12 months 〉 1+ year
Do you still engage in a mindfulness practice? If so, how often?	〉 Yes: Everyday 〉 Yes: At least once a week 〉 Yes: At least once a month 〉 Yes: Less than once a month 〉 No: I no longer have a mindfulness practice
How likely are you to recommend a mindfulness programme and practice?	〉 Highly unlikely 〉 Unlikely 〉 Neutral 〉 Likely 〉 Highly Likely
Do you currently hold a leadership position in your organisation?	〉 Yes 〉 No

Appendix B: Mindful Attention Awareness Scale

For each of the statements below choose from the following alternatives:

1 Almost Always	2 Very Frequently	3 Somewhat Frequently	4 Somewhat Infrequently	5 Very Infrequently	6 Almost Never

	Statement
1.	I could be experiencing some emotion and not be conscious of it until sometime later.
2.	I break or spill things because of carelessness, not paying attention, or thinking of something else.
3.	I find it difficult to stay focused on what's happening in the present.
4.	I tend to walk quickly to get where I'm going without paying attention to what I experience along the way.
5.	I tend not to notice feelings of physical tension or discomfort until they really grab my attention.
6.	I forget a person's name almost as soon as I've been told it for the first time.
7.	It seems I am "running on automatic," without much awareness of what I'm doing.
8.	I rush through activities without being really attentive to them.
9.	I get so focused on the goal I want to achieve that I lose touch with what I'm doing right now to get there.
10.	I do jobs or tasks automatically, without being aware of what I'm doing.
11.	I find myself listening to someone with one ear, doing something else at the same time.
12.	I drive places on 'automatic pilot' and then wonder why I went there.
13.	I find myself preoccupied with the future or the past.
14.	I find myself doing things without paying attention.
15.	I snack without being aware that I'm eating.

Appendix C: Perceived Stress Scale

For each question below choose from the following alternatives:

0 Never	1 Almost Never	2 Sometimes	3 Fairly Often	4 Very Often

	Question
l.	In the last month how often have you been upset because of something that happened unexpectedly?
2.	In the last month how often have you felt that you were unable to control the important things in your life?
3.	In the last month how often have you felt nervous and stressed?
4.	In the last month how often have you felt confident about your ability to handle your personal problems?
5.	In the last month how often have you felt that things were going your way?
6.	In the last month how often have you found that you could not cope with all the things that you had to do?
7.	In the last month how often have you been able to control irritations in your life?
8.	In the last month how often have you felt that you were on top of things?
9.	In the last month how often have you been angered because of things that happened that were outside of your control?
10.	In the last month how often have you felt difficulties were piling up so high that you could not overcome them?

Appendix D: Participant Information Sheet

Good day, my name is Alexia Szabo and I am currently completing my Masters in Organisational Psychology at The University of the Witwatersrand.

You are invited to participate in a study which will be investigating the impact of a mindfulness practice on employees and their mindfulness and stress levels. This questionnaire should take no longer than 5-10 minutes to complete. Participation is entirely voluntary and will remain anonymous. By participating in this survey you are giving the researcher consent to utilise the information you provide. If you wish to view the results obtained from the study, please email me on the email address provided below.

Please do not hesitate to contact me with any questions you may have.

Yours sincerely,

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