EMPLOYEES' WORK-RELATED SENSE OF COHERENCE AND CAREER WELL-BEING AS COUNTERMEASURES FOR FATIGUE EXPERIENCES

by

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DECLARATION

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EMPLOYEES' WORK-RELATED SENSE OF COHERENCE AND CAREER WELL-BEING AS COUNTERMEASURES FOR FATIGUE EXPERIENCES

I declare that the above dissertation is my own work and that all the sources that I have used or quoted have been indicated and acknowledged by means of complete references (APA 7th edition style for referencing was applied).

I further declare that the study has been carried out in strict accordance with the Policy for Research Ethics of the University of South Africa (UNISA). I took great care that the research was conducted with the highest integrity, taking into account UNISA's Policy for Infringement and Plagiarism. I further declare that I submitted the thesis to originality checking software and that it falls within the accepted requirements for originality.

I further declare that ethical clearance to conduct the research has been obtained from the Department of Industrial and Organisational Psychology, University of South Africa (see Appendix 1 for certificate). Informed consent to use the data for research purposes was obtained from the individuals who participated in this study.

I further declare that I have not previously submitted this work, or part of it, for examination at UNISA for another qualification or at any other higher education institution.

C.Bouman JANUARY 2022

Signature Date

ABSTRACT / SUMMARY

EMPLOYEES' WORK-RELATED SENSE OF COHERENCE AND CAREER WELL-BEING AS COUNTERMEASURES FOR FATIGUE EXPERIENCES

by

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The general aim of the research was to explore the nature and the magnitude of the associations between work-related sense of coherence (independent variable) and fatigue experiences (outcome variable), taking into account the intervening effect of career well-being (mediating variable) and the moderating effect of socio-demographic characteristics (such as age, gender and race). The research further aimed to inform employee well-being support practices. A convenience sample of (N = 104; mean age = 42 years; SD: 11.99) employees in the service industry participated in the study. The sample was predominantly represented by women (74%) and people from the coloured (62%) race group. A cross-sectional quantitative research design was utilised. Mediation regression analysis indicated work-related sense of coherence as a significant negative predictor of fatigue experiences and a positive predictor of career well-being. However, the pathway from work-related sense of coherence via career well-being to fatigue experiences was not significant. Career well-being did not act as a significant predictor of fatigue experiences. Age, race and gender did not act as significant moderators. Female participants scored significantly higher than male participants on their fatigue experiences. Recommendations for employee well-being practices and future research were outlined.

Key terms: Work-related sense of coherence; career well-being; fatigue experiences; coping in Industry 4.0; COVID-19 pandemic; employee well-being support practices

OPSOMMING

WERKNEMERS SE WERKSVERWANTE SIN VIR SAMEHANG EN BEROEPSWELSTAND AS TEENMAATREËLS VIR ERVARINGS VAN VERMOEIDHEID

deur

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Die algemene oogmerk van die navorsing was om die aard en die omvang van die assosiasies tussen werksverwante sin van samehang (onafhanklike veranderlike) en ervarings van vermoeidheid (uitkomsveranderlike) te ondersoek, met inagneming van die ingrypende uitwerking van beroepswelstand (tussenveranderlike) en die versagtende uitwerking van sosio-demografiese kenmerke (soos ouderdom, geslag en ras). Die navorsing het verder ten doel gehad om ondersteuningspraktyke vir werknemerwelstand te inspireer. ’n Gerieflikheidsteekproef van (N = 104; gemiddelde ouderdom = 42 jaar; SD: 11.99) werknemers in die diensbedryf het aan die studie deelgeneem. Die steekproef is hoofsaaklik deur vroue (74%) en persone van die kleurling-rassegroep (62%) verteenwoordig. ’n Deursnee- kwantitatiewe navorsingsontwerp is gebruik. Bemiddelingsregressieontleding het werksverwante sin vir samehang aangedui as ’n beduidende negatiewe voorspeller van vermoeidheidervarings en ’n positiewe voorspeller van beroepswelstand. Die roete van werksverwante sin vir samehang via beroepswelstand na ervarings van vermoeidheid was egter nie beduidend nie. Beroepswelstand het nie as ’n beduidende voorspeller van vermoeidheidervarings gedien nie. Ouderdom, ras en geslag het nie as beduidende moderators gedien nie. Vroulike deelnemers het aansienlik hoër puntetellings as manlike deelnemers gehad vir hul ervarings van vermoeidheid. Aanbevelings vir werknemerwelstandspraktyke en toekomstige navorsing is gemaak.

Sleutelterme: Werksverwante sin van samehang; beroepswelstand; ervarings van vermoeidheid; hantering in Industrie 4.0; COVID-19-pandemie; ondersteuningspraktyke vir werknemerwelstand

ISISHWANKATHELO

UKUQONDA KAKUHLE NOKUVAKALELWA KAMNANDI KWABAQESHWA NGOMSEBENZI WABO NJENGENDLELA YOKUTHINTELA AMAVA OKUDIKWA NGUMSEBENZI

ngu

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Injongo jikelele yolu phando yayikukuphanda ubunjani nobungakanani bokuhambelana kokuqonda kakuhle namava okudikwa ngumsebenzi, kwaqwalaselwa nefuthe lokulunga komsebenzi kunye nefuthe lemiba ephathelene namanani ezibalo zoluntu (njengobudala, isini, uhlanga). Enye injongo yophando yayikukuqwalasela indlela abaxhaswa ngayo abasebenzi. Kwakhethwa isampulu ekuthiwa yi*convenience sample* (N = 104; mean age = 42 years; SD: 11.99) yabaqeshwa abakwicandelo lorhwebo lweenkonzo. Le sampulu yayinabafazi abaninzi (74%) abaphuma kuhlanga lwabebala (62%). Kwaphandwa ngohlobo lokuqwalasela ubuninzi bamanani. Uhlalutyo lweziphumo ngokulandela i*mediation regression* lwaveza ukuwungaqondi kakuhle umsebenzi njengophawu oludiza ukudinwa kodwa ludize ukulunga komsebenzi. Noxa kunjalo, indlela esukela ekuwuqondeni kakuhle umsebenzi idlule kumava okudinwa ayibonisanga kubaluleka. Ubudala, uhlanga kunye nesini nazo azibonakalisanga kubaluleka. Abathathi nxaxheba ababbhinqileyo bafumana amanqaku aphezulu kakhulu kunamadoda xa kuqwalaselwa amava okudinwa. Kwacetyiswa iindlela zokulondoloza impilo yabaqeshwa nokuqhuba uphando.

Amagama aphambili: Ukuwuqonda kakuhle umsebenzi; ukuziva kamnandi ngomsebenzi; amava okudikwa; ukumelana neemeko zomsebenzi we4.0; ubhubhane weCOVID-19; iindlela zokuxhasa impilo yabasebenzi

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

CHAPTER 1: SCIENTIFIC ORIENTATION TO THE RESEARCH

The research explored the extent to which the work-related sense of coherence of employees and their career well-being may act as countermeasures for fatigue experiences. The relevant research constructs are (1) work-related sense of coherence (comprehensibility, manageability and meaningfulness) as an independent variable, (2) career well-being (career meaningfulness, career networking/social support and positive career affect) as a mediating variable, (3) socio-demographical characteristics (age, gender and race) as moderating variables and (4) fatigue experiences (as a sub-dimension of burnout) as the dependent variable.

Work-related sense of coherence (independent variable) and career well-being (mediating variable) are treated as a set of coping resources influencing the fatigue experiences (dependent variable) of employees. The socio-demographic variables are treated as moderating and control variables by assessing whether the relationship between an employee's work-related sense of coherence combined with their career well-being, and experiences of fatigue is conditional upon the moderating variables (socio-demographical characteristics; namely age, gender and race).

This chapter provides the background and motivation for the intended research by means of a literature study, after which the problem statement and research questions are formulated. Subsequently, the aims of the research are specified. The chapter elaborates on the paradigm perspectives which define the research boundaries and limitations. In addition, the chapter discusses the research design and the research method which provides structure to the research process. Finally, the manner in which the chapters are presented is introduced.

1.1 BACKGROUND AND MOTIVATION FOR THE RESEARCH

The context of this research is employee well-being from the perspective of the changing nature of work and careers in Industry 4.0. The Coronavirus disease 2019 (COVID-19) has recently also provided impetus to digital ways of connecting and pursuing work (Restubog et al., 2020). 'Industry 4.0' is the term that is often used to refer to the 'Fourth Industrial Revolution' (Kagermann et al., 2013; Min et al., 2019) which is described as the revolution of digitisation (Van Rensburg, 2019). Consequently, effective coping resources are required to adapt to the ongoing digital transformation (Ghislieri et al., 2018). Coping can be portrayed as the capacity with which an individual handles an unpleasant occasion (Ferreira et al., 2019; Oosthuizen, 2021). Industry 4.0 is

characterised by disruptive change and strong uncertainty. Coping and resilience help in dealing with such challenges (Oosthuizen, 2021). Marx (2016) as well as Asamani et al. (2015) found that coping signifcantly infuences an individual's ability to adapt in times of stress and adversity.

Industry 4.0 allows for the interconnectedness of people all over the world through the internet (Hattingh, 2018), but it also requires them to possess specialised skills (Motyl et al., 2017) which will enable them to deal with all the uncertainties regarding work, jobs and careers. This could lead to employees experiencing stress and anxiety (Matthee et al., 2014). Employees will therefore require new coping resources in order to meet the new demands of the digital era (Hirschi, 2018).

Although the degree of automation will vary between different sectors, its impact will be universally felt (Chui et al., 2016). Companies will have no choice but to adapt, as a lack in the required skill-set will lead to decreased performance and reduced competiveness (Steyn, 2020). Industry 4.0 is therefore not only about the advancement in technology, but also human resource development (Armstrong, 2020; Schallock et al., 2018) as well as the career well-being of employees which is of great importance in the digital era (Coetzee et al., 2020c).

Matthee et al. (2014) found working with computers and the internet to be a stressful task and a real occupational stressor for some people. It can adversely interfere with the achievement of work goals and the well-being of employees (Hudiburg, 1997; Lazar et al., 2006; Olivier et al., 2020). Now, with the onset of the COVID-19 pandemic and the necessary lockdown restrictions that were put in place around the world so as to avoid the spreading of the deadly virus, many employees have had to work from home in order to continue to earn their salaries (Meylahn, 2020). For employers, consultation with their employees could only be done through digital platforms such as Skype, Zoom meetings, Microsoft Teams or even WhatsApp (Olivier et al., 2020).

Not possessing the technological skills required to continue working from home could definitely increase a person's stress and fatigue levels. Van Rensburg (2019) states that the sense of urgency that comes with Industry 4.0 should help people focus on how to connect, collaborate and co-innovate. But it most likely could also have the opposite effect of increasing their stress and fatigue levels. Wittenberg-Lyles et al. (2014) agree that stressors at work are often re-lived at home, influencing personal relationships and resulting in sleeplessness and fatigue.

Fatigue is a sub-dimension of burnout and research seems to indicate that there exists a negative relationship between burnout and health. For example, Hills (2014) found exhaustion to be related to negative mental health outcomes such as poor sleep and depression. Additionally, burnout and exhaustion are related to negative outcomes such as role conflict at work, thoughts about leaving one's current job, and career-related training (Burke, 2019). The negative consequences of stress and fatigue add to the importance of the current study.

Although some research has been done in the past regarding the effect of a stressful working environment on the career well-being of an individual (e.g. Rothmann, 2003; Van der Colff & Rothmann, 2009), there seems to be a need for more recent research to be done, particularly in a COVID-19/post-COVID-19 and digital era context. The present study is therefore much needed.

The study is interested in exploring how an employee's work-related sense of coherence and their career well-being can countermeasure against them experiencing fatigue. This will be done in the context of Industry 4.0 and COVID-19 which requires most people to work from home and to connect with their colleagues via technology. These three constructs are important to study and the information from the study should be of great value for industrial psychologists and human resource practitioners, as they will provide new insights into making recommendations for coping and well-being support practices. It will be of added interest to see if and how these constructs are moderated by a person's age, race and gender.

Work-related sense of coherence is defined as the regarded comprehensibility, manageability and meaningfulness of a person's present situation at work (Vogt et al., 2013). According to Rothmann et al. (2003), sense of coherence elevates a person's feelings of control. Thus, it is good for employees to experience a high work-related sense of coherence. An employee with a weak sense of coherence will experience their job as being unmanageable and feel that they lack the resources to meet the demands at work (Antonovsky, 1987).

The three dimensions of work-related sense of coherence, namely comprehension, manageability and meaningfulness are highly interrelated (Antonovsky, 1987; 1993): According to Van der Colff and Rothmann (2009), having a strong sense of coherence may help an employee to understand stressors, so that they will regard those stressors as manageable and meaningful.

Interestingly, Rothmann et al. (2003) state that sense of coherence is an expression of a person's pervasive, enduring and dynamic feeling of coherence. Fatigue, as will be explained below, is the opposite of this feeling (Bridger, 2009; Shen et al., 2006; Swart & Sinclair, 2015). Strümpfer (2003)

found there to be a link between these two constructs in that a person's sense of coherence may assist in warding off burnout. The researcher of the present study is looking forward to adding to the research done on work-related sense of coherence, as it is a fairly new construct and there seems to be a paucity of research on the construct in a South African context (Ramasodi, 2016).

The present study hopes to contribute to employee coping and well-being support practices, so the following is relevant and note-worthy: Work-related sense of coherence influences the way an employee perceives, appraises and copes with work stressors, also referred to as job demands (Antonovsky, 1987). For example, an employee with a high work-related sense of coherence will perceive their job demands as challenging instead of threatening. Such an employee will be confident that there are enough available resources to deal with the demands. They will also more likely select an appropriate coping strategy (Basson & Rothmann, 2002; Rothmann et al., 2005; Strümpfer, 2003). According to Jenny et al. (2017), successful coping determines how healthy a person is.

With this study, the researcher aims to determine the influence of career well-being on the link between work-related sense of coherence and fatigue. Career well-being will therefore be explored.

'Career well-being' is a multi-dimensional construct for which previous literature does not seem to provide one single definition (Abdi et al., 2019). However, according to Bester et al. (2019), career well-being can be conceptualised as a positive intrinsic socio-emotional psychological condition that reflects an employee's long-term satisfaction with their career outcomes, career achievements and career changes; as well as their employability within the challenges and complexities of the current world of work. Previous research by Antonovsky (1987), Hakanen et al. (2006), Jenny et al. (2017), Van der Westhuizen (2018) and Zweber (2014) suggests that career well-being may act as an intervening mechanism in explaining the link between a high level of work-related sense of coherence and a low level of fatigue. The present study aims to confirm this.

According to Coetzee et al. (2020b), the three positive states underpinning an individual's career well-being are career meaningfulness, career networking/social support and positive career affect. These intrinsic positive socio-emotional psychological states represent self-concordant independent career motives that generate the feelings of career well-being (Coetzee, 2021a). They help employees to feel secure and confident when dealing with the stress that comes with

changing career contexts (Lyubomirsky & Porta, 2010). These states are discussed in more detail in chapter 3.

The present study will seek to determine how career well-being may act as an intervening mechanism in explaining the link between work-related sense of coherence and fatigue.

Fatigue, as a physical component, is one of the three sub-components of burnout; the other two being: (cognitive) weariness and (emotional) exhaustion or withdrawal (Asiwe et al., 2014). Burnout frequently occurs in individuals who do “people-work” (Burke, 2019; Maslach & Jackson, 1981b; Wright & Bonett, 1997; Wright & Cropanzano, 1998). Interestingly, studies found that these physical and emotional aspects of exhaustion collapse into one factor that reflects fatigue (Enzmann et al., 1998). The present study specifically focuses on fatigue, since it is not as well-researched as is burnout.

Shen et al. (2006) define fatigue as an immense sense of tiredness, of a lack of energy, and of feeling exhausted in relation to diminished physical and cognitive functioning. Researchers commonly address the issue that fatigue has its effect on the performance of employees, so where fatigue is work-related, Bridger (2009) defines fatigue as a side effect of work that reduces a person’s ability to continue doing work of the same kind. Swart and Sinclair (2015) are in agreement with this.

Bezuidenhout and Cilliers (2010) as well as Harry and Coetzee (2013) state that in the fast-paced digital era of today, the success and survival of an organisation depend on the employees' drive, energy and passion. Fatigue, as explained by Shen et al. (2006), means having an extreme lack of energy. Fatigue clearly poses a real problem. The current study proposes that work-related sense of coherence and career well-being may help to counteract fatigue.

The current study endeavours to test South African employees who work with people and deliver a type of service to others, but who possess different socio-demographic characteristics (age, gender and race). This will provide a complete and detailed view which will help to inform managers and the employees themselves of coping and well-being interventions at an individual and organisational level.

Previous research has found there to be differences in the fatigue levels of employees from different age groups. For example, Jackson and Rothmann (2005) found that employees between the ages of 45 and 50 experienced lower scores than younger employees below 27 years of age. This contrasts with a study done by Osipow et al. (1985) that found lower fatigue levels in employees aged between 20 and 25. Their explanation for this is the fact that workers tend to take on greater family responsibilities and work overload as they age. This also relates to their low levels of well-being and work-related sense of coherence. Interestingly though, Ekstedt et al. (2006) found that fatigue in occupational burnout may be linked to variables external to the work environment, such as disturbed sleep (Asiwe et al., 2014). The present study will try to decipher this.

Studies have found that sense of coherence is also connected to gender (Mayer et al., 2016). Sense of coherence scores have traditionally proven either to be similar for both genders (Von Bothmer & Fridlund, 2003) or higher for men (Antonovsky, 1987; Lindström & Eriksson, 2005; Mayer, 2011). In more recent times, however, sense of coherence scores have been significantly higher in females (Garcia-Moya et al., 2013; Mayer et al., 2019). Furthermore, these findings might support the assumption that sense of coherence scores with regard to gender are strongly dependent on the contextual concepts and values of individuals as well as their broader socio-political and cultural contexts (Antonovsky, 1979; Chu et al., 2016; Mayer, 2011). The present study seeks to investigate this, since it will be interesting to compare South Africans with Indians – the study mentioned above by Garcia-Moya et al. (2013) was conducted at a university in Northern India.

South Africa is rich in diversity. Most organisations in the country employ individuals with diverse cultural backgrounds. The psychological differences among different racial groups remains a relatively understudied area. The present study will offer new knowledge and insight in this regard.

Finally, a study conducted in China (Chu et al., 2016) showed that a stronger sense of coherence relates to better performance when compared to peers. This is consistent with studies that show low sense of coherence scores correlate with high burnout/fatigue scores (Bezuidenhout & Cilliers, 2010).

In light of the above research literature, the following research hypotheses are formulated:

H1: There is a negative relationship between (1) the antecedent variable (work-related sense of coherence), and (2) the mediating variable (career well-being), and fatigue experiences (dependent variable).

H2: The link between the antecedent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's career well-being (mediating variable).

H3: The effects of (1) the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue) and (2), the mediating variable (career well-being) on the dependent variable (fatigue) is moderated by an employee's age, gender and race. This means that certain groups will experience less fatigue than other groups because of their level of work-related sense of coherence and career well-being.

H4: Employees with different age, gender and race groups differ significantly regarding their work-related sense of coherence, career well-being and experiences of fatigue.

1.2 PROBLEM STATEMENT

The nature of people's work, jobs and careers will continuously change in the contemporary context conditions of Industry 4.0 (Ramraj & Amolo, 2021). With the worldwide pandemic of COVID-19, it is even more true that careers, the form of jobs and occupations will be unstable, unpredictable and that they will be changing drastically within the employment context (Akkermans et al., 2020; Restubog et al., 2020). Coping resources such as work-related sense of coherence and career well-being should be regarded as a necessity. Wilhelm and Hirschi (2019) state that people will need a sense of career well-being in order to develop agile coping capabilities when facing the new challenges and opportunities of the digital era.

With COVID-19 comes the necessity to upgrade the skills and competencies of employees, especially regarding the use of technology (Akkermans et al., 2020). Many scholars (Selamat et al., 2017; World Economic Forum, 2016) also agree that aside from the technical skills required for Industry 4.0, these should be complemented by strong social and collaborative skills. Employers should offer support to their employees, especially in such difficult and unprecedented times of COVID-19 (Akkermans et al., 2020). Coetzee et al. (2020b) state that employees should be guided as to how technological advancement in the organisation could benefit their careers. They should

be told of the new opportunities that may arise as a result of technological change. This kind of support could assist with the cognitive restructuring of change, and in fostering a sense of efficiency among employees instead of helplessness.

Furthermore, studies have shown that fatigue -that arises from more uncertain and turbulent career contexts- acts as an indicator of work wellness i.e. career well-being and that work-related sense of coherence offers an explanation for this (Van der Westhuizen, 2018). Rothmann et al. (2005) confirmed the results of Basson and Rothmann (2002), and Wissing et al. (1992) that a person's sense of coherence is negatively related to burnout. Fatigue is a sub-dimension of burnout and it seems that sense of coherence is a strong predictor to take into consideration.

The literature suggests that the work-related sense of coherence and career well-being of employees are worth investigating, especially as countermeasures for fatigue experiences. The contribution of this study will therefore be in the form of recommendations for coping and well-being support practices, since the field of Industrial and Organisational Psychology focuses on enhancing employee behaviour and their well-being at work. The argument is that peoples' contentment with their career outcomes, career achievements and career changes; and their sustainable employability amidst the complexities of the contemporary work environment relates to their personal narratives about the self in relation to their experiences of the environment with which they operate and interact (Coetzee et al., 2020b).

This study will focus on those employees who work in Service Industries, since burnout/fatigue frequently occurs in individuals who do "people-work" (Burke, 2019; Maslach & Jackson, 1981b; Wright & Bonett, 1997; Wright & Cropanzano, 1998). The current research on fatigue experiences is sparse due to previous authors focusing more on burnout. According to Phillips (2014), sleep deprivation and sustained task performance are the two main causes of fatigue. Sleep deprivation has a major impact on a person's cognitive functions, including alertness, perceptual skills, reaction times and decision-making (Lim & Dinges, 2010). Fatigue experiences in the workplace should therefore be avoided as far as possible. Work-related sense of coherence and career well-being may help in this regard. It has already been stated that fatigue is a sub-dimension of burnout, and many previous authors have found that employees with a strong sense of coherence experience less burnout (Basson & Rothmann, 2002; Rothmann et al., 2005).

Previous literature has also proven that work-related sense of coherence and career well-being are closely linked (Eberz et al., 2011; Vogt et al., 2013). In fact, Zweber (2014) discovered that work-related sense of coherence is positively related to the perception that the organisational climate is supportive of employee health and well-being. This will make it possible to research the mediating role of career well-being in the relationship between work-related sense of coherence and fatigue experiences.

This study will also consider the moderating effects of socio-demographic characteristics as there seems to be a need for more knowledge and insight in this regard. The study will investigate if and how the three above-mentioned constructs are moderated by a person's age, gender and race. This will provide a complete and detailed view which will help to inform managers and the employees themselves of coping and well-being interventions at an individual and organisational level.

In view of the current literature on the relationship dynamics between work-related sense of coherence and fatigue as well as the career well-being of employees together with their socio-demographic characteristics (age, gender and race), the following research problems are brought forward:

- The dire need for more research gives the opportunity to broaden the knowledge on the relationship between work-related sense of coherence, career well-being and fatigue experiences which may inform employee well-being practices.
- There seems to be a need for more knowledge and insight on the moderating effects of socio-demographic characteristics; and the mediating effect of career well-being which may potentially influence the relationship between work-related sense of coherence and experiences of fatigue, especially in the context of Industry 4.0 and COVID-19.

<u>The problem statement leads to the following general research question:</u>

Does the level of work-related sense of coherence and career well-being of an employee predict their experiences of fatigue, and if so, to what extent do socio-demographical characteristics influence the relationship dynamics among the variables?

From the above, the research questions below were formulated in terms of the literature review and empirical study.

1.2.1 Research questions with regard to the literature review

The literature review points out the following research problems:

Research question 1: How does the literature conceptualise the constructs of work-related sense of coherence, career well-being and fatigue in the context of Industry 4.0 post-COVID-19?
Research question 2: What is the theoretical relationship between work-related sense of coherence, career well-being and fatigue?
Research question 3: What are the implications of the theoretical relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences for general well-being support practices?

1.2.2 Research questions with regard to the empirical study

In terms of the empirical study, the following specific research questions have been formulated:

Research question 1: What are the empirical inter-relationships between work-related sense of coherence (the antecedent variable), fatigue experiences (the dependent variable) and career well-being as mediating variable, as demonstrated in a sample of South African employees who work with people and deliver services to them? (This research question relates to the research hypothesis 1).
Research question 2: To what extent is the link between the antecedent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) mediated by an employee's level of career well-being (mediating variable)? (This research question relates to the research hypothesis 2).
Research question 3: What are the effects of the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue experiences) and the mediating variable (career well-being) on the dependent variable (fatigue experiences), when moderated by an employee's age, gender and race characteristics? (This research question relates to the research hypothesis 3).
Research question 4: Do employees from different socio-demographic groups differ significantly regarding their work-related sense of coherence, career well-being and fatigue experiences? (This research question relates to the research hypothesis 4).

Research question 5: What recommendations can be formulated for industrial psychologists and human resource professionals in terms of general well-being support practices?

1.3 AIMS OF THE RESEARCH

Given the research questions as discussed above, the aims of this study are formulated as follows:

1.3.1 General aim

The general aim of the research is to explore the nature and the magnitude of the associations between work-related sense of coherence (independent variable) and fatigue experiences (outcome variable), taking into account the intervening effect of career well-being (mediating variable) and the moderating effect of socio-demographic characteristics (such as age, gender and race). The research further aims to inform employee well-being support practices.

1.3.2 Specific aim

The following aims are formulated for the literature review and empirical study:

1.3.2.1 Literature review

Research aim 1: To conceptualise, from the literature, the constructs of work-related sense of coherence, career well-being and fatigue in an Industry 4.0 and post-COVID-19 context.
Research aim 2: To explore the theoretical relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences.
Research aim 3: To establish the implications of the theoretical relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences for well-being support practices.

1.3.2.2 Empirical study

Research aim 1: To assess the empirical inter-relationships between work-related sense of coherence (the independent variable), fatigue experiences (the dependent variable) and career well-being (as mediating variable).

Research aim 2: To assess whether the link between the independent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's level of career well-being.

Research aim 3: To assess (1) the effect of the independent variable (work-related sense of coherence) on the dependent variable (fatigue experiences), and (2) the effect of career well-being (mediating variable) on fatigue experiences (dependent variable), when moderated by an employee's age, gender and racial characteristics.

Research aim 4: To assess whether employees from different socio-demographic groups (namely age, gender and race) differ significantly with regards to work-related sense of coherence, career well-being and fatigue experiences.

Research aim 5: To formulate conclusions and recommendations for industrial psychologists and human resource professionals with regards to well-being support practices.

1.4 STATEMENT OF SIGNIFICANCE

The modern world is fast-paced. In keeping up with an increasingly demanding way of life, including at their places of work, the health of people as well as their career well-being have taken a backseat. Fatigue experiences have become more common in employees in recent years. This poses a great challenge for Industrial Psychologists and Human Resource professionals. Fatigue is a sub-component of burnout (Asiwe et al., 2014) and burnout is said to frequently occur in individuals who do "people-work" (Burke, 2019; Maslach & Jackson, 1981b; Wright & Bonett, 1997; Wright & Cropanzano, 1998), so it is fitting for the present study to focus on employees who offer a type of service to others.

The COVID-19 pandemic has only made matters worse. Its impact on the world was extremely sudden and unforeseen (Akkermans et al., 2020). Businesses have been majorly affected by this pandemic (De Pandy & Pal, 2020; Restubog et al., 2020). Olivier et al. (2020) and Molino et al. (2020) explain how employers and employees have had to deepen their understanding of Industry 4.0 to enable them to work from home during times of lockdown. Not adapting would have resulted in decreased performance, reduced competiveness and no salaries (Meylahn, 2020; Pak, 2021; Steyn, 2020). Employees with a lack of modern technological skills were and are at a great disadvantage, resulting in increased stress levels (Ethel et al., 2016). The negative consequences of stress and fatigue also add to the importance of the current study.

At a **theoretical level**, the research may be useful to explore the theoretical relationship between work-related sense of coherence (independent variable), career well-being (mediating variable), socio-demographic characteristics -namely age, gender and race- (as moderating variable) and fatigue experiences (dependent variable). If significant relationships are found in the research literature, it will inform future coping and employee well-being initiatives within the service industry. Furthermore, the study will create a greater understanding of the intricate dynamics between these constructs and the findings will contribute to the existing body of knowledge on the subject. The literature review may also help to identify gaps -pertaining to the theoretical and empirical gaps- in the existing research which the present study may help to address. Thus, the present study may add new knowledge and insights to contribute to the well-being literature.

At an **empirical level**, the research will empirically test the relationship of the variables as manifested in South African employees; as well as the predictive relationship that work-related sense of coherence and career well-being may have on the fatigue experiences of those who do "people-work". Additionally, the study may indicate whether employees from different socio-demographic groups differ in terms of their work-related sense of coherence, career well-being and fatigue experiences.

At a **practical level**, industrial psychologists and human resource professionals could develop a greater understanding of work-related sense of coherence, career well-being and fatigue; and their dynamic interaction within an Industry 4.0, post-COVID-19 pandemic context. This could result in suggesting well-being support practices in the workplace. Additionally, this study could help with enhancing people behaviour and well-being in an organisational context.

The dynamic interplay of work-related sense of coherence, career well-being, fatigue experiences and socio-demographic characteristics is an under-studied area. Placing this study in an Industry 4.0 and post-COVID-19 pandemic context adds an immediate applicable quality. The objective of this study is to be a starting point into an investigation of the relationship dynamics between these constructs. As a result, this study could potentially be considered as important and lead the way for future research on this topic.

1.5 THE RESEARCH MODEL

The seminal research model of Mouton and Marais (1996) will serve as a framework for this research. This model considers research into social sciences to be a co-operative human activity in

which social reality is objectively studied in order to gain a well-grounded understanding of it. The model incorporates the following five dimensions of social science research (Neuman, 2011):

- Sociological dimension: Assuming that research involves society and will require the participation of others;
- Ontological dimension: Understanding that social research is guided by societal reality and its assumptions;
- Teleological dimension: Taking the research's ultimate intention into consideration which is to acquire a better understanding of society;
- Epistemological dimension: The researcher's aim to establish what is true; while considering the relationship between reality, the researcher and what is valid;
- Methodological dimension: The objective techniques which the researcher uses in the pursuit of reality.

It is a systems theoretical model and its three sub-systems interact with one another, namely the intellectual climate, the market of intellectual resources and the actual research process. For the current research, these sub-systems will be dealing with the research domain of Industrial and Organisational Psychology.

1.6 PARADIGM PERSPECTIVES OF THE RESEARCH

A paradigm refers to the structure of theory and research. A paradigm gives a framework to the definitive confines of the research. It includes the basic assumptions, key topics, models of quality research and the research methods or techniques; and examines the philosophical constructs of social sciences (Jonker & Pennink, 2010; Neuman, 2011). A paradigm also presents an inherent representation of the researcher's view of the world, including their values and beliefs (O'Neil & Koekemoer, 2016). In the context of this research, paradigms are explored in terms of the field of study, intellectual climate, market of intellectual resources, and central hypothesis.

1.6.1 Field of study

The study will be conducted in the field of Industrial and Organisational Psychology which has been described by Landy and Conte (2016) as the application of psychological principles, theory

and research to issues that individuals encounter in the professional environment. Industrial and Organisational psychology, historically called personnel psychology (Coetzee et al., 2021), is the study of the conduct of individuals within work settings. Broadly speaking, Industrial and Organisational psychology is concerned about human behaviour in the workplace, which involves the application of psychological principles (Giberson, 2015; Coetzee et al., 2021; Riggio, 2017).

The aim of Industrial and Organisational psychology research is to add to the existing body of knowledge regarding behaviour in the workplace with the aim to improve individual behaviour, the working environment and employee well-being. An Industrial and Organisational Psychologist thus acts as both a practitioner and scientist (Riggio, 2017).

In this particular study, the researcher wishes to establish whether the work-related sense of coherence and career well-being of employees can counteract against them having fatigue experiences. The researcher hopes that the findings of the study will guide managers and employees in planning and implementing interventions that are aimed at increasing the work-related sense of coherence; as well as the level of career well-being of employees to prevent experiences of fatigue.

1.6.2 The intellectual climate

The intellectual climate refers to a range of meta-theoretical values and beliefs that are shared by the practitioners of a particular field of study or discipline (Mouton & Marais, 1996).

The relevant constructs to this study include work-related sense of coherence, career well-being and fatigue experiences. The literature review will be presented from the combined paradigms of humanist and positive psychology. The empirical study will be presented from the post-positivist research paradigm.

1.6.2.1 The literature review

The constructs of work-related sense of coherence, career well-being and fatigue, thematically, all relate to the humanistic paradigm and positive psychology.

The humanistic paradigm supports the idea that human-beings have free will (Morgan, 1980; Sdorow & Rickabaugh, 2002). Thus, the approach argues that people have the freedom and autonomy to make significant personal choices. Humanistic psychology emphasizes self-efficacy and self-actualisation (Brockett & Hiemstra, 1991). Rather than concentrating on dysfunction, humanistic psychology strives to help people fulfil their potential and maximize their well-being. Humanists conceptualise human nature as positive and acknowledge their subjective experiences and conscious processes as they play an active role in determining a person's behaviour (Mguqulwa, 2008). As humans are integrated beings, they actively strive towards self-actualisation (Ngokha, 2008).

Positive psychology is also relevant to the constructs of this study. Positive psychology is the scientific study of optimal human functioning that focuses on the positive aspects of human functioning and experience. It is interested in integrating the positive aspects with the negative aspects of human functioning and experience (Linley et al., 2006; Peterson, 2008; Rashid & Seligman, 2013). Stressors, such as work demands, are not regarded as sources of difficulties, but rather as aspects that individuals can understand, manage, enjoy and get involved in because of the strengths and virtues they possess (Kjerulf, 2016; Seligman & Csikszentmihalyi, 2000).

Positive psychology relates well to the current study, since it focuses on dealing with unavoidable stress which can lead to illness or growth, manifesting in experiences of fatigue. Should the study establish the link between work-related sense of coherence and fatigue experiences, industrial psychologists and human resource professionals may use the findings in their continuous efforts to develop suitable well-being interventions.

1.6.2.2 The empirical study

The empirical research will be presented from the post-positivism research paradigm. Post-positivism is defined as the pursuit of 'warranted assert-ability' as opposed to 'truth' (Lather, 1990). Post-positivism takes on a meta-theoretical position which aims to critically analyse and amend positivism (Bergman, 2016). The post-positivist paradigm accepts that the research outcome is only an approximation of the truth rather than the truth itself (Popper, 1992a). It is important that the researcher strive to remain as neutral as possible.

Post-positivism acknowledges the shortcoming of all measurements and highlights the importance of using multiple measures. It also highlights the advantage of using a combination of different theories, data sources, methods or investigators (called triangulation) in the study of a single phenomenon. This helps researchers to better explain, enrich and analyse data; as well as to reduce bias (Houghton et al., 2012). Post-positivists regard both quantitative and qualitative methods to be valid approaches, whereas positivists give emphasis to quantitative methods (Taylor & Lindlof, 2011). The present study will be conducted by means of cross-sectional quantitative research.

Post-positivist research has the following characteristics (Ryan, 2006):

- Research is broad, not specialised: an array of different things meets the requirements of research;
- Theory and practice cannot be separated;
- The researcher's motivation for the research is an essential and fundamental consideration;
- Precise techniques for collecting and categorising information are now acceptable.

From the above, it is evident that the post-positivist framework would be most appropriate for this study.

1.6.3 The market of intellectual resources

The market of intellectual resources covers the collection of beliefs which has a direct effect on the epistemic status of scientific statements (Mouton & Marais, 1996). The following sections present the meta-theoretical statements and conceptual descriptions about work-related sense of coherence, career well-being and fatigue experiences; as well as the central hypothesis and theoretical and methodological assumptions for this study.

Meta-theoretical statements embody the assumptions underlying the theories, models and paradigms that form the context of a specific study (Mouton & Marais, 1996). Based on the literature review, the conceptual models used in this research will be work-related sense of coherence, career well-being and fatigue experiences.

1.6.3.1 Work-related sense of coherence

Similar to Antonovsky's (1979) definition for 'sense of coherence', 'work-related sense of coherence' is defined as the regarded comprehensibility, manageability and meaningfulness of a person's present situation at work (Vogt et al., 2013).

Antonovsky's salutogenic model of health (Antonovsky, 1993b) will be applied to study the construct; whereas the English version of the Work-related sense of coherence scale (Work-SoC) (Vogt et al., 2013) will be employed as the measurement tool. This questionnaire consists of a 9-item self-report inventory, measuring the following dimensions: Items 1, 3, 6 and 9 measure the sub-dimension of comprehensibility (e.g. "clear/unclear"); items 4 and 7 measure the sub-dimension of manageability (e.g. "controllable/uncontrollable"); and items 2, 5 and 8 measure the sub-dimension of meaningfulness (e.g. "insignificant/significant").

1.6.3.2 Career well-being

Career well-being can be conceptualised as an employee's long-term satisfaction with their career outcomes, career achievements, career changes as well as their employability within the challenges and complexities of the current world of work (Bester et al., 2019). It alludes to remaining healthy, productive, and content; as well as being able to meet the economic and quality-of-life needs in a technologically advanced work environment (Coetzee & Schreuder, 2020; Van der Heijden & De Vos, 2015).

The Coping Circumplex Model (Stanislawski, 2019) will be applied to study the construct; while the Career Wellbeing Scale (Coetzee et al., 2021) will be employed as the measurement tool. The scale measures three states of career well-being: *positive affective career state* (6 items: e.g. 'I feel my career provides me with the skills and experience I need to easily find new employment'); *state of career meaningfulness* (4 items: e.g. 'I feel that what I do in my career is valuable and worthwhile'); and *career networking/ social support state* (4 items: e.g. 'I find it easy to reach out to others to help and support me in achieving my career goals'). The 14 items are rated on a seven-point Likert-type scale (1 = strongly disagree; 7 = strongly agree). Coetzee et al. (2021) identified a three-factor structure and high internal consistency reliability of this Career Wellbeing Scale.

1.6.3.3 Fatigue experiences

Shen et al. (2006) define fatigue as an immense sense of tiredness, a lack of energy, and feeling exhausted in relation to diminished physical and cognitive functioning.

Maslach's burnout theory (Maslach & Jackson, 1981b; Maslach, 1993) will be applied to study the construct. The measurement tool will be The Fatigue Scale taken from the three factor 'Burnout Scale' (Asiwe et al., 2014); since fatigue is a one of the three sub-dimensions of burnout. The Fatigue scale consists of a 5-item self-report inventory (e.g. "I feel weak while at work").

Table 1.1 summarises the constructs, their respective sub-elements, the theoretical model on which each construct will be based and the measurement instrument assigned to each construct.

Table 1.1

Core Constructs, Measuring Instruments and Theoretical Models

CONSTRUCT	CORE ASPECTS TO BE MEASURED	MEASURING INSTRUMENT	CORE THEORETICAL MODEL
Work-related sense of coherence	• Comprehensibility • Manageability • Meaningfulness	English version of the Work-related sense of coherence Scale (Work-SoC) -(Vogt et al., 2013)	Antonovsky's salutogenic model of health (Antonovsky, 1993b)
Career well-being	• Positive career affect • Career meaningfulness • Career networking/ Social support	Career Wellbeing Scale -(Coetzee et al., 2021)	The Coping Circumplex Model (Stanislawski, 2019)
Fatigue experiences	• Feeling weak at work • Not enough energy for daily tasks • No energy in the morning	Fatigue Scale -taken from the three factor 'Burnout Scale' -(Asiwe et al., 2014)	Maslach's burnout theory (Maslach & Jackson, 1981b; Maslach, 1993)

	• Feeling exhausted at the end of the day • Feeling emotionally exhausted at work		

Source: Author's own work

1.6.4 Central hypothesis

The central hypothesis of the research is formulated as follows:

The antecedent variable (work-related sense of coherence) will have an inverse relationship with the outcome variable (fatigue experiences) through career well-being (as a mediating variable). The hypothesis further assumes that the relationship between work-related sense of coherence, career well-being and fatigue experiences is moderated by the individuals' socio-demographic characteristics (age, gender and race). The relationship is more negative for certain socio-demographic groups than others.

1.6.4.1 Theoretical assumptions

The following theoretical assumptions are addressed in this research:

- There is a need for preliminary research to isolate the relationship between work-related sense of coherence and fatigue experiences.
- The employee's level of career well-being will influence their experiences of fatigue in the workplace.
- The employee's work-related sense of coherence and career well-being can be moderated by their socio-demographic characteristics (namely age, race and gender).
- Understanding the dynamic relationship between work-related sense of coherence, career well-being, fatigue experiences and socio-demographic characteristics may inform/guide managers and the employees themselves about/regarding well-being support practices with the focus on enhancing people behaviour and their well-being in an organisational context.

1.6.4.2 Methodological assumptions

Methodological assumptions are theories that relate to the nature of social sciences and scientific research (Mouton & Marais, 1996). The following methodological assumptions affect the nature and structure of the research domain:

(a) Sociological dimension

According to Mouton and Marais (1996), the sociological dimension describes scientific research as a co-operative activity. This dimension observes the requirements of the sociological research ethos that draw on the research community for its contributions to the area of this study. This research will be non-experimental in nature. It will focus on the quantitative analysis of variables and concepts that will be described in the chapters dealing with empirical research and the results of the research.

(b) Ontological dimension

The ontological dimension refers to how people view reality. Neuman (2011) described this dimension as one that concerns itself with the fundamental nature of reality or with what exists. This research will measure the properties of the constructs: work-related sense of coherence, socio-demographic characteristics, career well-being and fatigue experiences.

(c) Teleological dimension

The teleological dimension considers research to be an intentional and goal-directed activity where the main aim involves understanding the phenomena (Mouton & Marais, 1996). The objectives of this research are clearly established: To investigate the relationship dynamics between work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences. The practical aim of this research is to further the field of Industrial and Organisational Psychology by contributing knowledge that may inform/guide managers and employees about/regarding coping and well-being support practices in the workplace.

(d) Epistemological dimension

The epistemic dimension is concerned with the creation of knowledge by focusing on the most valid ways to reach the truth (Neuman, 2011). Under this dimension, the aim of the research is to provide a reliable understanding of reality. This research will attempt to provide valid and reliable results by means of a well-structured research design.

(e) Methodological dimension

The methodological dimension refers to the decision-making process in scientific research which is concerned with using scientific methods to investigate phenomena. Research methodologies are categorised as quantitative, qualitative or participatory research (Mouton & Marais, 1996). This study will present quantitative, exploratory research in the form of a literature review on work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences. Quantitative research will be presented in the empirical study.

1.7 RESEARCH DESIGN

The research design is a kind of empirical strategy (Theron, 2017) or strategic framework. It acts as a bridge between the research questions and the execution of the research (Durrheim, 2010). The elements of the research design will be discussed with reference to this research.

1.7.1 Exploratory research

Exploratory research aims to examine relatively unknown areas of research. It almost always yields new insights into a topic for research (Rubin & Babbie, 2014). The main purposes of exploratory research are to obtain new insights, to undertake a primary investigation, and to determine central concepts and constructs which will help researchers to determine future research priorities (Mouton & Marais, 1996). This research is exploratory as it will compare various theoretical perspectives on work-related sense of coherence, career well-being and fatigue experiences.

1.7.2 Descriptive research

Descriptive research aims to provide a comprehensive, systematic picture of a situation, social setting or relationship. Descriptive research begins with a clearly defined issue, describes it accurately and delivers a detailed picture of the issue (Kumar, 2019; Neuman, 2011; Veal, 2017).

In the literature study, descriptive research applies to the conceptualisation of the constructs of work-related sense of coherence, career well-being and fatigue experiences. In the empirical study, descriptive research is provided with regard to the socio-demographic characteristics of the sample as well as the means, standard deviations and Cronbach's alphas (internal consistency reliability) of the constructs of work-related sense of coherence, career well-being and fatigue experiences.

1.7.3 Explanatory research

The nature of explanatory research expands on exploratory and descriptive research (Neuman, 2011), as it aims to provide causal explanations between variables (Rubin & Babbie, 2014; Veal, 2017). Explanatory research makes use of an existing social theory or research explanation and then details a new problem in an effort to determine how well that explanation holds up. This type of research aims to establish whether or not the theory needs to be modified or is limited to specific conditions (Kumar, 2019; Neuman, 2011).

In the empirical study, the researcher will seek to explain the nature, direction and magnitude of the relationship between the variables by means of a cross-sectional quantitative study. The cross-sectional design is not only cost-efficient, but is the most practical design at the early stages of research or when dealing with new research questions (Spector, 2019). This form of research will be applicable to the relationship between work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences for the group. However, some of the limitations of cross-sectional research design are that the study cannot be used to analyse behaviour over time, it cannot establish cause-and-effect and the study (primarily a snapshot in time) cannot be considered a guaranteed representation, but merely the nature, magnitude and direction of links between variables (Spector, 2019).

As previously stated, the study seeks to investigate the intermediary process of career well-being on the link between work-related sense of coherence and fatigue experiences, testing the

mediation effect of the employee's career well-being on their fatigue experiences. This level of investigation will assist in understanding the antecedents, intermediary mechanisms and outcome of fatigue experiences which will inform the importance of well-being support practices. Due to the exploratory cross-sectional nature of the research design, there will be no attempt to determine cause-and-effect relations. Only the magnitude, direction and nature of the links between the variables will be explored.

Although social science researchers generally critique cross-sectional mediation designs, cross-sectional studies employing mediation analysis are known to contribute new theoretical insights in exploratory research (Disabato, 2016). This study recognises the limitations of cross-sectional mediation analysis, namely the possibility of bias, and the support for mediation effects when there is no true mediation process in the sample (Fairchild & McDaniel, 2017). However, as clearly stated in this study, the research does not aim to assess causal effects. It will only assess the direction and magnitude of links between variables. In this regard, it is important to emphasise that the research design employed mediation analysis for explanation purposes and not mediation for design (i.e. true causal effects over time) purposes.

Furthermore, the study seeks to assess the moderation or interaction effect of individual employees' socio-demographic characteristics (age, gender and race) on the relationship between work-related sense of coherence, career well-being and fatigue experiences. The study will focus on measuring whether the moderation variables of socio-demographic characteristics -which are relatively stable traits- will modify the strength and direction of the (1) effect of work-related sense of coherence and (2) the effect of career well-being on employees' experiences of fatigue. This will help to inform coping and well-being support practices at the individual and organisational level, especially in an Industry 4.0 and post-COVID-19 context.

1.7.4 Validity

The main purpose of using a research design is to plan and structure the research project so that it guarantees the literature review and empirical study are valid for all the research variables (Mouton & Marais, 1996).

Validity refers to which extent the research information reflects the true nature of the phenomenon that is being studied (Veal, 2017). Validity is narrowed down to internal and external validity. Internal validity refers to whether the variables adequately represent the phenomenon (Veal,

2017), as well as the extent to which the relationships between the variables have been correctly interpreted (Punch, 2014). External validity refers to the generalisability of outcomes to situations and populations beyond the study (Rubin & Babbie, 2014; Veal, 2017).

1.7.4.1 Validity of the literature review

The validity of the literature review was ensured by making use of recent and relevant literature regarding the nature, problems and aims of the research. The research will ensure that the most recent literature sources were consulted, but where possible, will refer to the classical and contemporary mainstream studies.

1.7.4.2 Validity of the empirical research

The study will ensure internal validity with the utilisation of suitable and standardised measuring instruments. The research will include a critical examination of the measuring instruments to determine the face-validity, criterion-related validity, construct validity and content validity. The study will also minimise bias by using convenience sampling when targeting South African employees who work with people and deliver (a) service(s) to them.

External validity will be ensured by targeting South African employees who work with people by delivering (a) service(s) to them. The study will include participants from different socio-demographic groups such as age, gender and race to reflect the socio-demographic profile of the population; thereby increasing the generalisability of the findings to the target population (Neuman, 2011; Veal 2017).

1.7.5 Reliability

Reliability refers to the dependability of a measuring instrument (Punch, 2014). In the literature study, reliability pertains to the collation of available, accurate, impartial and comprehensive information (Fink, 2010). In the empirical study, reliability will be measured by means of the internal consistency. The internal consistency will be measured by using the Cronbach's coefficient alpha. It is a statistical procedure that indicates the average correlation among all scale items (Punch, 2014). Cronbach's coefficient should preferably be greater than .70.

1.7.6 Research variables

For the purpose of this study, work-related sense of coherence will act as the independent variable, career well-being as the mediating variable, fatigue experiences as the dependent variable and the socio-demographic characteristics (namely age, gender and race) will act as moderating variables.

In order to make informed recommendations for well-being support practices, the study aims to investigate the relationship dynamics between all the variables. Additionally, the research will assess whether or not the socio-demographical characteristics significantly modify the strength and direction of the employee's fatigue experiences.

1.7.7 The unit of research

In social sciences studies, individuals are typically the units of analysis. The unit of analysis differentiates between the different characteristics of either the individuals, organisations, groups, social artefacts and social actions (Cohen et al., 2013; Rubin & Babbie, 2014). A unit of research is the geographic range and the group of the individuals or organisations within it. In other words, the unit of research specifies the focus object of the study (Craig & Douglas, 2006; de Vos et al., 2011).

Mouton and Marais (1996) established four main categories of units of analysis: individuals, groups, organisations and social artefacts. In this study, the researcher will focus on the constructs of work-related sense of coherence, career well-being and fatigue experiences. The researcher will consider the individual scores on each of the measuring instruments (individual level), the general scores on each of the measuring instruments (group level) as well as the socio-demographic characteristics (sub-group level).

1.7.8 Delimitations

The study will be narrowed-down to research dealing with work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences of South African employees who work with people and deliver a type of service to them.

The research targeted those who work in service industries by means of convenience sampling. The disadvantages of convenience sampling include the relevance of bias as well as a high level of sampling errors. The findings will specifically relate to service industries. This type of working environment is unique and the research findings may not necessarily apply to organisations that operate in other industries.

The study will rely on self-report measures. The risks associated with self-report tools are common method variance (Jakobsen & Jensen, 2015; Malhotra et al., 2017; Podsakoff, 2003; Richardson et al., 2009) and social desirability response bias (Krumpal, 2013).

The study intends to serve as preliminary exploratory cross-sectional research which will be limited to only assessing the links between the constructs of work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences.

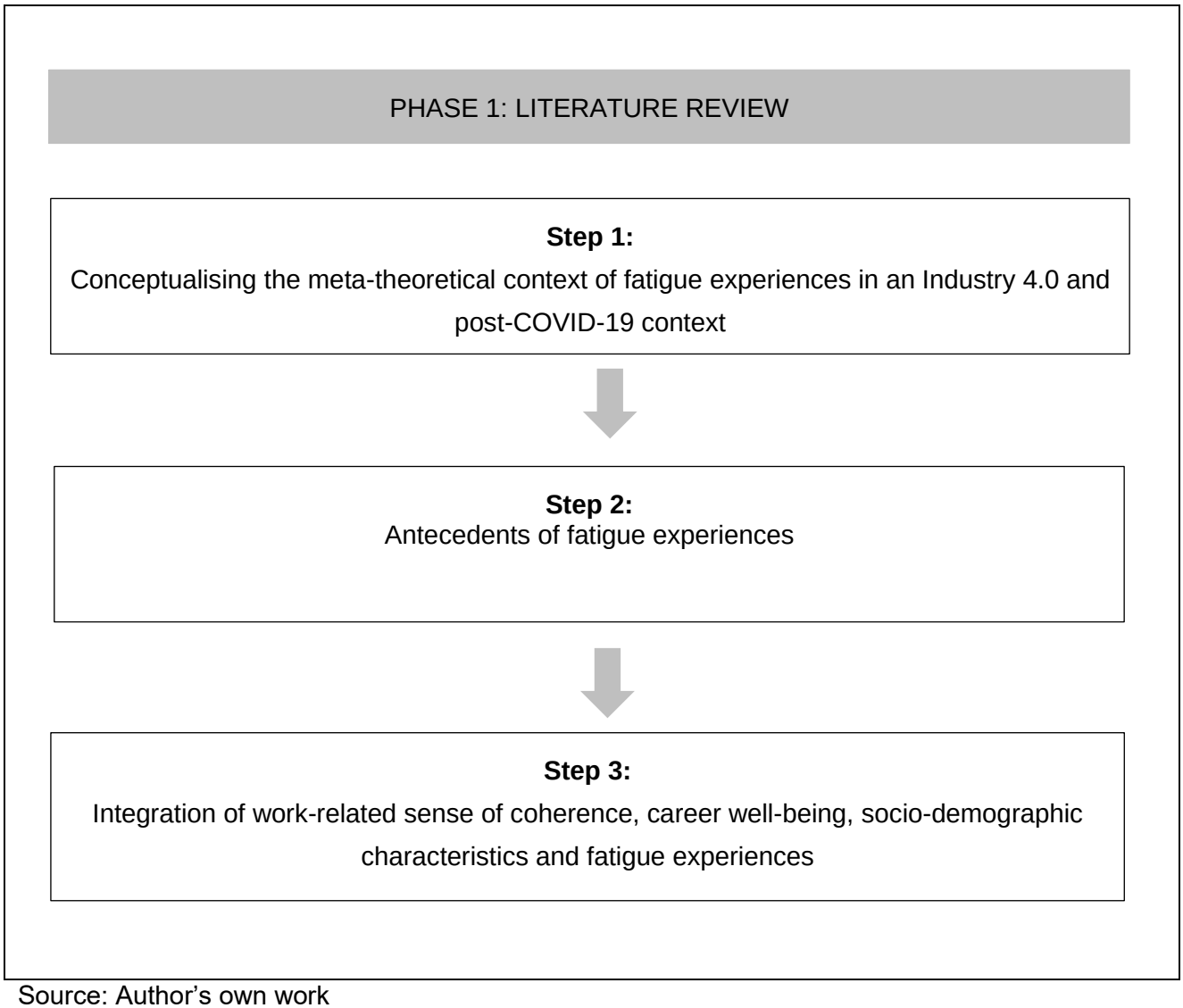
This research will be useful for future researchers addressing matters related to these constructs if a significant negative relationship is found between them.

1.8 THE RESEARCH METHODOLOGY

The study will be conducted in two different phases, namely literature review and empirical study. Figure 1.1 gives an overview of the different phases.

Figure 1.1

Overview of the Literature Study



Source: Author's own work

1.8.1 Phase 1: Literature review

The literature review will focus on the main constructs of the research, namely work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences.

Step 1: Conceptualising the meta-theoretical context of fatigue experiences in an Industry 4.0 and post-COVID-19 context

This phase of the literature review will conceptualise fatigue experiences in an Industry 4.0 context and will take into consideration the global pandemic that is the Coronavirus. The study will then

explore the influence of socio-demographic characteristics (age, gender and race) on fatigue experiences. Chapter 2 addresses this step of the literature review.

Step 2: Work-related sense of coherence and career well-being

This phase will conceptualise the antecedents of fatigue experiences, namely work-related sense of coherence and career well-being. The study will also explore the influence of socio-demographic characteristics (age, gender and race) on the antecedents. Chapter 3 addresses this step of the literature review.

Step 3: Integration of work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences

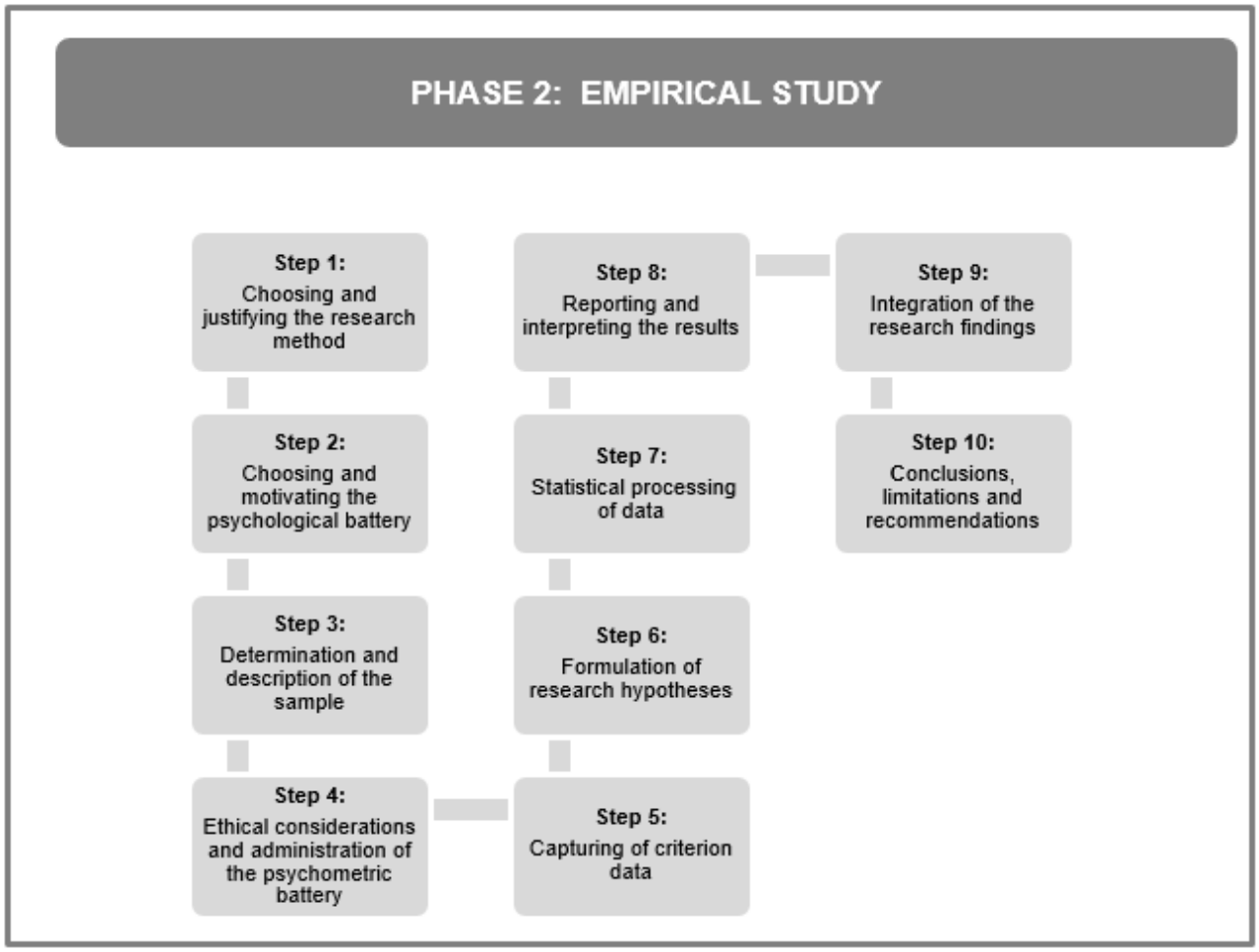
The final phase of the literature study will consist of a theoretical integration of work-related sense of coherence, career well-being, socio-demographic characteristics and fatigue experiences by means of the Conservation of Resources theory (Hobfoll, 2002) and the Coping Circumplex Model (Stanislawski, 2019) as the overarching theoretical lenses. The implications of the relationship between these constructs for coping and well-being support practices will be discussed; after which the research hypotheses will be justified. Chapter 3 addresses this step of the literature review.

1.8.2 Phase 2: The empirical study

The study will be conducted on South African employees who work with people on a daily basis by delivering a type of service to them. Figure 1.2 gives an overview of the different phases in the empirical study.

Figure 1.2

Overview of the Empirical Study



Source: Author's own work

Step 1: Choosing and justifying the research method

The study will follow a cross-sectional quantitative research design. A cross-sectional study is one that examines population data at a particular point in time (Brink et al., 2012). The research method is discussed in detail in chapter 4.

Step 2: Choosing and motivating the psychometric battery

The psychometric properties of the measuring instruments will be described in chapter 4 (Research method).

Step 3: Determination and description of the sample

Chapter 4 discusses the sample characteristics and sampling technique*.*

Step 4: Ethical considerations and administration of the psychometric battery

Chapter 4 discusses this step in detail.

Step 5: Capturing of the criterion data

The participants' responses to each of the items on the three questionnaires were captured on an electronic database (Microsoft Excel). Thereafter, it was converted to an SPSS data file with the assistance of an independent statistician.

Step 6: Formulation of the research hypothesis

Chapter 4 discusses this step in detail.

Step 7: Statistical processing of the data

Chapter 4 discusses this step in detail.

Step 8: Reporting and interpreting the results

The results are reported in chapter 5. They are presented in a systematic framework, supplemented by tables, diagrams and/or graphs. The format will ensure an articulate interpretation of the findings.

Step 9: Integration of the research findings

The results of the empirical research were integrated into the findings of the literature review. Chapter 6 discusses this step in detail.

Step 10: Conclusions, limitations and recommendations

The final step in the process concludes the research findings and how they integrate with the theory. Chapter 6 discusses the limitations and make recommendations in terms of the constructs, coping and well-being support practices, and future research recommendations.

1.9 CHAPTER DIVISION

The chapters will be presented as follows:

- Chapter 1: Scientific overview of the research
- Chapter 2: Meta-theoretical context of the research: fatigue experiences in an Industry 4.0 and post-COVID-19 context
- Chapter 3: Work-related sense of coherence and career well-being
- Chapter 4: Research method
- Chapter 5: Research results
- Chapter 6: Discussion, conclusions, limitations and recommendations

1.10 CHAPTER SUMMARY

This chapter discussed the scientific direction of the study. In particular, it explained the background to and motivation for the research, the aim of the study, the research model and paradigm perspectives, the theoretical research, design and methodology. The central hypothesis and research method were also explained. The research will explore the interplay of work-related sense of coherence, career well-being and socio-demographic characteristics (age, gender and race) on an employee's fatigue experiences. This study may inform Industrial and Organisational psychologists and Human Resource professionals on well-being support practices.

CHAPTER 2: META-THEORETICAL CONTEXT OF THE RESEARCH: FATIGUE EXPERIENCES IN AN INDUSTRY 4.0 AND POST-COVID-19 CONTEXT

The general aim of the research is to explore the nature and the magnitude of the associations between work-related sense of coherence (independent variable) and fatigue experiences (outcome variable), taking into account the intervening effect of career well-being (mediating variable) and the moderating effect of socio-demographic characteristics (such as age, gender and race). The research will inform employee well-being support practices. Chapter 2 addresses part of the first literature review research aim, namely, to conceptualise, from the literature, the construct of fatigue in an Industry 4.0 and post-COVID-19 context. Chapter 2 critically reviews the characteristics of the contemporary world of work from an Industry 4.0 and post-COVID pandemic context and its consequences for employee well-being.

2.1 THE DIGITAL POST-COVID PANDEMIC WORLD OF WORK

Industry 4.0 and COVID-19 have changed the world of work. There is now an increased usage of technology in the workplace. Many employees have had to shift to working from home during periods of lockdown. This has affected their general well-being in ways that will be discussed below.

2.1.1 The changing context of work

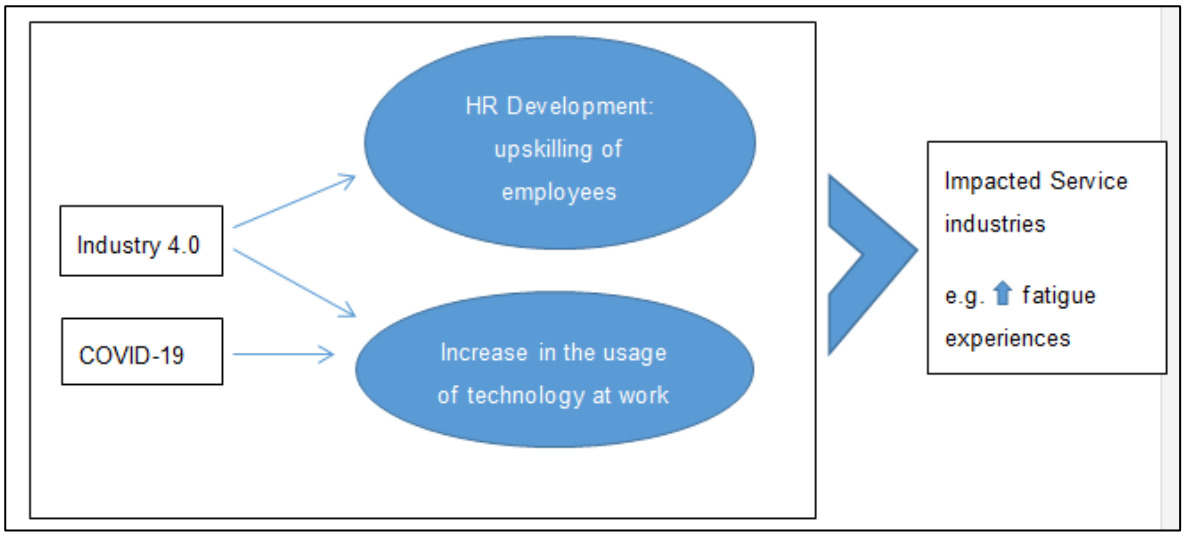
The Fourth Industrial revolution has influenced production and business models, but it has also affected the skills required by employees in various industries (Armstrong, 2020; Benešová & Tupa, 2017). The Fourth Industrial revolution, also known as Industry 4.0, is driving the world into a global, automated, virtual and flexible environment. This has resulted in a global contest for jobs that demand specialised skills for the digital and sharing economy (Motyl et al., 2017). The South African industry is no exception. According to a study by Maisiri and Van Dyk (2019), although categorised as partially emerging, South Africa is nonetheless developing in the area of digital transformation. Companies will suffer economically if they do not adapt (Olivier et al., 2020).

Now, the Coronavirus disease (COVID-19) has resulted in new ways of working with many countries being forced into a period of lockdown. Most people have had to work from home for the sake of their health and for that of their colleagues (Molino et al., 2020). Employers have had to make peace with this in order for business to continue during the lockdown period. Employers have

had to be innovative in their approach to consultation with employees through the use of technology. Depending on the resources available to the employer and its employees, consultation could only be done by means of digital platforms such as Skype, Zoom meetings, Microsoft Teams or WhatsApp (Olivier et al., 2020). Employers also had to ensure their employees had the necessary resources to work from home such as a laptop, access to the Internet and to the company network (Erradu, 2020).

However, as illustrated in Figure 2.1, Industry 4.0 and COVID-19 require more than just technological advancement (Schallock et al., 2018). Businesses also have to prioritise human resource development which involves developing the necessary skills for the future (Armstrong, 2020; Motyl et al., 2017). It is of great importance to create opportunities for employees to develop meaningful and transferable skills (Maisiri et al., 2019). Selamat et al. (2017) state that the best talent is not the machines but a combination of both humans and machines.

Figure 2.1
Core Trends in the Changing Context of Work



Source: Author's own work

Tom Friedman uses the term 'STEMpathy jobs' to explain 'the sweet spot of where work has to go'. STEMpathy jobs are those jobs that combine science, technology, engineering and mathematics with human empathy (Armstrong, 2020; Friedman, 2011). Empathy is the tendency to indirectly experience other individuals' emotional states (Davis, 1994). In Service Industries where people work with other people, empathy is almost an essential trait to possess.

A person working in a Service Industry has to be careful though that their empathy does not result in burnout or fatigue. Service industries are those where employees work with people and deliver a type of service to them. Burke (2019), Maslach and Jackson (1981b), Wright and Bonett (1997) as well as Wright and Cropanzano (1998) discovered that burnout often occurs in individuals who do "people-work" with the key feature of their burnout being an increase in emotional exhaustion. Schaufeli and Greenglass (2001) define burnout as a state of physical, emotional and mental exhaustion that results from long-term involvement in work situations that are emotionally demanding. Emotional exhaustion has been linked to a number of negative work-related, physiological and psychosocial outcomes such as lower quality of self-care by staff, absenteeism, low morale, being physically exhausted, poor sleep (i.e. fatigue), increase in usage of drugs or alcohol, and marital and family problems (Burke, 2019; Hills, 2014; Maslach & Jackson, 1981b).

Those working in Service industries were especially 'hard-hit' by COVID-19. For example, many of those who work in health care sectors have had to come out of retirement to help their former colleagues cope with the high demand of their services (Akkermans et al., 2020). Psychological distress also occurs. For example, a study of health care workers during the SARS outbreak which was similar to the current COVID-19 pandemic (Maunder et al., 2003) revealed incidents of professional isolation as a result from the use of protective masks. Furthermore, the observance of minimal physical contact between colleagues reduced the morale among health care workers. Some administrative and professional staff even refused to work under such conditions. Bai et al. (2004) investigated the reactions of health care workers and professional staff shortly after 57 health care workers were quarantined due to the SARS epidemic. They discovered that 20% of the participants reported feeling stigmatised, ostracised and rejected in their neighbourhoods due to their hospital work; while 9% were reluctant to return to work or had thoughts of quitting their job (Restubog et al., 2020).

In essence, the modern workforce needs to be educated and skilled to cope with the Industry 4.0 dispensation. COVID-19 has also undoubtedly provided impetus to digital ways of connecting and pursuing work. This understandably caused certain people a great amount of stress if they were not familiar or comfortable with using technology before the outbreak of COVID-19 (Ethel et al., 2016; Olivier et al., 2020). Employees were suddenly at a risk of losing their jobs if they were not computer literate. Since employees are the most valuable asset of a business, it is vital to maintain the well-being of employees to ensure business continuity, productivity and ultimately business sustainability and profitability (Lee et al., 2016).

2.1.2 Implications for general employee well-being

Studies suggest that disease outbreaks can have pervasive consequences for the mental health and well-being of employees (Restubog et al., 2020). COVID-19 has definitely had mostly negative career and psychological consequences; for example, job losses, reduced salaries as well as lower career and work satisfaction (Akkermans et al., 2020). In a study conducted in KwaZulu-Natal, South Africa, nurses agreed that they had difficulty in separating their professional and personal lives (Wentzel et al., 2019). One can imagine how much more difficult it must be to do that when COVID-19 is forcing nearly everybody to work from home.

Ragins et al. (2014) explain that working from home has added the stress of work-family conflict and financial debt. The lockdown periods have aggravated these challenges as individuals have narrow opportunities to replenish cognitive and emotional resources that are depleted from fulfilling family and work demands. Sonnentag et al. (2010) state that the need to balance challenging work and family demands may cause individuals to underperform in both work and family domains. It can also result in increased emotional exhaustion, stress and burnout. Many people who were confined to their homes during periods of lockdown have in fact become depressed (Meylahn, 2020).

In addition, COVID-19 has led to employees having to endure harsh workplace conditions such as limited social and work support, increased work demands, irregular working hours, inadequate work benefits, and poor access to healthcare (Blake et al., 2010; Blendon et al., 2008; International Labor Organization, 2020). These challenging work conditions often increase general health complaints. For example, fatigue, stomach problems, and headaches (Matsuishi et al., 2012; Shigemura et al., 2020). Leung et al. (2012) and Wittenberg-Lyles et al. (2014) also found that emotional stressors experienced while working often influence personal relationships and results in sleeplessness and fatigue.

Symptoms of fatigue include physical, mental and emotional exhaustion, disconnection, depersonalisation as well as a lessened sense of personal achievement (Figley, 2005). Duarte and Pinto-Gouveia (2017) discovered that emotional exhaustion can even lead to loss of self -both professionally and personally.

In conclusion, the core insights taken from this discussion are the following:

- Industry 4.0 has increased the usage of technology in the workplace. Human resource development has also been affected, since employees require certain skills in order to adapt and not lose their jobs.
- The COVID-19 pandemic has forced people to work from home to avoid contracting the disease during periods of lockdown. But this has had largely negative career and psychological consequences.
- Industry 4.0 and the COVID-19 pandemic have especially impacted the Service industries. In such industries, empathy is an essential trait to possess, but it could lead to emotional exhaustion (i.e. burnout/fatigue) for many.
- Working from home has resulted in increased levels of stress, emotional exhaustion, burnout/fatigue and loss-of-self due to work-family conflict. There has also been an increase in physical health complaints since employees started working at home.

2.2 EMPLOYEE WELL-BEING

The current study focuses on fatigue experiences within the broader context of employee well-being, hence the following discussion.

2.2.1 Conceptualisation of employee well-being

Previous research does not provide a universally agreed-upon definition of well-being as a subjective experience. At its broadest level, though, well-being is said to refer to our perception of how well our life is going. For some researchers, this concept is best captured by a global evaluation of how satisfied we are with our life (Diener et al., 1999).

Then there are scholars who view well-being as the presence of positive emotions such as happiness (Fredrickson, 2004; Layard, 2005). This is the hedonic view of well-being. Similarly, Huppert and So (2013) adopted the definition of well-being as positive mental health. In other words, the opposite of the common mental disorders described in standard mental health classifications such as the Diagnostic and Statistical Manual of Mental Disorders.

Another conceptual approach is that well-being cannot be reduced to either happiness or life satisfaction alone, but that well-being comprises a number of different components (Huppert & So,

2013). According to Diener et al. (1999), 'subjective well-being' is the combination of life satisfaction, the presence of pleasant affect and the absence of unpleasant affect. Other scholars suggest that the subjective experience of well-being is more than the combination of feeling good and being satisfied; it also includes functioning well both personally and socially. This is sometimes referred to as eudaimonic well-being (Ryan & Deci, 2001).

Interestingly, Huppert and So (2013) included DSM Axis V- Global Assessment of Functioning, which rates an individual's general level of personal and social functioning. This systematic approach yielded ten features of positive well-being. It was found that these ten features combined positive feeling and positive functioning (i.e. hedonic and eudaimonic aspects of well-being). The features are: competence, emotional stability, engagement, meaning, optimism, positive emotion, positive relationships, resilience, self-esteem, and vitality (Huppert & So, 2013).

In summary, it is evident that well-being is best understood as a multi-dimensional construct. In terms of one's career, Hofmann and Tetrick (2003) describe a healthy work organisation as one that encourages both employee and organisational health. Specifically, a healthy workplace is where people use their talents and gifts to ensure high performance, high satisfaction and well-being.

2.2.2 Theories of well-being

As already mentioned, some scholars conceptualise well-being purely in terms of eudaimonic well-being (e.g. Ryff, 1989). An example of an eudaimonic conceptualisation is the self-determination theory (Ryan & Deci, 2008; 2017). It postulates that the fulfilment of three basic psychological needs -namely autonomy, competence and relatedness- is essential and sufficient for well-being.

Jahoda (1958) contrasted psychological well-being with psychological ill-being and defined six elements of positive psychological functioning, namely: attitudes of individuals towards their own self, personal growth or self-actualisation, integration, autonomy, perception of reality, and environmental mastery. A similar approach was taken by Ryff (1989).

Another theoretical framework with a long history defines psychological well-being as equivalent to positive mental health, including both eudaemonic and hedonic aspects of well-being. This approach has been adopted by many organisations and individuals including the World Health

Organization (1947) and the Organization for Economic Co-operation and Development (OECD) which regularly undertakes cross-national well-being surveys. Their guidelines state that well-being measures should include positive affect, eudaimonic well-being and life evaluation (OECD, 2013).

Finally, the broaden-and-build theory of positive emotions, according to Fredrickson (1998; 2001; 2004) is based on understanding the nature, origins and consequences of positive emotions. More specifically, the theory is based on the perceptions that positive emotions lead to long term resources such as well-being. Frederickson (1998; 2001; 2004) further explains that the theory pays attention to cognitive flexibility (the broaden effect) as well as the implications for lifespan or career development (build effect). The broaden-and-build theory therefore emphasises that positive emotions stimulate our thoughts and attention and lead to creative thinking and problem solving, which in turn build well-being.

In conclusion, the core insights taken from this discussion are the following:

- Well-being is safely stated to be a multidimensional construct. Some scholars have taken the hedonic view of it; while others have suggested an eudaimonic view.
- Hofmann and Tetrick (2003) describe a healthy work organisation as one that encourages both employee and organisational health. In particular, a healthy workplace is where people use their talents and gifts to ensure high performance, high satisfaction and well-being.
- The various theories of well-being include the self-determination theory, the approach of the six elements of positive psychological functioning, the positive mental health theory (a combination of eudaemonic and hedonic views), and the broaden-and-build theory.

2.2.3 Antecedents of employee well-being and the consequences of its absence

The broaden-and-build theory of positive emotions (Fredrickson, 1998; 2001; 2004) emphasises that positive emotions stimulate our thoughts and attention and lead to creative thinking and problem solving, which in turn build well-being. According to Hobfoll (1989), optimism has a positive impact on well-being. Higher optimism levels have been associated with fewer symptoms of physical illness, less burnout and/or fatigue, less perceived stress and depression and better mental well-being (Scheier et al., 2001). Bridger (2009) explains that stress, strain and fatigue are related.

Furthermore, Nel (2021) states that a holistic approach to employee wellness is necessary to ensure effective adaptation to the 'new normal' that has been brought about by Industry 4.0 and COVID-19. The holistic model of work wellness (Nelson & Simmons, 2003) explains that without general well-being, employees will experience stress. This model further states that burnout could be regarded as an outcome of job stress, and fatigue is a sub-dimension of burnout. A number of recent studies have successfully tested a model that demonstrated the negative relationship between burnout and health (e.g. Hakanen et al., 2006; Schaufeli & Bakker, 2004).

Disease outbreaks such as the COVID-19 pandemic definitely have an effect on the well-being of individuals. Marsh et al. (2020) state that many studies have found relationships between the outbreak of infectious diseases and a list of negative psychological consequences. These include anxiety about being infected (Jehn et al., 2011), greater incidences of depression and psychological distress (Bai et al., 2004; Bults et al., 2011; Shultz et al., 2016), functional impairment (Thompson et al., 2017) as well as a reduced quality of life and subjective well-being (Lau et al., 2008).

Even though the effect of an often highly stressful environment on the well-being of the individual worker is widely recognised and well documented in previous literature, very little research in this regard has been undertaken in South Africa. This is particularly true regarding fatigue. It would therefore seem that the present study is much needed.

In conclusion, the core insights taken from this discussion are the following:

- The antecedents of employee well-being include positive emotions such as optimism which have a positive impact on well-being.
- In terms of the consequences of the absence thereof, it is important to note that without general well-being, employees will experience stress.
- According to the holistic model of work wellness, job stress could lead to burnout or fatigue, especially in such times of Industry 4.0 and the COVID-19 pandemic.
- The outbreak of infectious diseases such as COVID-19 has a list of negative psychological consequences such as anxiety, depression, psychological distress, functional impairment as well as a reduced quality of life and subjective well-being.

2.3 EXPERIENCES OF FATIGUE

Experiences of fatigue have become more common now since the COVID-19 pandemic and the increased usage of technology in the workplace. The current study will make use of Maslach's burnout theory (Maslach & Jackson, 1981b; Maslach, 1993) to study the construct of fatigue, since fatigue is one of the three sub-dimensions of burnout (Hobfoll & Shirom, 2000). There are also many factors that influence experiences of fatigue which is what will be explored below.

2.3.1 Conceptualisation of fatigue experiences

Shen et al. (2006) define fatigue as an immense sense of tiredness, a lack of energy, and feeling exhausted in relation to diminished physical and cognitive functioning. Bezuidenhout and Cilliers (2010) as well as Harry and Coetzee (2013) state that in the fast-paced digital era of today, the success and survival of an organisation depend on the employees' drive, energy and passion. Fatigue, as explained by Shen et al. (2006), means having an extreme lack of energy. Fatigue poses a real problem and it is thus important to study ways of combatting the fatigue experiences of employees.

Studies have shown that fatigue acts as an indicator of work wellness (Van der Westhuizen, 2018). Fatigue is a sub-dimension of burnout and there have been a number of recent studies that successfully tested a model that demonstrated the negative relationship between burnout and health (e.g. Hakanen et al., 2006; Johnston, 2018; Schaufeli & Bakker, 2004).

Van Rensburg (2019) states that the uncertainties regarding contemporary work and careers contribute to stress and fatigue. The sense of urgency that comes with Industry 4.0 should help people focus on how to connect, collaborate and co-innovate. But it most likely could also have the opposite effect of increasing their stress and fatigue levels (Wittenberg-Lyles et al., 2014). Not possessing the technological skills required to continue working from home due to the COVID-19 pandemic could definitely also increase a person's stress and fatigue levels (Meylahn, 2020).

Hills (2014) found exhaustion, especially emotional exhaustion, to be related to negative mental health outcomes such as poor sleep and depression. In fact, burnout and exhaustion are related to a number of negative outcomes that are psychological and work-related. Of these include role conflict at work, thoughts about leaving one's current job, and career-related training (Burke, 2019;

Jackson et al., 1986). The negative consequences of stress and fatigue add to the importance of the current study.

2.3.2 Maslach's Burnout Model

The current study will make use of Maslach's burnout theory (Maslach & Jackson, 1981b; Maslach, 1993) to study the construct of fatigue, since fatigue is a one of the three sub-dimensions of burnout (Hobfoll & Shirom, 2000). Maslach (1982) defined burnout as a psychological syndrome that occurs among employees who work with other people in challenging situations. This justifies the use of Maslach's Burnout Inventory Model (MBI) in the present study which focuses on counteracting the experiences of fatigue among people who provide a type of service to others in the kind of work that they do. According to Maslach (1982), burnout compromises the professional care and attention given to clients by human service professionals such as teachers, doctors and lawyers. Nevertheless, a review of 34 burnout studies by Hwang and colleagues (2003) concluded that there was considerable evidence that the MBI is suitable for use across a wide range of occupations, languages and countries.

As depicted by Figure 2.2, the three dimensions of Maslach's Burnout Model (Maslach, 1982) are emotional exhaustion, depersonalisation, and personal accomplishment. A series of confirmatory factor analyses by Lee and Ashforth (1990) supports the 3-factor model, with the first two aspects being highly correlated. Interestingly, the three aspects were found to be related to other variables reflecting aspects of strain, stress, coping and self-efficacy in predictable and meaningful ways.

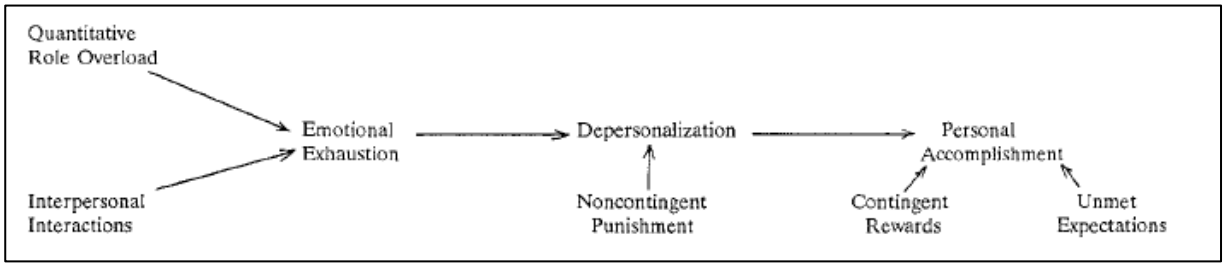
The emotional exhaustion (EE), depersonalisation (DP) and personal accomplishment (PA) subscales are parts of the 22-item MBI (Maslach & Jackson, 1981a). The EE subscale describes feelings of being emotionally exhausted because of the work and contains nine items. The PA subscale contains eight items that describe beliefs of competence and successful achievement at work. The DP subscale describes detached and impersonal treatment of patients and consists of five items. Each of the 22 items asks employees to describe their feelings on a 7-point scale, ranging from never having those feelings to having those feelings a few times a week.

Maslach's team demonstrated, using data from U.S. samples, that the three subscales have good psychometric properties (Maslach & Jackson, 1981a). Maslach and Jackson investigated the performance of the three subscales and demonstrated further that the Cronbach's alpha for all

three subscales were above 0.7. Also, they established the convergent validity of Maslach's Burnout Model by correlating individual MBI scores with: 1) measures of various outcomes such as job dissatisfaction that were hypothesised to be related to burnout subscales; 2) job characteristics that were expected to contribute to the development of burnout such as difficult workloads; and 3) behavioural ratings provided by other persons who knew the individuals scored very well (e.g. spouses and co-workers). All correlations provided evidence about the validity of the MBI and its dimensions (1981b). Other researchers added to the evidence by confirming that Maslach's Burnout Model is a useful tool for research and they support its three dimensionality (Greenglass et al., 2001; Hastings et al., 2004).

Figure 2.2

Maslach's Burnout Model



Source: Cordes et al. (1997, p. 7)

Interestingly, Pines and Aronson (1988) developed an instrument for the measurement of burnout that they named the burnout measure (BM). A short version (BMS) was introduced (Maslach-Pines, 2005). This instrument defines burnout as 'a state of physical, emotional and mental exhaustion caused by long-term involvement in emotionally demanding situations' (Pines & Aronson, 1988). Studies have found that the physical and emotional aspects of exhaustion theorised by Pines et al. (1981) appear to collapse into one factor that reflects fatigue (Enzmann et al., 1998).

The researcher made use of The Fatigue Scale as a measurement tool in the present study which is taken from the three factor 'Burnout Scale' (Asiwe et al., 2014). It consists of a combination of physical fatigue, emotional exhaustion and cognitive weariness (Shirom, 2003) where physical fatigue refers to feelings of tiredness and low levels of energy in carrying out daily tasks at work, such as getting up in the morning to go to work (Shirom & Melamed, 2005). Emotional exhaustion refers to feeling too weak to display empathy towards clients or co-workers and lacking the energy

needed to invest in relationships with other people at work. Finally, cognitive weariness refers to feelings of slow thinking and reduced mental agility (Shirom & Melamed, 2005).

In conclusion, the core insights taken from this section are the following:

- Fatigue refers to a state of tiredness, having an extreme lack of energy and feeling exhausted.
- There is no place for fatigue in the fast-paced digital era of today, especially not in the workplace; since the success and survival of an organisation depend on the employees' drive, energy and passion. Resources of well-being should be studied to counteract fatigue experiences.
- Fatigue is an indicator of work wellness. There exists a negative relationship between them.
- Industry 4.0 and the COVID-19 pandemic have led to increased levels of stress and fatigue. This has a negative effect on well-being.
- Burnout/fatigue and exhaustion relate to many negative psychological and work-related outcomes such as thoughts of quitting one's job.
- Fatigue is a sub-dimension of burnout. The current study will therefore make use of Maslach's burnout theory to study the construct of fatigue.
- The measurement tool will be The Fatigue Scale taken from the three factor 'Burnout Scale' (Asiwe et al., 2014). It consists of a combination of physical fatigue, emotional exhaustion and cognitive weariness.

2.3.3 Factors influencing experiences of fatigue

The two main factors influencing fatigue are sleep deprivation and sustained task performance (Phillips, 2014). However, there are many other underlying causes of fatigue experiences. These are worth exploring on an individual, socio-demographic and organisational level.

2.3.3.1 Factors on an individual level

Fatigue is a sub-dimension of burnout and there have been a number of recent studies that successfully tested a model that demonstrated the negative relationship between burnout and health (e.g. Hakanen et al., 2006; Schaufeli & Bakker, 2004). As can be seen in Table 2.1, a few of the many underlying potential causes of fatigue experiences include sleep deprivation, interrupted or fragmented sleep, circadian factors associated with work schedules, undiagnosed or untreated

sleep disorders, the use of medications, and the consumption of alcohol when tired (May & Baldwin, 2009). Although the two main factors influencing fatigue, according to Phillips (2014), are sleep deprivation and sustained task performance. Sleep deprivation has been shown to have significant impact on cognitive functions of the brain, including alertness, perceptual skills, reaction times and decision-making (Lim & Dinges, 2010). Sustained task performance brings additional problems – the longer a task is performed, the worse it is carried out. What is unclear is the extent to which work-related sense of coherence and career well-being counteract the experiences of fatigue.

2.3.3.2 Factors on a socio-demographic level

According to Maslach et al. (2001), the demographic variable of age is consistently related to burnout, probably due to the relationship between age and work experience; thereby indicating that burnout seems to be more of a threat early in an individual's career. Other researchers, such as Jackson and Rothmann (2005), have found higher levels of burnout amongst younger employees when compared to their older colleagues. More specifically, previous research has found there to be differences in the fatigue levels of employees from different age groups. For example, Jackson and Rothmann (2005) found that employees between the ages of 45 and 50 experienced lower scores than younger employees below 27 years of age. This is in contrast with a study done by Osipow et al. (1985) that found lower fatigue levels in employees aged between 20 and 25. Their explanation for this is the fact that workers tend to take on greater family responsibilities and work overload as they age. This also relates to their low levels of well-being and work-related sense of coherence.

Regarding gender, some researchers have hypothesised that women tend to experience more burnout compared to men (Maslach et al., 2001). Research findings have however been inconsistent with some researchers reporting higher levels of burnout for women; while others report high levels of burnout for men and others report no gender differences (Maslach et al., 2001). There is a consistent finding that men score higher on cynicism; while their female counterparts score slightly higher on exhaustion, although this could easily be attributed to gender job stereotyping (Maslach et al., 2001). However, Barkhuizen and Rothmann (2008) found no significant differences between the burnout levels of gender groups. Their follow-up analysis of variance showed that the levels of exhaustion, mental distance and professional efficacy did not differ between the gender groups.

Finally, Coetzee and Rothmann (2007) found that white employees (in comparison to black employees) showed higher levels of exhaustion. South Africa is rich in diversity and its people are multicultural. Most organisations in the country employ individuals with diverse cultural backgrounds. The psychological differences among different racial groups remain a relatively understudied area. The present study will offer new knowledge and insight in this regard.

2.3.3.3 Factors on an organisational level

This study focuses on Service industries, since fatigue is a sub-component of burnout (Asiwe et al., 2014) and burnout is said to frequently occur in individuals who do "people-work" (Burke, 2019; Maslach & Jackson, 1981b; Wright & Bonett, 1997; Wright & Cropanzano, 1998). The key feature of burnout is an increase in emotional exhaustion (Maslach & Jackson, 1981; Wright & Bonett, 1997; Wright & Cropanzano, 1998;). Wittenberg-Lyles et al. (2014) discovered that emotional stressors at work often influence personal relationships which results in sleeplessness and fatigue. Wentzel et al. (2019) made a similar discovery in a study that they conducted in Durban, KwaZulu-Natal, South Africa. Furthermore, Ekstedt et al. (2006) found that fatigue in occupational burnout may be linked to variables external to the work environment, such as disturbed sleep (Asiwe et al., 2014). The present study will try to decipher the extent to which work-related sense of coherence and career well-being counteract employees' experiences of fatigue.

Table 2.1

Factors Influencing Experiences of Fatigue

FACTORS THAT INLUENCE FATIGUE EXPERIENCES		
Individual factors	Socio-demographic factors	Organisational factors
• sleep deprivation, • sustained task performance, • interrupted or fragmented sleep, • circadian factors associated with work schedules, undiagnosed / untreated sleep disorders, • the use of medications,	• Higher levels of burnout amongst younger employees (Jackson & Rothmann, 2005), except if workers take on greater family responsibilities and work overload as they age (Osipow et al., 1985). • Some researchers report higher levels of burnout for	• Emotional stressors at work (Wentzel et al.,2019; Wittenberg-Lyles et al., 2014) • Variables external to the work environment, such as disturbed sleep (Asiwe et al., 2014; Ekstedt et al., 2006).

• the consumption of alcohol when tired (May & Baldwin, 2009; Phillips 2014)	women; while others report high levels of burnout for men and others report no gender differences (Maslach et al., 2001; Barkhuizen & Rothmann, 2008). • Men score higher on cynicism; while women score slightly higher on exhaustion (Maslach et al., 2001). • White employees, in comparison to black employees, show higher levels of exhaustion (Coetzee & Rothmann, 2007).	

Source: Author's own work

2.4 EMPLOYEE WELL-BEING PRACTICES FOR ALLEVIATING FATIGUE

On an individual level, Gould (2009) came to the conclusion that fatigue, specifically micro-sleeping on the job, can be reduced if employees stand while working. Instead of panicking about potential job losses due to Industry 4.0 and COVID-19, Van Rensburg (2019) recommends that the focus be on the human-only capabilities that will be required in the new world of work. For example: independent, critical thinking and problem solving. Self-leadership and self-development are also important in the modern world of work (Matthee et al., 2014). Regarding well-being, specifically, positive psychologists suggest applying positive psychology in the workplace (Joseph, 2017). In context of the present research, positive psychology alludes to developing people's psychological resources such as their work-related sense of coherence and career well-being.

In terms of recommended well-being practices for organisations, since there exists a negative relationship between fatigue and health (Hakanen et al., 2006; Schaufeli & Bakker, 2004), the Health and Safety Executive (UK) suggest that repetitive and boring jobs be minimised. Maisiri et al. (2019) agree with this as fatigue negatively affects the performance of employees. It reduces their ability to continue doing work of the same kind (Bridger, 2009). Lastly, a supportive

organisational culture is highly recommended by Steyn (2018) as support shows a negative linear relationship with burnout (Johnston, 2018).

The following are a few specific practices that could be implemented in the workplace to alleviate fatigue experiences and increase the well-being of employees. Nel (2021) explains that maintaining the well-being of employees is a shared responsibility at all levels of the organisation.

Creating awareness

In order to enhance the well-being of its employees, organisations need to raise awareness about the current mental health and well-being issues among its employees such as fatigue experiences as a result of Industry 4.0. Employees need to know that the organisation is committed to their well-being and that there are resources available to assist them. Supportive leadership also plays a major role. Organisations should consider referring to employee well-being in their current business objectives or core values. Providing mental health awareness training on workplace stress-related issues is another way to create awareness (Goetzel et al., 2018; Shann et al., 2014).

Identifying and managing work-related risks

This includes identifying opportunities in the organisation's physical work environment that may play a role in protecting its employees, since the work environment should be a safe and healthy space (Burton, 2010). This also includes identifying work-related stressors that result in emotional or psychological distress. Rothmann et al. (2005) agree that stress is an organisational factor that contributes to burnout or fatigue. The organisation could address psychosocial hazards by allowing participative decision-making, work–life integration (e.g. flexible or remote work) to avoid fatigue experiences, providing recognition in the form of rewards, and by offering skills training or mentoring. Goetzel et al. (2018) state that putting in place an organisational policy that supports diversity, inclusion and equity with mental health and well-being is also critical.

Conducting risk assessment and management

A key component of risk management is risk assessment. There should be a continuous evaluation of risk assessment data. This will help to ensure that the resources for well-being remain relevant and effective. Goetzel et al. (2018) and Deloitte (2019) suggest an ongoing measurement of intervention effects. These may include measures relating to employee satisfaction, engagement, fatigue, absenteeism, disability trends, or motivation (Deloitte, 2019).

Implementing employee well-being plans

Employee well-being plans should integrate the broader dimensions of well-being into a holistic wellness plan. This is in agreement with the Holistic Model of Work Wellness (Nelson & Simmons, 2003). Employee well-being plans should also include adequate funding and have measurable goals. Participation in employee well-being plans can be increased by offering incentives. Organisations could partner with local or national bodies to assist them with this (Burton, 2010).

In conclusion, the core insights taken from this section are the following:

- On an individual level, micro-sleeping can be reduced if employees stand while working.
- Self-leadership and self-development are also important in the modern world of work.
- Positive psychologists suggest applying positive psychology in the workplace in order to increase the employees' levels of well-being.
- In terms of the well-being of organisations, repetitive and boring jobs should be minimised.
- A supportive organisational culture is highly recommended to ward off burnout.
- Maintaining the well-being of employees should be a shared responsibility at all levels of the organisation.
- Workplaces can also implement the following to alleviate fatigue experiences: create awareness; identify and manage risks; conduct risk assessments; and implement employee well-being plans.

2.5 CHAPTER SUMMARY

This chapter conceptualised the construct of fatigue and critically reviewed the characteristics of the contemporary world of work. This was done in the context of Industry 4.0 and the COVID-19 pandemic with the focus on Service Industries. The questionnaire theory dimensions of the fatigue scale were discussed and consideration was given to the range of socio-demographic variables that will be included in the study. Lastly, employee well-being was discussed in terms of its antecedents and consequences. The rationale for employee well-being practices being used as a countermeasure for experiences of fatigue was explained. This study hopes to help inform managers and the employees themselves of coping and well-being interventions at an individual and organisational level.

CHAPTER 3: WORK-RELATED SENSE OF COHERENCE AND CAREER WELL-BEING

Chapter 3 further addresses part of the first literature review research aim, namely, to conceptualise, from the literature, the constructs of work-related sense of coherence and career well-being. This chapter then also integrates the constructs.

3.1 WORK-RELATED SENSE OF COHERENCE

The term ‘work-related sense of coherence’ is similar to ‘sense of coherence’. It is a context-based application of sense of coherence; that context being the working environment. It is good for employees to experience a high work-related sense of coherence, so that they are able to choose a correct coping strategy.

3.1.1 Conceptualising work-related sense of coherence

The term ‘work-related sense of coherence’ stems from the simpler term ‘sense of coherence’ which refers to consistency, conformity and agreement (Mayer et al., 2019). Antonovsky (1979) elaborated on work characteristics that are potentially related to sense of coherence, offering the description of a workplace where individuals experience meaningfulness, manageability and comprehensibility. This indicates that work-related sense of coherence and sense of coherence are interrelated but independent factors.

Bauer and Jenny proposed, back in 2007, this context-specific application of sense of coherence in the working environment, namely work-related sense of coherence. Similar to sense of coherence’s definition, work-related sense of coherence is defined as the regarded comprehensibility, manageability and meaningfulness of a person’s present situation at work (Vogt et al., 2013). According to Rothmann et al. (2003), sense of coherence elevates a person’s feelings of control. Thus, it is good for employees to experience a high work-related sense of coherence. An employee with a weak sense of coherence will experience their job as being unmanageable and feel that they lack the resources to meet the demands at work (Antonovsky, 1987).

The present study hopes to contribute to employee well-being support practices within the field of Industrial and Organisational Psychology; therefore, it is important to take note of the fact that work-related sense of coherence influences the way an employee perceives, appraises and copes with work stressors, also referred to as job demands (Antonovsky, 1987). For example, an

employee with a high work-related sense of coherence will perceive their job demands as challenging instead of threatening. Such an employee will be confident that there are enough available resources with which to deal with the demands. They will also more likely select an appropriate coping strategy (Basson & Rothmann, 2002; Rothmann et al., 2005; Strümpfer, 2003). According to Jenny et al. (2017); successful coping determines how healthy a person is.

As explained in chapter 2, the nature of people's work, jobs and careers will continuously change in the contemporary context conditions of Industry 4.0 (Ramraj & Amolo, 2021). With the worldwide pandemic of COVID-19, it is even more true that careers, the form of jobs and occupations will be unstable, unpredictable and changing drastically within the employment context (Akkermans et al., 2020; Restubog et al., 2020). In such times, coping resources such as work-related sense of coherence should be regarded as a necessity (Ghislieri et al., 2017; Wilhelm & Hirschi, 2019).

3.1.2 Theory and research on work-related sense of coherence

Employees must be convinced that they possess the required knowledge, skills, material and equipment to address the problems at work; and they should receive support from their colleagues (Antonovsky, 1987; Bester et al., 2019; Potgieter et al., 2019). In Antonovsky's (1987) original model of salutogenesis, he specifies the context of work in stating that job resources are part of the generalised resistance resources which help build up an employee's work-related sense of coherence (Jenny et al., 2017).

Antonovsky (1987) emphasised that the right load balance is required in order for an employee to manage well at work. According to him, for work to be salutogenic, it needs to be comprehensible, manageable and meaningful. Antonovsky (1987) stated that consistency, underload–overload balance and participation in decision-making are important; thus supporting the perception of comprehensibility, manageability and meaningfulness, which are the three dimensions of work-related sense of coherence.

The present study wishes to explore whether work-related sense of coherence may act as a countermeasure for fatigue experiences. In line with this, Van der Westhuizen (2018) has found work-related sense of coherence to be a significant predictor of fatigue. As stated before, fatigue is a sub-dimension of burnout. Many previous authors have found that employees with a strong sense of coherence experience less burnout (Basson & Rothmann, 2002; Rothmann et al., 2005; Wissing et al., 1992). This is most likely because such employees perceive stimuli from the

environment as making cognitive sense (comprehensible), as being under the control of both the employee and others (manageable), and as being motivationally relevant and meaningful (meaningfulness). These three dimensions of work-related sense of coherence are highly interrelated (Antonovsky, 1987; 1993).

As explained in Table 3.1, 'Comprehensibility' describes the degree to which an employee perceives their work situation to be structured, consistent and clear; the employee experiences the stimuli at work as being predictable (Vogt et al., 2013); and they have a sense of job security (Antonovsky, 1987). But their work-stressors can still pose demands. This is where the other two dimensions come into play.

'Manageability' describes the extent to which the employee perceives that adequate resources are available to cope with the demands in the workplace (Antonovsky, 1987; Jenny et al., 2017). Employees must be convinced that the problems they face at work are legitimate; that they possess the required knowledge, skills, material and equipment to address the problems at work; that their potential is fulfilled; and that they have the support of their colleagues (Antonovsky, 1987).

Lastly, 'meaningfulness' describes the extent to which a work situation is seen as worthy of the employee's commitment and involvement (Vogt et al., 2013). Meaningfulness also relates to the degree to which employees feel a sense of ownership in their work, the degree to which they can participate in decision-making and the degree to which they experience freedom in their work environment (Antonovsky, 1987). According to Van der Colff and Rothmann (2009), having a strong sense of coherence may help an employee to understand stressors, so that they will regard those stressors as manageable and meaningful.

Table 3.1

The three Dimensions of Work-related Sense of Coherence

Work-related sense of coherence		
Comprehensibility	Manageability	Meaningfulness
• the degree to which an employee perceives their work situation to be structured, consistent and clear; • the employee experiences the stimuli at work as being predictable (Vogt et al., 2013); • they have a sense of job security (Antonovsky, 1987).	• the extent to which the employee perceives that adequate resources are available to cope with the demands in the workplace (Antonovsky, 1987; Jenny et al., 2017) • Employees must be convinced that the problems they face at work are legitimate; • that they possess the required knowledge, skills, material and equipment to address the problems at work; • that their potential is fulfilled; • that they have the support of their colleagues (Antonovsky, 1987).	• the extent to which a work situation is seen as worthy of the employee's commitment and involvement (Vogt et al., 2013); • the degree to which employees feel a sense of ownership in their work; • the degree to which they can participate in decision-making; • the degree to which they experience freedom in their work environment (Antonovsky, 1987).

Source: Author's own work

Interestingly, Rothmann et al. (2003) state that sense of coherence is an expression of a person's pervasive, enduring and dynamic feeling of coherence. Fatigue is the opposite of this feeling (Bridger, 2009; Shen et al., 2006; Swart & Sinclair, 2015). Strümpfer (2003) found there to be a link between these two constructs in that a person's sense of coherence may assist in warding off burnout. Furthermore, Brauchli et al. (2015) provide examples of positive health as including energetic fitness, joy and happiness. Fatigue is the opposite of this, as it is defined as having a lack of energy, and feeling exhausted in relation to diminished physical and cognitive functioning (Shen et al, 2006). This is in agreement with a number of recent studies that successfully demonstrated the negative relationship between burnout and health (Hakanen et al., 2006; Schaufeli & Bakker, 2004).

In addition to this, previous literature has proven that work-related sense of coherence and career well-being are closely linked. For example, Eberz et al. (2011) found work-related sense of coherence to be a good predictor of career well-being. This proposition was supported by Vogt et al. (2013). In 2014, Zweber discovered that work-related sense of coherence is positively related to the perception that the organisational climate is supportive of its employees' health and career well-being.

In conclusion, the core insights taken from this section are the following:

- For work to be salutogenic, it needs to be comprehensible, manageable and meaningful.
- Work-related sense of coherence is defined as the regarded comprehensibility, manageability and meaningfulness of a person's present situation at work.
- Work-related sense of coherence influences the way an employee perceives, appraises and copes with work stressors/job demands.
- An employee with a high work-related sense of coherence is more likely to select an appropriate coping strategy.
- In such times of the COVID-19 pandemic and Industry 4.0, coping resources such as work-related sense of coherence should be regarded as a necessity.
- Work-related sense of coherence is a significant predictor of fatigue.
- A person's sense of coherence may assist in warding off burnout.
- There is a negative relationship between burnout and health.
- Work-related sense of coherence is a good predictor of an employee's health and career well-being.

3.2 CAREER WELL-BEING

Career well-being is a multi-dimensional construct which may help to counteract fatigue experiences. A high level of career well-being helps employees to feel secure and confident when dealing with the stress that comes with changing career contexts.

3.2.1 Conceptualising career well-being

A review of the research literature reveals a great amount of research on the construct and measurement of general well-being (Coetzee et al., 2021), but the construct of career well-being is generally under-researched (Lent & Brown, 2008; Marsh et al., 2020; Steiner & Spurk, 2019;

Wilhelm & Hirschi, 2019). There seems to be a paucity of research on both the construct and measurement of career well-being. The current study aims to address this gap in research.

Furthermore, 'career well-being' is a multi-dimensional construct for which previous literature does not seem to provide one single definition (Abdi et al., 2019). However, the researcher has decided that the definition most relevant and best suited to the current study is that by Bester et al. (2019). They have conceptualised career well-being as a positive intrinsic socio-emotional psychological condition that reflects an employee's long-term satisfaction with their career outcomes, career achievements and career changes; as well as their employability within the challenges and complexities of the current world of work.

According to Coetzee (2021a), career well-being alludes to a long-term psychological state of subjective well-being that is as a result of an employee's current career situation instead of the anticipated future career context; while Coetzee and Schreuder (2020) together with Van der Heijden and De Vos (2015) agree that career well-being alludes to remaining healthy, productive and content. Additionally, it implies being able to meet the economic and quality-of-life needs in a technologically advanced work environment (Coetzee & Schreuder, 2020; Van der Heijden & De Vos, 2015).

Career well-being is of great relevance in counteracting the unsettling effect of the coronavirus disease 2019 (COVID-19) pandemic, and the shift into an increasing remote and digital means of working (Coetzee et al., 2021). Career well-being may help to counteract fatigue experiences in that career behaviour is autonomous and regulated by the self rather than external contingencies. Weinstein et al. (2012) explain that high levels of autonomous, self-regulated behaviour are positively associated with greater energy as well as creative learning and engagement, lower stress, and rewarding social connections.

3.2.2 Theory and research on career well-being

According to Coetzee et al. (2020b), the three positive states underpinning an individual's career well-being are career meaningfulness, career networking/social support and positive career affect. These intrinsic positive socio-emotional psychological states represent self-concordant independent career motives that generate the feelings of career well-being (Coetzee, 2021a). They help employees to feel secure and confident when dealing with the stress that comes with

changing career contexts (Lyubomirsky & Porta, 2010). Improvement in these three areas will lead to an increased level of career well-being.

As a state of career well-being, career meaningfulness is recognised as the main indicator of human flourishing (Colby et al., 2002). In short, c*areer meaningfulness* refers to the highest level of satisfaction of an employees' career. Several authors have found a correlation between well-being and the perception that one's job and career has meaning (Cameron et al., 2003; Dik & Duffy, 2008; May et al., 2004; Oliver & Rothmann, 2007; Shaufeli & Bakker, 2004; Wrzensniewski & Tosti, 2005).

The opposite of career meaningfulness is 'career meaninglessness'. Career meaninglessness is identified as a lack of control by an individual over their environment which leaves them feeling frustrated and powerless (Ashforth, 1989). Steenkamp and Basson (2013) state that experiencing career meaninglessness has major effects on both the employee and organisation such as little satisfaction, low organisational self-esteem, negative personal self-esteem and poor organisational performance. However, the belief that one's life pursuits have meaning seems to assist in adapting and surviving when faced with extreme adversity (Masten & Wright, 2010).

Career networking/social support is a career well-being state that describes when a person has confidence in the support of a network of people; when that person knows that they can easily reach out to others to help and support them in achieving their career goals (Coetzee et al., 2020b). Here 'social support' refers to the support experienced by an employee from their supervisors, co-workers and from organisational policies and procedures (Rothmann et al., 2005; Spielberger et al., 2003).

Several researchers found there to be positive correlations between networking/social support and well-being (Berman et al., 2002; Crabtree, 2004; Ellingwood, 2001; Hamilton, 2007; Potgieter, 2019; Riordan & Griffeth, 1995; Yildirim et al., 2017). Employees who positively experience social support and networking are less likely to experience high amounts of stress; thereby preventing a negative impact on their personal health, well-being and on their actual work (Schmidt & Diestel, 2011). They are in a better position to manage their emotions through cognitive processes (Lee et al. 2008).

Positive career affect specifically alludes to positive emotions from psychological states such as the feeling of being satisfied with conditions that are instrumental in achieving one's career goals

(Coetzee et al., 2020b). Positive emotions are known to buffer the negative effects of stressful conditions (Reich et al., 2010; Tugade & Fredrickson, 2004). Görgens-Ekermans and Steyn (2016) state that in order for an organisation to be successful in a contemporary world, it has to foster an environment where its employees have positive emotions and work experiences.

Schaufeli and Salanova (2007) have documented that publications on negative emotional states, such as depression and anxiety, far exceed those on positive states, such as happiness and life satisfaction. This is echoed by Jenny et al. (2017) who feel that what is missing and greatly needed in terms of career well-being is the promotion of salutogenic thinking. They further state that there is lack of a concise definition of positive emotions. Brauchli et al. (2015), however, define 'positive health' as physical, mental and social self-fulfilment. Examples provided by them include energetic fitness, joy, happiness and being embedded in harmonious relationships. Seligman (2002) stated that employees will experience high career well-being when they experience joy and positivity.

According to Ferreira et al. (2019), the three states of career well-being imply intrinsic-driven positive emotional ways of coping that are obtained by positive feelings about the career. Stanislawski (2019) explains that preoccupations from negative emotional coping lower the capability to sustain a person's well-being. The Coping Circumplex Model (CCM) by Stanislawski (2019) is an integrative model that focuses on coping with stress. It deals with bipolar problem coping and emotion coping dimensions; and the idea of a circular continuum of coping styles. These two dimensions define the space for other coping categories within the circumplex. The model is based on the principle of efficiency versus helplessness. This concept of efficiency in coping refers to a combination of problem-solving and positive emotional coping (Stanislawski, 2019). Instead of sinking into a sense of helplessness (i.e. negative problem-solving and emotional coping), the three states of career well-being evoke positive emotional ways of coping that enable cognitive transformations regarding work in the digital era (Ferreira et al., 2019).

In addition, studies have shown that fatigue acts as an indicator of career well-being and that work-related sense of coherence offers an explanation for this (Van der Westhuizen, 2018); hence the following discussion on the integration among the three constructs.

In conclusion, the core insights taken from this section are the following:

- Career well-being is a positive intrinsic socio-emotional psychological condition that reflects an employee's long-term satisfaction with their career outcomes, career achievements and

career changes; as well as their employability within the challenges and complexities of the current world of work.

- Career well-being alludes to a long-term psychological state of subjective well-being that is as a result of an employee's current career situation. It also alludes to remaining healthy, productive and content.
- Career well-being may help to counteract fatigue experiences in that career behaviour is autonomous and regulated by the self which is positively associated with greater energy.
- The three positive states underpinning an individual's career well-being are career meaningfulness, career networking/social support and positive career affect. These states help employees to feel secure and confident when dealing with the stress that comes with changing career contexts.
- The Coping Circumplex Model (Stanislawski, 2019) is based on the principle of efficiency versus helplessness. Instead of sinking into a sense of helplessness, the three states of career well-being evoke positive emotional ways of coping that enable cognitive transformations regarding work in the digital era.

3.3 INTEGRATION: RELATIONSHIP DYNAMICS AMONG EXPERIENCES OF FATIGUE, WORK-RELATED SENSE OF COHERENCE AND CAREER WELL-BEING

In chapter 1, the central hypothesis of the research was formulated as follows: The antecedent variable (work-related sense of coherence) will have an inverse relationship with the outcome variable (fatigue experiences) through career well-being (as a mediating variable). The hypothesis further assumes that the relationship between work-related sense of coherence, career well-being and fatigue experiences is moderated by the individuals' socio-demographic characteristics (age, gender and race). The relationship is more negative for certain socio-demographic groups than others.

The current research will endeavour to determine the relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences which has not yet been investigated in a single study. The present study is specifically interested in exploring how an employee's work-related sense of coherence and career well-being can countermeasure against them experiencing fatigue. This will be done in the context of Industry 4.0 and the COVID-19 pandemic which requires most people to work from home and to connect with their colleagues via technology (Molino et al., 2020). The three constructs discussed in the above chapters are

important to study and the information from the study should be of great value for industrial psychologists and human resource practitioners, as they will provide new insights into making recommendations for coping and well-being support practices. It will be of added interest to see if and how these constructs are moderated by a person's age, race and gender.

The relationship dynamics will be explored by using the Conservation of resources theory (Hobfoll, 2002) as the overarching theoretical lens.

3.3.1 Conservation of resources theory

The Conservation of Resources theory (Hobfoll, 2002) describes human motivation as maintaining the status quo of psychological resources in stressful situations or in pursuit of new psychological resources. Hobfoll (2002) theorised that a change in a person's psychological resources (a loss or a threat of loss) would result in stress. This theory by Hobfoll (2002) encompasses two principles:

- The principle of primary resource loss: A person would feel greater impairment if they were to lose a resource, than if they were to gain a resource.
- The principle of resource investment: A person would most likely invest resources in the development of another resource or to protect current resources.

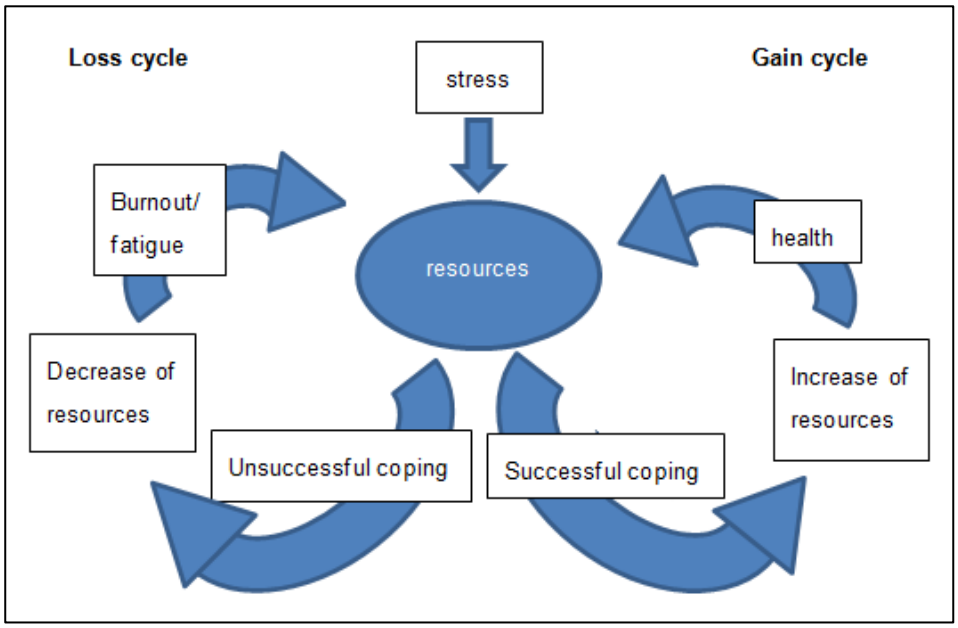
Stress and coping are important components of burnout (Schorn & Buchwald, 2007). The Conservation of Resources theory (Hobfoll, 1998) suggests that burnout is a result of chronic work stress, existing in an environment where there is only a limited renewal of resources (Buchwald & Hobfoll, 2004). The development of burnout and/or fatigue, as fatigue is a sub-dimension of burnout (Asiwe et al., 2014), can be seen as a cycle or spiral of resource losses which obtains its dynamic from a combination of chronic work stress and inadequate styles of coping with it (Hobfoll, 1998). Industry 4.0 and COVID-19 have resulted in employees experiencing a great amount of stress (Leung et al., 2012; Wittenberg-Lyles et al., 2014). As illustrated in Figure 3.1, the Conservation of Resources theory (Hobfoll, 1998) suggests that employees attempt to combat ongoing work stress by a high level of resource-investment directed toward coping. Their coping efforts either fail or succeed. Failure results in burnout or fatigue (Schorn & Buchwald, 2007).

It is important to avoid experiences of fatigue in the workplace. Work-related sense of coherence and career well-being may help to counteract fatigue. Previous literature has proven that work-related sense of coherence and career well-being are closely linked (Eberz et al., 2011; Vogt et al., 2013). In fact, Zweber (2014) discovered that work-related sense of coherence is positively related

to the perception that the organisational climate is supportive of employee health and well-being. This will make it possible to research the mediating role of career well-being in the relationship between work-related sense of coherence and fatigue experiences. It has already been stated that fatigue is a sub-dimension of burnout, and Strümpfer (2003) discovered that a person's sense of coherence may assist in warding off burnout.

Figure 3.1

Hobfoll's Conservation of Resources Theory



Source: Author's own work

The research hypotheses are as follows:

3.3.2 Research hypothesis 1

H1: There is a negative relationship between the antecedent variable (work-related sense of coherence), the mediating variable (career well-being) and fatigue experiences (dependent variable).

A study conducted in China (Chu et al., 2016) showed that a stronger sense of coherence relates to better performance when compared to peers. This is consistent with studies that show low

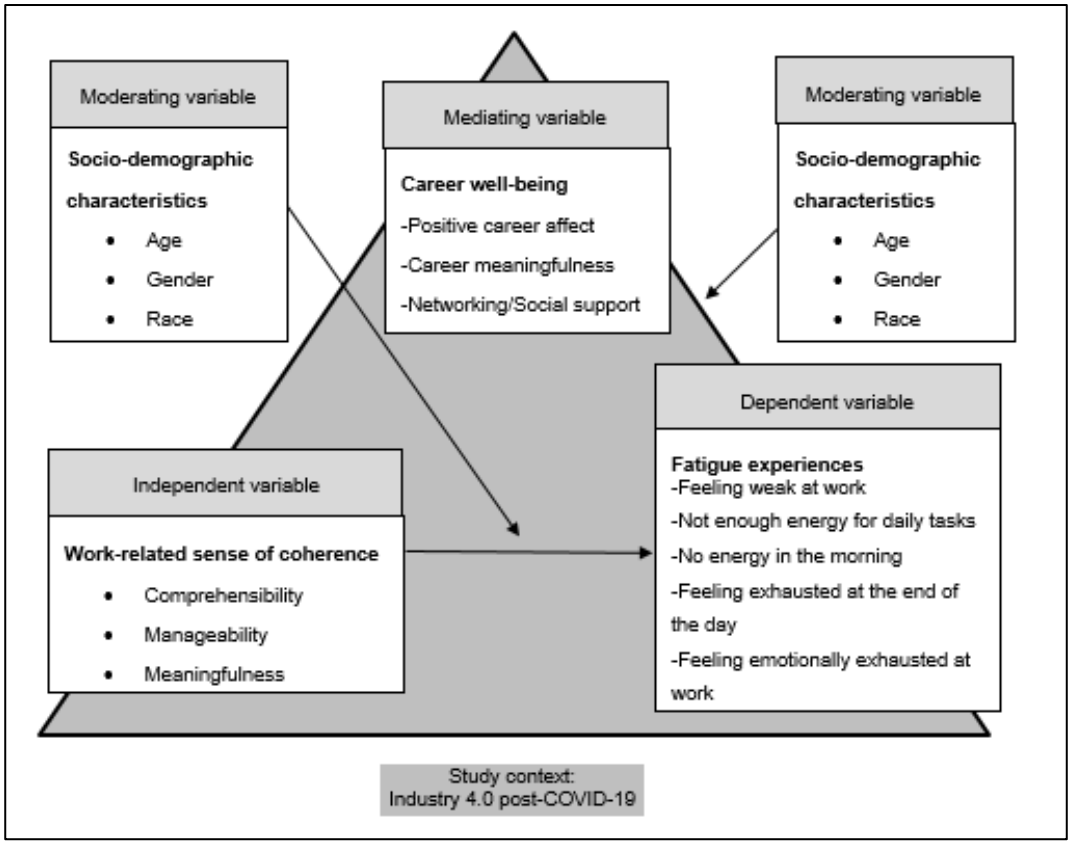
sense of coherence scores correlate with high burnout/fatigue scores (Bezuidenhout & Cilliers, 2010).

In addition, studies have shown that fatigue acts as an indicator of work wellness (Van der Westhuizen, 2018). According to Hobfoll and Freedy (1993), stress occurs when work or other situations threaten an individual's ability to obtain or maintain resources. The emphasis is on the unremitting depletion of the individuals' energetic coping resources resulting from their chronic exposure to occupational stress (Hobfoll & Shirom, 2000; Shirom, 1989, 2003). Interestingly, Brauchli et al. (2015) provide examples of positive health as including energetic fitness, joy and happiness. Fatigue is the opposite of this, as it is defined as having a lack of energy, and feeling exhausted in relation to diminished physical and cognitive functioning (Shen et al, 2006). There are a number of studies that successfully demonstrated the negative relationship between burnout and health (Hakanen et al., 2006; Schaufeli & Bakker, 2004).

Previous research thus suggests that work-related sense of coherence and career well-being may act as positive psychological resources that lower experiences of fatigue. The present study aims to investigate and confirm this. Figure 3.2 is a depiction of work-related sense of coherence and career well-being as countermeasures for fatigue experiences. Furthermore, and in agreement with the above, Van der Westhuizen (2018) has found work-related sense of coherence to be a significant predictor of fatigue. Many previous authors have found that employees with a strong sense of coherence experience less burnout (Basson & Rothmann, 2002; Rothmann et al., 2005; Wissing et al., 1992). This is most likely because such employees perceive stimuli from the environment as making cognitive sense (comprehensible), as being under the control of both the employee and legitimate others (manageable), and as being motivationally relevant and meaningful (meaningfulness).

Figure 3.2

The Conceptual Research Model for this Study



Source: Author's own work

3.3.3 Research hypothesis 2

H2: The effect of the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue experiences) is mediated by an employee's career well-being (mediating variable).

Previous research by Antonovsky (1987), Hakanen et al. (2006), Jenny et al. (2017), Van der Westhuizen (2018) and Zweber (2014) suggests that well-being may act as an intervening mechanism in explaining the link between a high level of work-related sense of coherence and a low level of fatigue. The present study aims to confirm this.

Additionally, the Luxembourg Declaration on Workplace Health Promotion in the European Union (ENWHP, 2005), one of the most important documents giving guidelines on research and practice

in workplace health promotion, underlines the need to create work that balances workers' job demands, job control (decision latitude), and support from colleagues and supervisors. This is the main focus of the well-known job demand-control-support (DCS) model by Karasek and Theorell (1990). The strain hypothesis predicts that jobs with high mental job demands and low control or social support lead to mental strain and thereby mental and physical illness among workers (Van der Doef & Maes, 1999). This hypothesis could be regarded as a salutogenic pathway and predicts that high mental job demands in combination with a high degree of control and support will lead to increased learning, motivation, and a feeling of mastery. This increased learning and feeling of mastery will, according to Karasek and Theorell (1990), inhibit perceptions of work-related strain and associated health problems and will thus mediate the effect of work factors on strain and health (Jenny et al., 2017). These research findings will inform the present research on the mediating role of career well-being in the relationship between work-related sense of coherence and fatigue experiences.

3.3.4 Research hypothesis 3

H3: The effects of (1) the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue) and (2), the mediating variable (career well-being) on the dependent variable (fatigue) is moderated by an employee's age, gender and race. This means that certain groups will experience less fatigue than other groups because of their level of work-related sense of coherence and career well-being.

Ekstedt et al. (2006) found that fatigue in occupational burnout may be linked to variables external to the work environment, such as disturbed sleep (Asiwe et al., 2014). The present study will explore whether the relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences are moderated by external variables such as age, gender and race.

3.3.5 Research hypothesis 4

H4: Employees with different age, gender and race groups differ significantly regarding their work-related sense of coherence and career well-being.

Previous researchers have discovered differences in the fatigue levels of employees from different age groups. For example, Jackson and Rothmann (2005) found that employees between the ages of 45 and 50 experienced lower scores than younger employees below 27 years of age. This is in contrast with a study done by Osipow et al. (1985) that found lower fatigue levels in employees aged between 20 and 25. Their explanation for this is the fact that workers tend to take on greater family responsibilities and work overload as they age. This also relates to their low levels of well-being and work-related sense of coherence.

In terms of gender, studies have found that sense of coherence is connected to gender (Mayer et al., 2016). Sense of coherence scores have traditionally proven either to be similar for both genders (Von Bothmer & Fridlund, 2003) or higher for men (Antonovsky, 1987; Lindström & Eriksson, 2005; Mayer, 2011). In more recent times, however, sense of coherence scores have been significantly higher in females (Garcia-Moya et al., 2013; Mayer et al., 2019). Furthermore, these findings might support the assumption that sense of coherence scores with regard to gender are strongly dependent on the contextual concepts and values of individuals as well as their broader socio-political and cultural contexts (Antonovsky, 1979; Chu et al., 2016; Mayer, 2011). For instance, women, in comparison to men, were found to display lower sense of coherence scores in different cultural contexts (Antonovsky, 1987; Lindström & Eriksson, 2005; Mayer, 2011). The present study seeks to further investigate and establish this, since it will be interesting to compare the various South African racial groups with Indians –the study mentioned above by Garcia-Moya et al. (2013) was conducted at a university in Northern India.

3.4 IMPLICATIONS FOR EMPLOYEE WELL-BEING PRACTICES (INDIVIDUAL, TEAM AND ORGANISATIONAL LEVELS)

The present study endeavours to provide recommendations for organisational well-being practices aimed at alleviating the negative effects of fatigue.

Individual level

In career development intervention, Coetzee (2021b) recommends narrative reframing of negative perceptions about the career to counteract low levels of work volition. She explains that positive feelings help to decrease the autonomic arousal produced by negative emotions. This is done by increasing the person's flexibility of thinking and problem-solving regarding their work and career (Coetzee, 2021a; Reich et al., 2010; Tugade & Fredrickson, 2004). Researchers also found that in

uncertain times, learning, experience and creativity serve as personal enablers that support development and thriving (Brown et al., 2017).

Team level (diversity)

According to Xie et al. (2017), people's careers and well-being are socially embedded. The social environment of the organisation is considered instrumental to meaningful career goal achievement. Career development practices may include regular discussions about employees' experiences of their careers in the organisation, the support they need for goal achievement, the meaningfulness of their work and careers, and the manner in which the career and job fit into the larger purpose of the organisation (Ferreira et al., 2019).

Organisational level

Organisational career support practices are important for creating the psychological conditions employees need to cope with and adapt to changing technological work contexts (Ferreira et al., 2019). Organisations could provide the necessary coping resources (Lazarus & Folkman, 1984) that will enable employees to manage, tolerate or reduce the physical, social or psychological distress associated with digital technology use, human–machine interaction, or cybersecurity issues (Pascual et al., 2016). Employees should be made aware of changes in their jobs/careers flowing from new technological advancements that are implemented in the organisation. They should be exposed to training and development opportunities that help them embrace technological change and that help them to optimise their person-job fit. Employees should be guided in terms of the manner in which technological advancement in the organisation benefits their careers and the new opportunities that may emerge as a result of technological change. Such support may help with the cognitive restructuring of change into a sense of efficiency and meaningfulness, rather than helplessness in coping. Research has demonstrated positive associations between perceived organisational career development support and career satisfaction (Chen, 2011).

In conclusion, the core insights taken from this section are the following:

- On an individual level, positive narratives are recommended to reframe negative perceptions about a person's work and career by increasing their flexibility of thinking and problem-solving.
- Learning, experience and creativity support development and thriving during uncertain times.

- On a team level, the social environment of the organisation is considered instrumental to meaningful career goal achievement and sense of coherence.
- Career development practices include regular discussions about employees' experiences of their work, careers, the support they need, the meaningfulness of their careers and the manner in which the career and job fit into the larger purpose of the organisation.
- On an organisational level, career support practices are important for creating the psychological conditions that employees need to cope.
- Organisations should provide the necessary coping resources to manage, tolerate or reduce the distress associated with digital technology use.
- Employees should be made aware of changes in their jobs/careers; they should be exposed to training and development opportunities; employees should be guided as to how technology benefits their careers. Such support may help with the cognitive restructuring of change into a sense of efficiency and meaningfulness.

3.5 CHAPTER SUMMARY

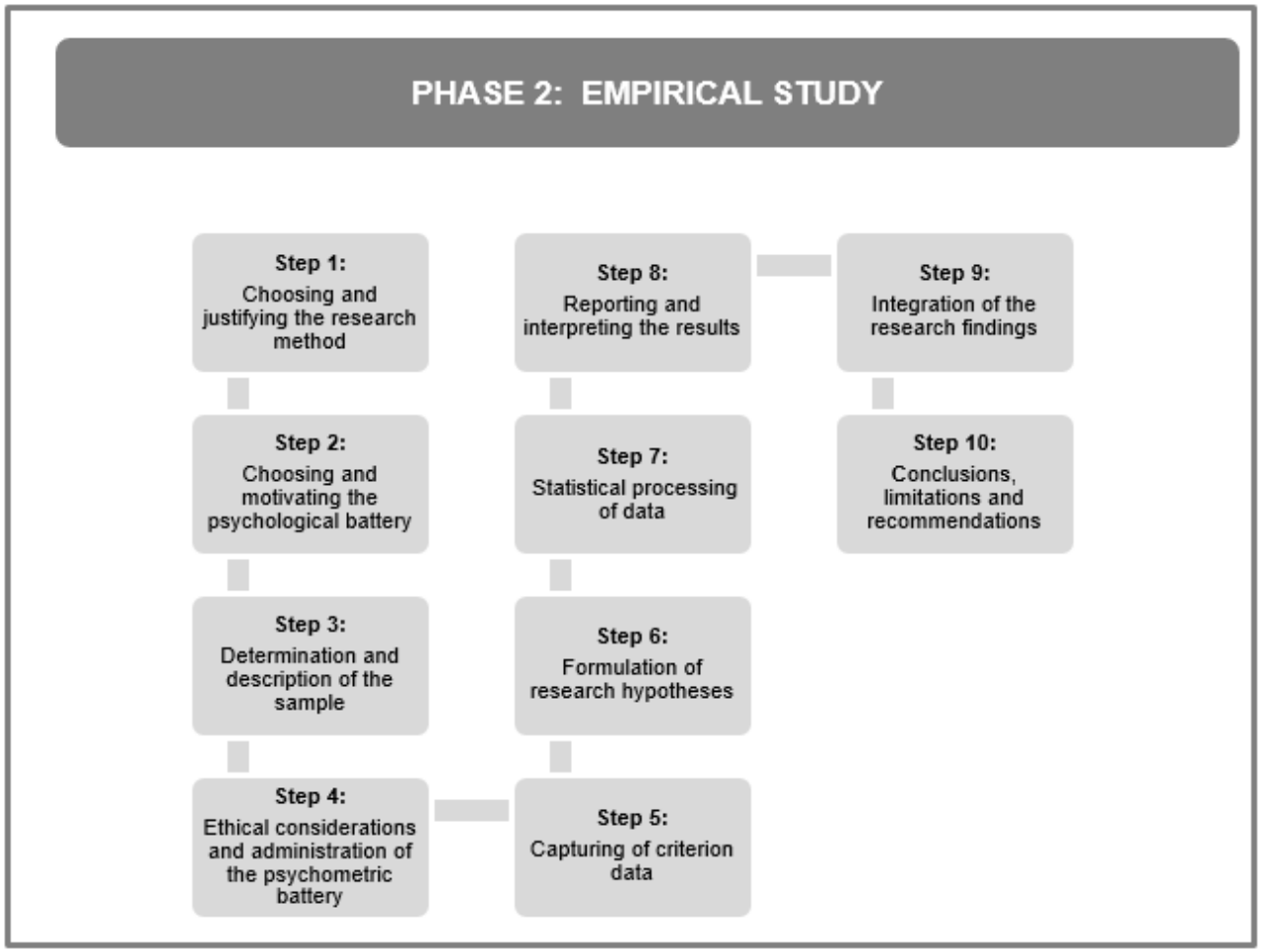
This chapter conceptualised the constructs of work-related sense of coherence and career well-being. This was done in the context of Industry 4.0 and the COVID-19 pandemic. The dimensions and measurement tools for these two constructs were discussed. Consideration was given to the socio-demographic variables that will be included in the study. The Conservation of Resources theory and the conceptual research model for this study were explained. The relationship dynamics among work-related sense of coherence, career well-being and fatigue experiences were also explored, followed by a discussion on the research hypotheses. Lastly, well-being interventions aimed at alleviating the negative effects of fatigue were explored at individual, team and organisational levels.

CHAPTER 4: RESEARCH METHOD

This chapter frames the empirical investigation by describing the research sample and the statistical strategies used to achieve the empirical aims. Figure 4.1 depicts the different steps in the empirical study. This chapter will address the first seven steps.

Figure 4.1

Overview of the Empirical Study



Source: Author's own work

4.1 STEP 1: CHOOSING AND JUSTIFYING THE RESEARCH METHOD

The study followed a cross-sectional quantitative research design. A cross-sectional study is one that examines population data at a particular point in time (Brink et al., 2012). A cross-sectional approach is often scrutinised. However, the benefits it had for this study are as follows:

- The design is an efficient use of a researcher's resources, especially in studies where the subject is in the early stages of research (Spector, 2019);
- The cross-sectional design is suitable in studies assessing the occurrence of certain behaviour in a population group (Spector, 2019);
- A cross-sectional study can be repeated over time to assess whether any trends become evident (Spector, 2019).

A cross-sectional design enabled a cost-effective and efficient measure to provide initial evidence on the subject matter. In time, an ensuing longitudinal study can be done to draw deeper causal conclusions.

The limitations of this approach were:

- Common method variance: The researcher had to be mindful of measurement biases which were as a result of the effects of other constructs on the found relationships between the variables (Spector, 2019);
- Causal conclusions: all study variables were assessed during the same arbitrary point in time and therefore may not be a representative snapshot (Spector, 2019).

4.2 STEP 2: CHOOSING AND MOTIVATING THE PSYCHOMETRIC BATTERY

The psychometric properties of the measuring instruments are described as follows. These instruments were intended to measure work-related sense of coherence, career well-being and fatigue experiences; and identify the socio-demographic characteristics (age, gender and race) of the respondents.

4.2.1 The measurement of socio-demographic characteristics

The socio-demographic characteristics of the respondents were established with a short biographical questionnaire consisting of age, gender and race.

The following three measuring instruments were used to measure the core constructs of the study:

4.2.2 The measurement of the independent construct: work-related sense of coherence

The measurement tool that was used was the English version of the Work-related sense of coherence scale (Work-SoC) (Vogt et al., 2013). This questionnaire consists of a 9-item self-report inventory, measuring the following dimensions: Items 1, 3, 6 and 9 measure the sub-dimension of comprehensibility (e.g. “I personally find my current job and work situation as clear/unclear”); items 4 and 7 measure the sub-dimension of manageability (e.g. “I personally find my current job and work situation as controllable/uncontrollable”); and items 2, 5 and 8 measure the sub-dimension of meaningfulness (e.g. “I personally find my current job and work situation as significant/insignificant”). The items are scored on a seven-point scale of 1-7 where 7 = ’Very true of me’ and 1 = ’Not at all true of me’. A high score on an item indicates a high belief in work-related sense of coherence.

The scale has good construct validity and a good internal consistency with a Cronbach alpha of 0.83 (Vogt et al., 2013).

4.2.3 The measurement of the mediating construct: career well-being

The Career Wellbeing Scale (Coetzee et al., 2020b) measures three states of career well-being: *affective career state* (6 items e.g. “I regularly feel I am making progress towards accomplishing my career goals”), *career networking/social support state* (4 items e.g. “I have a network of people that support me in my career”) and *state of career meaningfulness* (4 items e.g. “My job and career contribute to a bigger life purpose”). As is recommended by Pearse (2011), to ensure scale validity and reliability, the fourteen items are rated on a seven-point Likert-type scale that ranges from 1 (strongly disagree) to 7 (strongly agree). A high score on an item indicates a high psychological state of career well-being.

Coetzee et al. (2021) identified a high internal consistency reliability of this Career Wellbeing Scale. The internal composite consistency reliability coefficients are as follows: affective career state (.86), career networking/social support state (.85) and state of career meaningfulness (.87).

4.2.4 The measurement of the dependent construct: fatigue experiences

As fatigue is a one of the three sub-dimensions of burnout, the measurement tool that was used is the Fatigue Scale taken from the three factor 'Burnout Scale' (Asiwe et al., 2014). The Fatigue scale consists of a 5-item self-report inventory (e.g. *I feel weak while at work*). As is recommended by Pearse (2011), the items are scored on a seven-point frequency scale that ranges from 1 (never) to 7 (always). A high score on an item indicates a high belief in fatigue experiences.

The reliability and validity of the burnout scale were determined by means of the Cronbach's alpha coefficients (0.70) and exploratory factor analysis (Asiwe et al., 2014; Nunnally & Bernstein, 1994).

4.3 STEP 3: DETERMINATION AND DESCRIPTION OF THE SAMPLE

The population comprised of South African employees who work with people and deliver service(s) to them. Convenience sampling was applied to professional working adults in the Services Industry. With this method of sampling, the researcher was able to access existing contacts (Saunders et al., 2012). Convenience sampling, compared to other sampling methods, is the easiest way to recruit participants (Dudovskiy, 2016). Other advantages of convenience sampling are that it is cost-effective and easy to carry out. However, Dudovskiy (2016) also states that the disadvantages of convenience sampling include the relevance of bias and a high level of sampling errors.

The sample included a targeted population of (N = 400) professional working adults employed in Service industries known to the researcher and who were easily contactable via email and social media platforms. Potential participants who matched the following characteristics were individually contacted and asked to voluntarily complete the survey: The participants had different job titles, but all offered some kind of service to others; were between the ages of 18 and 65 years; and had working experience of interacting with people in the Service Industry. An attempt was made to have both male and female employees complete the survey. These employees were from various racial groups.

The rule of thumb of 10 observations per variable was applied in determining the minimum size of the sample (StatisticsSolutions, 2021). Seven (overall scale and sub-scales) variables were explored in the proposed study. This implied that a minimum of n = 70 useable questionnaires was required. A good maximum sample size is usually around 10% of the population. In this study, in a convenient population of (N = 400), 10% would be n = 40. The researcher managed to receive an adequate sample of N = 104 completed questionnaires. She was aware of the limitations posed on statistical procedures for a small sample as a larger sample would have allowed for more rigour in statistical analysis. Due to the constraints of the pandemic, availability of participants, time and costs, the sample size of N = 104 was deemed sufficient for the purposes of the Master's study.

The final sample size is regarded as adequate because of the following considerations: the researcher (1) had limited time and money; (2) needed a general estimate of the results for Master's research purposes; (3) planned to use only three categories of subgroups (gender, age, race); (4) expected that most participants would give similar answers; and (5) that conclusions and decisions that would be made based on the results would not have significant consequences because of the exploratory nature of the research (Tools4dev, 2021).

The following limitations of the sample size were considered in the interpretation of the findings:

- The findings could not be generalised to the total or broader population of service workers. The findings are only applicable to the sample of participants who participated in the survey.
- Although the final sample size was deemed adequate for testing the research hypotheses for a Master's study purposes, the representation of diverse race, age and gender groups was also limited.

These limitations were considered in the conclusions drawn from the study's findings. However, the research was exploratory in nature and can be regarded as a preliminary study that hopefully may stimulate future research on larger sample groups.

Table 4.1 provides a summary of the characteristics of the sample.

Table 4.1

Summary of Sample: Socio-demographic Characteristics

Socio-demographic characteristic	Percentage (%)
Age	
18 – 30 years	26%
31 – 45 years	29.8%
46 – 65 years	44.2%
TOTAL%	100%
Gender	
Male	26%
Female	74%
TOTAL %	100%
Race	
African	8.7%
Coloured	61.5%
Indian	1.0%
White	27.9%
Not specified	1.0%
TOTAL %	100%

Note: N = 104. Mean age of sample: mean = 42.39 standard deviation = 11.99

Interestingly, the final sample included employees from a range of different Service industries with most of the participants working in Education, Healthcare, Financial/Banking, Beauty, Governmental and Municipal Industries (the public sector). Typical job titles held by the participants included Educator, Lecturer, Nurse, Administrator, Manager and Hairstylist/designer.

In summary, the sample predominantly comprised of more females from the coloured racial group and 46-65 years age group; with the mean age of the sample being 42 years.

4.4 STEP 4: ETHICAL CONSIDERATIONS AND ADMINISTRATION OF THE PSYCHOMETRIC BATTERY

Ethics is a set of moral principles which speak of the quality of research procedures. It relates to the adherence of professional, legal and social obligations (De Vos et al., 2011). The ethical clearance for this study was obtained from the research ethics committee of the University of South Africa's department of Industrial and Organisational Psychology (see Appendix 1, reference number: **2021_CEMS/IOP_020**)

The "golden rule" of ethics: "treat others as you yourself would like to be treated" is the basis for all ethical considerations (Veal, 2017). Thus, the following ethical considerations were adhered to:

fairness, honesty, the openness of intent, disclosure of methods and the ends for which the research was executed, maintaining continuous respect and the integrity of the participants, guaranteed privacy, obtaining informed consent, confidentiality and ensuring anonymity (Neuman, 2011; Veal, 2017). The researcher ensured that the participants received explanations of the purpose of the study, of the participant's rights, and that the study would not harm the participant in any way. The participants were notified of their right to confidentiality, the procedure of the questionnaire, and they were not forced to take part in the study.

'Informed consent' formed part of the cover letter/information sheet. To proceed to the questionnaire, the participant needed to 'click' in agreement to all four of the following selection areas:

(1) It is assumed that you provide informed consent to participate (i.e. you understand the contents of the survey and the nature of the study, and voluntarily agree to take part in the study);
(2) It is assumed that you provide informed consent that the results of the survey may be used for research purposes;
(3) It is assumed that you provide informed consent that the researcher may use the findings of this study to publish the anonymous group-based research in a dissertation and research article;
(4) It is assumed that you provide informed consent that the information concerning you will be treated with confidentiality, is anonymous, and will not be made available to any person.

In addition to this, the researcher considered South African legislative requirements. In accordance with Section 8 of the Employment Equity Act 55 of 1998, the psychometric battery had to be scientifically reliable, valid, fair and free from discrimination. The researcher had to comply with the Protection of Personal Information ("POPI") Act 4 of 2013, in conjunction with the King III Code on Good Governance, in sections pertaining to data collection principles which states that the research's data mining techniques had to comply with two legislative imperatives: (1) the right to access material if the information is required for the exercise or protection of a right, and (2) the right to protection of personal information to the extent that the limitation of access is sensible and justifiable (Republic of South Africa, 2013).

Now with the onset of the COVID-19 pandemic and the national lockdown period that was implemented to curb the spread of the disease, the researcher had to make sure to adhere to

'UNISA's COVID-19 Position Statement on Research Ethics' that was released on 8 April 2020. This is in line with the World Health Organization's 'Ethical standards for research during public health emergencies: Distilling existing guidance to support COVID-19 R&D' (World Health Organization, 2020). In order to protect the parties involved, it was best to avoid face-to-face contact. The data required for this study was therefore collected online via the lime survey facilities of UNISA's College of Economic and Management Sciences. The lime survey's data is password-protected and stored on UNISA's server, thereby preventing any third party to access the data.

Lastly, participants received an URL link that directed them to the research questionnaire and all research findings are presented without distortion.

4.5 STEP 5: CAPTURING OF THE CRITERION DATA

The participants' responses to each of the items on the three questionnaires were captured on an electronic database (Microsoft Excel). Thereafter, it was converted to an SPSS data file with the assistance of an independent statistician.

4.6 STEP 6: FORMULATION OF THE RESEARCH HYPOTHESES

In order to achieve the objectives of the study, the research hypotheses were formulated as summarised in table 4.2.

Table 4.2

Research Hypotheses

Research Aim	Research Hypothesis	Statistical Procedure
Research aim 1: To assess the empirical inter-relationships between work-related sense of coherence (the independent variable), fatigue experiences (the dependent variable) and career well-being (as mediating variable).	**H1**: There is a significant and negative relationship between the antecedent variable (work-related sense of coherence), the mediating variable (career well-being) and fatigue experiences (dependent variable).	Descriptive statistics: mean, standard deviations, skewness, kurtosis Reliability coefficients Bi-variate (zero-order) correlations

Research aim 2: To assess whether the effect of the independent variable (work-related sense of coherence) on the dependent variable (fatigue experiences) is mediated by an employee's level of career well-being.	**H2**: The effect of the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue experiences) is mediated by an employee's career well-being (mediating variable).	Multiple regression analysis Mediation regression (Hayes' PROCESS procedure)
Research aim 3: To assess (1) the effect of the independent variable (work-related sense of coherence) on the dependent variable (fatigue experiences), and (2) the effect of career well-being (mediating variable) on fatigue experiences (dependent variable), when moderated by an employee's age, gender and racial characteristics.	**H3**: The effects of (1) the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue) and (2), the mediating variable (career well-being) on the dependent variable (fatigue) is moderated by an employee's age, gender and race. This means that certain groups will experience less fatigue than other groups because of their level of work-related sense of coherence and career well-being.	Moderated regression (Hayes' PROCESS procedure)
Research aim 4: To assess whether employees from different socio-demographic groups (namely age, gender and race) differ significantly with regards to work-related sense of coherence, career well-being and fatigue experiences.	**H4**: Employees with different age, gender and race groups differ significantly regarding their work-related sense of coherence and career well-being.	Tests for significant mean differences

Source: Author's own work

4.7 STEP 7: STATISTICAL PROCESSING OF THE DATA

The statistical process involves three major stages, namely descriptive statistical analysis, correlation analysis and inferential statistical analysis. Figure 4.2 summarises this process.

Figure 4.2

Statistical Processing of Data

STAGE 1: DESCRIPTIVE STATISTICAL ANALYSIS
• Measure of central tendency (mean) • Measure of central tendency (standard deviation) • Internal consistency (reliability coefficients) • Kurtosis • Skewness
STAGE 2: CORRELATION ANALYSIS
• Bi-variate correlations
STAGE 3: INFERENTIAL STATISTICAL ANALYSIS
• Multiple regression • Mediation regression (Hayes' PROCESS procedure) • Moderated regression (Hayes' PROCESS procedure) • T-tests

Source: Author's own work

Stage 1: Descriptive statistical analysis

The study made use of descriptive statistics to describe the notable characteristics of the sample which assisted the researcher with inspecting the variables for any violation of the statistical assumptions and in addressing the research questions.

The researcher utilised sample size, data accuracy, outliers, multi-collinearity, singularity, normality, linearity and homoscedasticity to test the assumptions underlying multi-variate statistical analysis. In addition, the following measures were used:

- *Measure of central tendency*: The mean (or average) was calculated by adding the values of responses and dividing it by the total number of responses.
- *Measure of spread:* Standard deviation calculated the average distance of cases from the mean value and how well the data was represented by the mean (Neuman, 2011).
- *Internal consistency:* The Cronbach Alpha's coefficient was employed to establish the strength of the scale correlation and the internal consistency reliability of the scales (Tredoux & Durrheim, 2013). Frequency tables were used to catalogue and compare the sample population.

- *Skewness:* measured the asymmetry of the data. It measured whether the distribution of data is positively skewed, negatively skewed or undefined (normal).
- *Kurtosis:* was applied to show how pointy or flat the distribution of data is (Field, 2015).

Stage 2: Correlation analysis

Correlation analysis are the statistical methods employed to describe and measure the relationship between a set of variables (Rovai et al., 2013). Bi-variate correlation was employed to detail the direction and the strength of the linear relationship between the variables. The researcher conducted tests for normality to assess the distribution of scores. The distribution determined whether Pearson product-moment correlation (parametric) or Spearman rho correlation (non-parametric) techniques should be utilised (Pallant, 2016). Additionally, practical effect sizes were utilised to determine whether the relationship between two variables is statistically significant. The practical effect sizes for significant correlations were Cohen's r >.10 to <.29 (small practical effect); r >.30 to <.49 (medium practical effect) and r >.50 (large practical effect) at p <.05.

The researcher attempted to limit type I and type II errors. A type I error (also referred to as the significance level) takes place when the null hypothesis is true, but rejected (Rovai et al., 2013). Type I errors can be limited by utilising the Bonferroni correction (a conservative approach whereby the researcher controls Type I errors with numerous comparisons) or the Holm's sequential Bonferroni correction which is a more powerful and uniform tool, as its intention is to control the family-wise error rate (Rovai et al., 2013).

A type II error becomes known when the null hypothesis is false, but erroneously fails to be rejected. It is often referred to as a false negative (Rovai et al., 2013). It is impossible to completely avoid type II errors; it can however be limited by increasing the sample size.

Stage 3: Inferential statistical analysis

Inferential statistics is employed by researchers to draw conclusions which extend beyond the data alone (Veal, 2017). In this study, it was applied by means of multiple regression. A mediation regression analysis was then conducted, followed by a moderated regression analysis, both performed with Hayes' PROCESS procedure (Hayes, 2018).

Multiple regression is a statistical analysis that assesses the way in which independent variables are able to predict a particular outcome (dependent variable) (Dhanpat et al., 2018). Multiple regression analysis was used in this study to empirically investigate whether socio-demographic control variables (age, gender and race), work-related sense of coherence and career well-being significantly predicted experiences of fatigue.

A mediation regression analysis reveals a causal sequence (Hayes & Preacher, 2013). A mediating variable provides a causal link between an independent variable and a dependent variable (Osborne, 2008). A mediating variable explains how and why certain effects occur. In this study, a mediation analysis was used to explore whether work-related sense of coherence has a negative link to fatigue experiences through career well-being as a mediating variable.

Moderated regression analysis is also known as conditional interaction effects (Preacher et al., 2007). The purpose of using moderated regression analysis in this study was to establish the interaction effect between the predictor variables (i.e. work-related sense of coherence and career well-being) and the moderating variables (i.e. age, gender and race) in predicting experiences of fatigue (Darlington & Hayes, 2017). In other words, moderated regression helped to establish whether high or low scores on either work-related sense of coherence or career well-being were dependent on the age, race or gender of the participants. Finally, the SPSS (Statistical Package for Social Sciences, Version 27; 2020) was used to perform the T-test statistical procedure for this analysis.

4.8 CHAPTER SUMMARY

In this chapter, the first seven steps of the empirical investigation were discussed. These included a description of the sample, the choice of and motivation for the relevant psychometric test batteries; as well as the ethical considerations, administration and scoring of the test batteries. Additionally, the steps for the capturing of the criterion data and the hypotheses were also formulated. The chapter concluded with a discussion and reasoning of the methods used to process statistical data.

CHAPTER 5: RESEARCH RESULTS

This chapter addresses step 8 of 10 in the empirical study. This chapter discusses the results of the statistical analysis that emerged from the techniques applied to test the research hypotheses. In particular, the detailed results of the descriptive, correlational and inferential statistics will be discussed. The chapter will close with a conclusion on the research hypotheses.

5.1 DESCRIPTIVE AND CORRELATIONAL STATISTICS

This section of the chapter reports on the descriptive statistics, including the means, standard deviations and the internal consistency reliability coefficients for the three scales used in this study: the English version of the Work-related sense of coherence scale (Work-SoC) (Vogt et al., 2013), the Career Wellbeing Scale (Coetzee et al., 2021) and The Fatigue Scale taken from the three factor 'Burnout Scale' (Asiwe et al., 2014).

This section also reports on the bi-variate correlations that were performed to determine the magnitude and direction of the relationship between the variables, using SPSS (Statistical Package for Social Sciences, Version 27; 2020). Due to the small but adequate sample (N = 104), only overall scale constructs have been included in the statistical analysis.

Empirical research aim 1 is referred to here.

Research aim 1: To assess the empirical inter-relationships between work-related sense of coherence (the independent variable), fatigue experiences (the dependent variable) and career well-being (as mediating variable).

Table 5.1 provides the descriptive and correlational information computed for this study.

Table 5.1

Descriptive and Correlational Statistics

	Variable	Cronbach alpha coefficient	Mean	SD	1	2	3	4	5	6
1	Age	n/a	n/a	n/a	-					
2	Gender	n/a	n/a	n/a	0.05	-				
3	Race	n/a	n/a	n/a	0.03	0.02	-			
4	Work-related sense of coherence	0.91	4.50	1.35	0.12	-0.11	-0.12	-		
5	Career well-being	0.95	5.04	1.21	0.02	-0.12	-0.09	.64**	-	
6	Fatigue experiences	0.87	3.24	1.33	-0.11	.20*	0.08	-.38***	-.32**	-

Note: N = 104. ****p* ≤ .000. ***p* ≤ .01. **p* ≤ .05. Statistics are reported at 95% confidence interval.

Table 5.1 displays the Cronbach alpha coefficients for the three constructs of this study. The Cronbach alpha coefficients were calculated to assess the internal consistency reliability of the measuring instruments. It is a statistical procedure that indicates the average correlation among all scale items. Cronbach's coefficient should preferably be greater than .70 (Punch, 2014). Table 5.1 shows that the three scale constructs had high internal consistency reliability (α ≥ .87).

Respondents' mean scores were based on a seven-point Likert-type scale. Career well-being had the highest mean score (mean = 5.04; SD = 1.21; moderately agree), followed by work-related sense of coherence (mean = 4.50; SD = 1.35; true of me). Fatigue experiences had the lowest mean score (mean score = 3.24; SD = 1.33; rarely). Overall, it appears from the mean scores that the sample of participants had low levels of fatigue experiences, average level of work-related sense of coherence, and moderate levels of career well-being.

Table 5.1 shows that the three constructs of work-related sense of coherence, career well-being and fatigue experiences had significant correlations. Work-related sense of coherence had a significant and positive association with career well-being (*r* = .64*; p* = .000; large practical effect*).* Fatigue experiences had a significant and negative association with work-related sense of coherence (*r* = -.38*; p* = .000; moderate practical effect*)* and career well-being (*r* = -.32*; p* = .001; moderate practical effect*).*

The results provided evidence in support of research hypothesis 1:

Research hypothesis 1 (H1): There is a negative relationship between (1) the antecedent variable (work-related sense of coherence), and (2) the mediating variable (career well-being), and fatigue experiences (dependent variable).

5.2 REGRESSION ANALYSIS

Multiple regression analysis was firstly performed as preliminary analysis in testing research hypothesis 2 and research hypothesis 3. SPSS (Statistical Package for Social Sciences, Version 27; 2020) was used.

Research hypothesis 2 (H2): The link between the antecedent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's career well-being (mediating variable).

Research hypothesis 3 (H3): The effects of (1) the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue) and (2), the mediating variable (career well-being) on the dependent variable (fatigue) is moderated by an employee's age, gender and race. This means that certain groups will experience less fatigue than other groups because of their level of work-related sense of coherence and career well-being.

This forms part of inferential statistics; the main goal of which is to answer the hypotheses in order to make rational conclusions about the research results (Ali & Bhaskar, 2016).

5.2.1 Multiple regression analysis

Table 5.2 shows that the ANOVA model was significant: $F = 4.38$; $p = .001$ and explained 14% ($R^2 = .14$; moderate practical effect) of the variance in fatigue experiences. The tolerance values (above threshold of .25) and variance inflation values (below threshold of 4.0: Corporate Financial Institute, 2021) showed that multicollinearity among work-related sense of coherence and career well-being was not a concern in interpreting the findings. Table 5.2 shows that only work-related sense of coherence significantly and negatively predicted fatigue experiences ($\beta = -0.26$; $p = .03$). The control variables of age, gender and race had no significant prediction effect.

Table 5.2

Results of Multiple Regression Analysis

Variable	**Unstandardised B**	**Standardised B**	**T**	***p***	***95% CI Lower Bound***	***95% CI Upper Bound***	***F***	***P***	***R²***
Age	-0.01	-0.09	-0.91	0.37	-0.03	0.01	4.38	0.001	0.14
Gender	0.47	0.16	1.74	0.09	-0.07	1.01			
Race	0.12	0.04	0.43	0.66	-0.41	0.64			
Work-related sense of coherence	-0.25	-0.26	-2.16	0.03	-0.48	-0.02			
Career well-being	-0.14	-0.13	-1.06	0.29	-0.40	0.12			

Note: N = 104. Dependent variable = Fatigue experiences. ANOVA Model: Tolerance values for independent variable constructs =.58. Variance inflation factor values = 1.75.

5.2.2 Mediated regression analysis

Mediation analysis was performed to achieve the empirical research aim 2:

Research aim 2: To assess whether the link between the independent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's level of career well-being.

Mediation analysis involves the presence of an intermediate variable between an independent variable and a dependent variable, where the intermediate variable transmits the causal effect of the independent variable onto the dependent variable (Agler & De Boeck, 2017). This study used the PROCESS Procedure (Hayes, 2018) for SPSS Version 3.5.3 to perform the mediation analysis to assess whether an employee's level of career well-being can explain the relationship between their level of work-related sense of coherence and their experiences of fatigue. Table 5.3 reports the mediation analysis results.

Table 5.3

Results of Mediation Analysis

Model 1 Variables Career well-being	**Standardised Coefficient β**	**SE**	***T***	***P***	**LLCI**	**ULCI**	***F***	***P***	***R²***
Constant	2.42	0.32	7.67	0.000	1.79	3.04	75.62	0.000	0.43
Work-related sense of coherence	0.65	0.07	8.70	0.000	0.45	0.72			
Model 2 Fatigue experiences	**Standardised Coefficient β**	**SE**	***T***	***P***	**LLCI**	**ULCI**	***F***	***P***	***R²***
Constant	5.51	0.52	1.54	0.000	4.48	6.55	11.11	0.000	0.18
Work-related sense of coherence	-0.28	0.12	-2.34	0.02	-0.51	-0.04			
Career well-being	-0.19	0.13	-1.58	0.12	-0.47	0.05			
Model 3	**Total effect of work-related sense of coherence on fatigue experiences**								
	Standardised effect	**SE**	***T***	***P***	**LLCI**	**ULCI**	***F***	***P***	***R²***
Work-related sense of coherence	-0.40	0.09	-4.41	0.000	-0.57	-0.22	19.46	0.000	0.16
Indirect effect of work-related sense of coherence on fatigue experiences through career well-being (mediator)									
	Completely standardised effect	**Boot SE**	***T***	***P***	**Boot LLCI**	**Boot ULCI**			
Career well-being	-0.12	0.09	N/A	N/A	-0.32	0.04			

Note: N = 104. Model 1 (Dependent variable) = Career well-being.

Model 2 and Model 3 (Dependent variable) = Fatigue experiences.

LLCI: Lower level confidence interval. ULCI: Upper level confidence interval. SE: standard error.

Table 5.3 shows that the ANOVA model and beta coefficient for the prediction effect of work-related sense of coherence (β = .65; p = 0.000) on career well-being was significant and positive: F = 75.62; p = .000, and explained 43% (R^2 = .43; large practical effect) of the variance in career well-being.

The ANOVA model for the prediction effect of both work-related sense of coherence and career well-being on fatigue experiences was significant: F = 11.11; p = .000 and explained 18% (R^2 = .18; moderate practical effect) of the variance in fatigue experiences. The model showed that only

work-related sense of coherence had a significant and negative prediction effect (β = -0.28; *p* = 0.02; LLCI = -.51; ULCI = - 0.04) on fatigue experiences when combined with career well-being as independent variable.

Table 5.3 further shows that career well-being did not have a significant mediating effect (β = -0.12; LLCI = -.32; ULCI = .04) in the link between work-related sense of coherence and fatigue experiences.

The mediation results did **not** provide evidence in support of research hypothesis 2:

(H2): The link between the antecedent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's career well-being (mediating variable).

5.2.3 Moderated regression analysis

Moderated regression analysis was performed to achieve research aim 3:

Research aim 3: To assess (1) the effect of the independent variable (work-related sense of coherence) on the dependent variable (fatigue experiences), and (2) the effect of career well-being (mediating variable) on fatigue experiences (dependent variable), when moderated by an employee's age, gender and racial characteristics.

The moderated regression analysis was performed by using the PROCESS Procedure (Hayes, 2018) for SPSS Version 3.5.3. In this study, the purpose of the moderated regression analysis was to determine the extent of the interaction (moderation) effects between the socio-demographic variables (age, gender and race) and the predictor variables (work-related sense of coherence and career well-being) in predicting fatigue experiences among employees.

The following dummy codes were used:

Age

≤ 45 years = 0

≥46 years = 1

Gender

Male = 0

Female = 1

Race

White = 0

Black (A, C, I) = 1

5.2.3.1 Work-related sense of coherence in interaction with age, gender and race

Table 5.4 shows that although the ANOVA models were significant in explaining a moderate practical effect (R^2 ≥ 0.15 to R^2 = 0.21) of the variance in fatigue experiences, there were no significant interaction effects between work-related sense of coherence and the variables of age, gender and race in predicting fatigue experiences. Gender had a significant main effect on fatigue experiences (β = 1.92; p = 0.04; LLCI = 0.11; ULCI = 3.74) when combined with work-related sense of coherence as predictor of fatigue experiences. Table 5.4 confirmed the negative and significant main effect of work-related sense of coherence on fatigue experiences.

Table 5.4

Moderated Regression Results: Work-related Sense of Coherence as Predictor of Fatigue Experiences

Model 1 Variables	**Coefficient B**	**SE**	***t***	***p***	**LLCI**	**ULCI**	***F***	***p***	***R²***
Constant	4.83	0.55	8.84	0.000	3.74	5.91	6.48	0.000	0.16
Work-related sense of coherence (A)	-0.35	0.12	-2.99	0.003	-0.59	-0.12			
Age (B)	0.47	0.86	0.54	0.59	-1.25	2.18			
A x B (Interaction)	-0.10	0.18	-0.56	0.58	-0.47	0.26			
Model 2 Variables	**Coefficient B**	**SE**	***t***	***P***	**LLCI**	**ULCI**	***F***	***p***	***R²***
Constant	3.58	0.77	4.66	0.000	2.06	5.10	8.78	0.000	0.21
Work-related sense of coherence (A)	-0.17	0.15	-1.11	0.27	-0.48	0.14			
Gender (B)	1.92	0.91	2.11	0.04	0.11	3.74			

A x B (Interaction)	-0.31	0.19	-1.63	0.11	-0.68	0.07			
Model 3 Variables	**Coefficient B**	**SE**	***t***	***p***	**LLCI**	**ULCI**	***F***	***p***	***R²***
Constant	5.09	0.73	6.95	0.000	3.64	6.54	5.74	0.001	0.15
Work-related sense of coherence (A)	-0.43	0.15	-2.95	0.004	-0.72	-0.14			
Race (B)	-0.43	0.90	-0.48	0.63	-2.21	1.35			
A x B (Interaction)	0.12	0.19	0.63	0.53	-0.25	0.48			

Note: N = 104. Dependent variable = Fatigue experiences

5.2.3.2 Career well-being in interaction with age, gender and race

Table 5.5 shows that although the ANOVA models were significant in explaining a small (R^2 = 0.12) to moderate practical effect (R^2 = 0.14 and R^2 = 0.16) of the variance in fatigue experiences, there were no significant interaction effects between career well-being and the variables of age, gender and race in predicting fatigue experiences. Interestingly, career well-being, when combined with age (career well-being β = -0.46; *p* = 0.002; LLCI = -0.74; ULCI = -0.17) and race (career well-being β = -0.54; *p* = 0.01; LLCI = -0.92; ULCI = -0.16), in the respective prediction models, had a significant and negative main effect on fatigue experiences.

Table 5.5

Moderated Regression Results: Career Well-being as Predictor of Fatigue Experiences

Model 1 Variables	**Coefficient β**	**SE**	***t***	***p***	**LLCI**	**ULCI**	***F***	***p***	***R²***
Constant	5.57	0.74	7.55	0.000	4.11	7.04	5.36	0.002	0.14
Career well-being (A)	-0.46	0.14	-3.21	0.002	-0.74	-0.17			
Age (B)	-0.58	1.06	-0.55	0.58	-2.69	1.52			
A x B (Interaction)	0.11	0.20	0.52	0.61	-0.30	0.51			
Model 2 Variables	**Coefficient β**	**SE**	**t**	***p***	**LLCI**	**ULCI**	***F***	***p***	***R²***
Constant	4.54	1.18	3.85	0.000	2.20	6.87	6.50	0.000	0.16
Career well-being (A)	-0.33	0.22	-1.53	0.13	-0.76	0.10			
Gender (B)	0.83	1.32	0.63	0.53	-1.78	3.44			
A x B (Interaction)	-0.06	0.25	-0.26	0.80	-0.55	0.43			
Model 3 Variables	**Coefficient B**	**SE**	**t**	***p***	**LLCI**	**ULCI**	***F***	***p***	***R²***
Constant	5.85	1.03	5.67	0.000	3.80	7.90	4.48	0.005	0.12
Career well-being (A)	-0.54	0.19	-2.80	0.01	-0.92	-0.16			

Race (B)	-1.24	1.21	-1.02	0.31	-3.64	1.16			
A x B (Interaction)	0.27	0.23	1.18	0.24	-0.18	0.72			

Note: N = 104. Dependent variable = Fatigue experiences

The results did **not** provide evidence in support of research hypothesis 3:

H3: The effects of (1) the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue) and (2), the mediating variable (career well-being) on the dependent variable (fatigue) is moderated by an employee's age, gender and race. This means that certain groups will experience less fatigue than other groups because of their level of work-related sense of coherence and career well-being.

5.3 TESTS FOR SIGNIFICANT MEAN DIFFERENCES

Tests for significant mean differences were performed to achieve research aim 4:

Research aim 4: To assess whether employees from different socio-demographic groups (namely age, gender and race) differ significantly with regards to work-related sense of coherence, career well-being and fatigue experiences.

The SPSS (Statistical Package for Social Sciences, Version 27; 2020) was used to perform the t-test statistical procedure for analysis. The age and race groups were treated as binary groups for statistical purposes because of the small but adequate sample size. The South African Employment Equity Act categorisation for clustering Black people (African, Coloured, Indian) was used.

5.3.1 Age

The following age categories were used as groups:

- 18 to 45 years
- 46 to 65 years

Table 5.6

Results of Tests for Significant Mean Differences for Age

	Variances				T-test					
Variable	***F***	***p***	***T***	**Df**	***p***	**Mean df**	**SE**	***LLCI***	***ULCI***	**Cohen *d* (point estimate)**
Fatigue experiences	0.13	0.72	0.20	102	0.84	0.05247	0.26418	-0.47153	0.57648	0.04
Work-related sense of coherence	0.13	0.72	-0.56	102	0.58	-0.14889	0.26809	-0.68066	0.38287	-0.11
Career well-being	1.02	0.32	-0.02	102	0.99	-0.00407	0.23994	-0.47999	0.47186	-0.003

Note: N = 104. 18 – 45 years (n) = 46. 46 – 65 years (n) = 58.

As shown in Table 5.6, no significant mean differences were observed between the age groups.

5.3.2 Gender

The following gender categories were used as groups:

- Male
- Female

Table 5.7

Results of Tests for Significant Mean Differences for Gender

	Variances				T-test					
Variable	***F***	***p***	***T***	**Df**	***p***	**Mean df**	**SE**	***LLCI***	***ULCI***	**Cohen *d* (point estimate)**
Fatigue experiences	1.51	0.22	-2.178	102	0.03	-0.63742	0.29260	-1.21780	-0.05705	-0.49
Work-related sense of coherence	1.13	0.29	1.195	102	0.24	0.36105	0.30206	-0.23807	0.96018	0.27
Career well-being	1.34	0.25	1.359	102	0.18	0.36597	0.26939	-0.16836	0.90030	0.30

Note: N = 104. Male (n) = 27. Female (n) = 77.

Table 5.7 shows that the male participants (mean = 2.77; SD = 1.21) scored significantly (p = .03; Cohen d = -0.49; small practical effect) lower than their female counterparts (mean = 3.41; SD = 1.34) on fatigue experiences.

5.3.3 Race

The following race categories were used as groups:

- White
- Black (African, Indian and Coloured) – grouped in line with the South African Employment Equity Act's description of Black.

Table 5.8

Results of Tests for Significant Mean Differences for Race

	Variances				T-test					
Variable	***F***	***p***	***T***	**Df**	***p***	**Mean df**	**SE**	***LLCI***	***ULCI***	**Cohen *d* (point estimate)**
Fatigue experiences	0.02	0.90	-0.85	101	0.40	-0.23849	0.28192	-0.79775	0.32077	-0.19
Work-related sense of coherence	1.84	0.18	1.21	101	0.23	0.35525	0.29406	-0.22809	0.93859	0.27
Career well-being	0.04	0.85	0.94	101	0.35	0.24191	0.25842	-0.27072	0.75454	0.21

Note: N = 104. White (n) = 29. Black (n) = 74.

As shown in Table 5.8, no significant mean differences were observed between the race groups.

In summary, the test for significant mean differences provided only **partial** evidence (gender on fatigue experiences) in support of research hypothesis 4:

H4: Employees with different age, gender and race groups differ significantly regarding their work-related sense of coherence, career well-being and experiences of fatigue.

5.4 DECISIONS REGARDING THE RESEARCH HYPOTHESES

This section includes the main findings of relevance to the research hypotheses, as indicated in Table 5.9.

Table 5.9

Summary of the Main Findings Relating to the Research Hypotheses

Research Aim	Research Hypothesis	Statistical Procedure	Evidence (Yes / No / Partial)
Research aim 1: To assess the empirical inter-relationships between work-related sense of coherence (the independent variable), fatigue experiences (the dependent variable) and career well-being (as mediating variable).	**(H1)**: There is a significant and negative relationship between (1) the antecedent variable (work-related sense of coherence), and (2) the mediating variable (career well-being), and fatigue experiences (dependent variable).	Bi-variate correlations	Yes
Research aim 2: To assess whether the link between the independent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's level of career well-being.	**(H2)**: The link between the antecedent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's career well-being (mediating variable).	Preliminary analysis: multiple regression Mediation analysis – PROCESS Hayes	 No
Research aim 3: To assess (1) the effect of the independent variable (work-related sense of coherence) on the dependent variable (fatigue experiences), and (2) the effect of career well-being (mediating variable) on fatigue experiences (dependent variable), when moderated by an employee's age, gender and racial characteristics.	**(H3)**: The effects of (1) the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue) and (2), the mediating variable (career well-being) on the dependent variable (fatigue) is moderated by an employee's age, gender and race. This means that certain groups will experience less fatigue than other groups because of their level of work-related sense of coherence and career well-being.	Moderation analysis – PROCESS Hayes	No
Research aim 4: To assess whether employees from different socio-demographic groups (namely age, gender and race) differ significantly with regards to work-related sense of coherence, career well-being and fatigue experiences.	**H4**: Employees with different age, gender and race groups differ significantly regarding their work-related sense of coherence, career well-being and experiences of fatigue.	T-test	Partial (gender- fatigue experiences)

5.5 CHAPTER SUMMARY

This chapter presented the research results. The first section dealt with descriptive statistics in which the means, standard deviations and the internal consistency reliability coefficients of the three scales were computed. This section was followed by the correlation analysis, which reported on the strength and magnitude of the relationships between the three scales. This was followed by the section on inferential statistics, which included the results of the mediation analysis, the moderated regression analysis and the test for the significant mean differences. The chapter closed with a summary of the main findings regarding the research hypotheses.

CHAPTER 6: DISCUSSION, CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS

The general aim of the research was to explore the nature and the magnitude of the associations between work-related sense of coherence (independent variable) and fatigue experiences (outcome variable), taking into account the intervening effect of career well-being (mediating variable) and the moderating effect of socio-demographic characteristics (such as age, gender and race). The research further aims to inform employee well-being support practices.

This chapter begins by discussing the conclusions pertaining to the aims of the study and the research hypotheses. This section is followed by a discussion of the limitations of both the literature review and the empirical results of the study. The chapter concludes with recommendations for future research in the field of Industrial and Organisational Psychology and the practical application of the findings in the workplace, with particular reference to the South African Service industries.

6.1 DISCUSSION

In this section, the biological and descriptive profile of the sample as well as the research aims of the study will be discussed.

6.1.1 Sample characteristics and means profile

The findings from the current study can only be generalised to the specific sample of participants (N = 104) and not to the broader service industry population. The biographical profile revealed that most of the participants were between the ages of 46 and 65 years (mean age of 42 years). The sample may be under-represented by younger employees and future research should cast a wider net on all the age groups within Service industries in order to draw more informed conclusions.

The majority of the participants were female (74%). Males were under-represented and future occupational research should aim to increase the number of male participants to produce more representative samples. The sample included more black (71.8%) than white (28.2%) participants, especially people of the coloured racial group. Future research should aim to increase the number of white and other racial group participants. This will produce more representative samples of the

Service industries in South Africa in order to draw more informed conclusions; especially since South Africa is rich in diversity and its people are multicultural. Most organisations in the country employ individuals with diverse cultural backgrounds. Interestingly, Coetzee and Rothmann (2007) previously found that white employees (in comparison to black employees) showed higher levels of exhaustion. However, the psychological differences among different racial groups remain a relatively understudied area.

6.1.2 Correlations

The empirical results showed that participants with high levels of work-related sense of coherence and career well-being were also likely to have significantly lower levels of fatigue experiences. This finding confirms previous research results by Basson and Rothmann (2002), Strümpfer (2003) and Rothmann et al. (2005) who found that a person's sense of coherence assists in warding off burnout. As already stated numerous times in this research project, fatigue is a sub-dimension of burnout. More recently, the studies by Bezuidenhout and Cilliers (2010) also show that low sense of coherence scores correlate with high burnout/fatigue scores. In addition, Van der Westhuizen (2018) reported work-related sense of coherence to be a significant predictor of fatigue. This is most likely because employees who have a high sense of work-related sense of coherence perceive stimuli from the environment as making cognitive sense (comprehensible), as being under the control of both the employee and legitimate others (manageable), and as being motivationally relevant and meaningful (meaningfulness).

Regarding work-related sense of coherence and career well-being, previous literature has proven that the two are closely linked. For example, Eberz et al. (2011) found work-related sense of coherence to be a good predictor of career well-being. This proposition was supported by Vogt et al. (2013). In 2014, Zweber discovered that work-related sense of coherence is positively related to the perception that the organisational climate is supportive of its employees' health and career well-being. In this regard, the findings suggest that a positive state of career well-being is likely to be associated with low levels of fatigue experiences.

6.1.3 Regressions

Weinstein et al. (2012) suggested that career well-being may help to counteract fatigue experiences in that career behaviour is autonomous and regulated by the self rather than external contingencies. Their explanation was that high levels of autonomous, self-regulated behaviour are positively associated with greater energy as well as creative learning and engagement, lower stress, and rewarding social connections. The present study, however, did not confirm this. In the present study, career well-being did not act as a significant predictor of fatigue experiences.

In addition, previous research by Antonovsky (1987), Hakanen et al. (2006), Jenny et al. (2017), Van der Westhuizen (2018) and Zweber (2014) suggested that career well-being may act as an intervening mechanism in explaining the link between a high level of work-related sense of coherence and a low level of fatigue. However, the present study found that the pathway from work-related sense of coherence via career well-being to fatigue experiences was not significant. In other words, career well-being had no mediating effect.

The Luxembourg Declaration on Workplace Health Promotion in the European Union (ENWHP, 2005), one of the most important documents giving guidelines on research and practice in workplace health promotion, underlines the need to create work that balances workers' job demands, job control (decision latitude), and support from colleagues and supervisors. This is the main focus of the well-known job demand-control-support (DCS) model by Karasek and Theorell (1990). The strain hypothesis predicts that jobs with high mental job demands and low control or social support lead to mental strain and thereby mental and physical illness among workers (Van der Doef & Maes, 1999). This hypothesis could be regarded as a salutogenic pathway and predicts that high mental job demands in combination with a high degree of control and support will lead to increased learning, motivation, and a feeling of mastery.

This increased learning and feeling of mastery will, according to Karasek and Theorell (1990), inhibit perceptions of work-related strain and associated health problems and will thus mediate the effect of work factors on strain and health (Jenny et al., 2017). These research findings help explain the reason for the non-mediating effect of career well-bring on the relationship between work-related sense of coherence and fatigue experiences. Career well-being seems to be a state of well-being pertaining to organisational career support conditions; it does not appear to affect the link between cognitive perceptions of the work being comprehensible, manageable and

meaningful, and fatigue experiences. However, the present study's findings suggest that work-related sense of coherence does explain higher levels of career well-being.

Interestingly, the present study found that the associations between work-related sense of coherence, career well-being and fatigue experiences are not conditional upon socio-demographic characteristics. In other words, age, gender and race did not have a moderating effect on the relationship between the three constructs. This is in contrast to the findings by, for example, Jackson and Rothmann (2005), and Maslach et al. (2001). They found age to be consistently related to burnout, indicating that burnout seems to be more of a threat early in an individual's career due to the relationship between age and work experience.

6.1.4 Tests for significant mean differences

The study findings showed that male and female participants differed regarding experiences of fatigue with women indicating significantly higher levels of fatigue experiences. This finding is contrary to the finding of Barkhuizen and Rothmann (2008) that levels of exhaustion as well as mental distance and professional efficacy do not differ between gender groups. Some researchers have hypothesised, though, that women tend to experience more burnout compared to men (Maslach et al., 2001). Overall, research findings have been inconsistent in this regard with some researchers reporting high levels of burnout for men and others reporting no gender differences (Maslach et al., 2001; Barkhuizen & Rothmann, 2008).

The present study found no differences on fatigue experiences for the age groups. This is contrary to research indicating differences in the fatigue levels of employees from different age groups. Jackson and Rothmann (2005) found that employees between the ages of 45 and 50 have lower scores of fatigue experiences than younger employees below 27 years of age; while Osipow et al. (1985) found lower fatigue levels in employees aged between 20 and 25. Their explanation for this is the fact that workers tend to take on greater family responsibilities and work overload as they age. This also relates to their low levels of well-being and work-related sense of coherence. However, the present study did not corroborate previous research findings.

6.1.5 Integration: Key insights

The current study aimed to broaden the knowledge on the relationship between work-related sense of coherence, career well-being and fatigue experiences in the hope to inform employee well-being support practices. With this study, the researcher discovered the significant role of work-related sense of coherence on career well-being and fatigue experiences.

Without a doubt, Industry 4.0 and COVID-19 have resulted in employees experiencing a great amount of stress (Leung et al., 2012; Wittenberg-Lyles et al., 2014). The Conservation of Resources theory (Hobfoll, 1998) suggests that employees attempt to combat ongoing work stress by a high level of resource-investment directed toward coping. Their coping efforts either fail or succeed. Failure results in burnout or fatigue (Schorn & Buchwald, 2007). But work-related sense of coherence and career well-being are successful coping resources that will help to counteract fatigue during such stressful times. Zweber (2014) discovered that work-related sense of coherence is positively related to the perception that the organisational climate is supportive of employee health and well-being.

As proven by the present study, work-related sense of coherence, in particular, is a positive predictor of career well-being and a negative predictor of fatigue experiences. Human resource professionals, industrial psychologists and career coaches therefore need to ensure that support initiatives are developed and implemented in order to improve the employees' work-related sense of coherence; especially since those working in Service industries often experience fatigue and/or burnout (Burke, 2019; Maslach & Jackson, 1981b; Wright & Bonett, 1997).

Regarding the socio-demographic variables in this study, it was discovered that women have higher levels of fatigue experiences than men. Fatigue has a negative effect on the performance of employees (Bridger, 2009; Swart & Sinclair, 2015). Furthermore, fatigue refers to having an extreme lack of energy (Shen et al., 2006). In the fast-paced digital world of today, an organisation's success and survival depend on its employees' energy to keep up (Bezuidenhout & Cilliers, 2020; Harry & Coetzee, 2013). Thus, fatigue experiences in the workplace should be avoided as far as possible. Organisations should prioritise providing their female employees with the necessary resources to cope better in this regard. For example, adjusting their work schedules and reducing work-related stressors (Phillips, 2014; Rothmann et al., 2005; Wentzel et al., 2019); a supportive organisational culture is also important (Steyn, 2018; Nel, 2021).

In conclusion, research on fatigue experiences is sparse due to previous authors focusing more on burnout. The construct of career well-being is also generally under-researched (Lent & Brown, 2008; Marsh et al., 2020; Steiner & Spurk, 2019; Wilhelm & Hirschi, 2019). The current study therefore offers practical information on the influence of work-related sense of coherence on career well-being and fatigue experiences. The research outcomes are expected to provide a deeper understanding of the relationships between the three constructs as well as the interaction effects between the sociodemographic variables, especially gender, in predicting fatigue experiences. This level of information may enlighten better employee support practices within South African Service industries. The researcher hopes that the outcomes, conclusions and recommendations of this study will be regarded in a constructive light and ultimately contribute to the field of Industrial and Organisational Psychology within Service industries and beyond.

6.2 CONCLUSIONS

This section discusses the research inferences which are constructed on both the literature review and the empirical study, in line with the research aims outlined in Chapter 1.

6.2.1 Literature review conclusions

The following aims were formulated for the literature review:

Research aim 1: To conceptualise, from the literature, the constructs of work-related sense of coherence, career well-being and fatigue in an Industry 4.0 and post-COVID-19 context.
Research aim 2: To explore the theoretical relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences.
Research aim 3: To establish the implications of the theoretical relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences for well-being support practices.

The three research aims were successfully achieved. Chapter 2 addressed part of the first literature review research aim with the conceptualisation of the construct of fatigue experiences in an Industry 4.0 and post-COVID-19 context. Chapter 2 critically reviewed the characteristics of the contemporary world of work from an Industry 4.0 and post-COVID pandemic context and its consequences for employee well-being.

Chapter 3 further addressed part of the first literature review research aim, namely, to conceptualise, from the literature, the constructs of work-related sense of coherence and career well-being. This chapter then addressed research aim 2 by integrating the three constructs and exploring the relationship dynamics among the three constructs. Finally, Research aim 3 was also achieved in Chapter 3.

6.2.2 Empirical study conclusions

The central hypothesis of the research was as follows:

The antecedent variable (work-related sense of coherence) will have an inverse relationship with the outcome variable (fatigue experiences) through career well-being (as a mediating variable). The hypothesis further assumes that the relationship between work-related sense of coherence, career well-being and fatigue experiences is moderated by the individuals' socio-demographic characteristics (age, gender and race). The relationship is more negative for certain socio-demographic groups than others.

The study findings provided evidence of the inverse and main link of both work-related sense of coherence and career well-being with fatigue experiences. However, only work-related sense of coherence is a significant, direct predictor of fatigue experiences and the prediction effect is not conditional upon age, race or gender characteristics.

6.2.2.1 Conclusion

Research hypothesis 1 (H1): There is a negative relationship between (1) the antecedent variable (work-related sense of coherence), and (2) the mediating variable (career well-being), and fatigue experiences (dependent variable).

Based on the empirical results, the correlation analysis results indicated a negative relationship between the three constructs. This means that where employees are displaying low levels of work-related sense of coherence and career well-being, industrial psychologists and human resource professionals could look at improving these levels in an effort to prevent the employees from experiencing fatigue.

6.2.2.2 Conclusion

Research hypothesis 2 (H2): The link between the antecedent variable (work-related sense of coherence) and the dependent variable (fatigue experiences) is mediated by an employee's career well-being (mediating variable).

The present study found that career well-being had no significant mediating effect on the relationship between work-related sense of coherence and fatigue experiences. The importance of work-related sense of coherence cannot be understated, as the present study found it to be both a positive predictor of career well-being and a negative predictor of fatigue experiences. Industrial psychologists and human resource professionals therefore need to ensure that support initiatives to improve the employees' work-related sense of coherence are developed and implemented.

6.2.2.3 Conclusion

Research hypothesis 3 (H3): The effects of (1) the antecedent variable (work-related sense of coherence) on the dependent variable (fatigue) and (2), the mediating variable (career well-being) on the dependent variable (fatigue) is moderated by an employee's age, gender and race. This means that certain groups will experience less fatigue than other groups because of their level of work-related sense of coherence and career well-being.

The present study considered the moderating effects of race as well as age and gender as there seemed to be a need for more knowledge and insight in this regard. Age, gender and race did not act as significant moderators of the three above-mentioned constructs. Thus, industrial psychologists and human resource professionals may take a general approach to the design of employee well-being support practices for age, gender and race groups.

6.2.2.4 Conclusion

Research hypothesis 4 (H4): Employees with different age, gender and race groups differ significantly regarding their work-related sense of coherence, career well-being and experiences of fatigue.

The present study found that female participants scored significantly higher than male participants on their experiences of fatigue. Industrial psychologists and human resource professionals may need to pay specific/more attention to the fatigue levels of female employees when applying their well-being strategies in the workplace.

6.3 LIMITATIONS

The limitations of the literature review and the empirical study are discussed below.

6.3.1 Literature review

The exploratory research into the relationship between work-related sense of coherence, career well-being and fatigue experiences within South Africa's Service industries was limited by the following features:

- This research was limited to the comparisons of various theoretical perspectives on work-related sense of coherence, career well-being and fatigue experiences.

- The research was conducted within the context of employee well-being. The perspective, findings and interpretations of the study were therefore made within the confines of Industrial and Organisational Psychology.

6.3.2 Empirical study

The results of the empirical study could be limited by the following:

- Due to the use of a cross-sectional design, the study could not be used to analyse behaviour over time, it could not establish cause-and-effect, and the study (primarily a snapshot in time) could not be considered a guaranteed representation of the links between the variables (Spector, 2019). The present study only assessed the direction and magnitude of the links between variables. In this regard, the research design employed mediation analysis for explanation purposes and not mediation for design (i.e. true causal effects over time) purposes.

- All the measuring instruments employed in this study are self-report questionnaires which involve the perspectives and experiences of the participants. As a result, these self-report questionnaires may have prejudiced the validity of the research outcome.

- The research sample was drawn from the South African Service industries only. Hence, the research outcome has limited generalisability to other occupations or countries.

- Although the sample size (N = 104) was adequate to investigate the effects of the socio-demographic groups on the work-related sense of coherence, career well-being and fatigue experiences within Service industries, a larger and more representative sample of the different socio-demographic groups could have resulted in more meaningful comparisons and evaluation. The small sample size of the present study also limits the generalisability to the total population.

- The sample involved mainly older female participants which limited the generalisability of the results.

- For socio-demographic variables, the study only included age, gender and race; different socio-demographic variables might have resulted in different research outcomes.

- The study was conducted by means of convenience sampling which increased the likelihood of biased results and of under- or over-representation of the population. The generalisability of the research findings is therefore limited.

Despite these limitations, the study was able to assess the links between the constructs of work-related sense of coherence, career well-being and fatigue experiences while taking into account the influence of socio-demographic characteristics. More specifically, the study was able to examine the effect of the aforementioned coping resources on the fatigue experiences of employees within South African Service industries. Although the research was exploratory in nature, this research will be useful for future researchers addressing matters related to these constructs.

6.4 RECOMMENDATIONS FOR WELL-BEING PRACTICES

In light of the research findings, conclusions and limitations, the following recommendations for organisational psychology and further research in the field are discussed.

6.4.1 Research

The researcher makes the following recommendations for future research:

- This study concentrated on the relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences within South African Service industries. Future research can broaden the scope to include other occupational categories to obtain more insights into the relationship between these variables.

- The moderation effect of socio-demographic characteristics in this study was limited to age, gender and race. Future research should take into account other socio-demographic characteristics and their influence on the relationship dynamics between the three aforementioned constructs.

- The research sample was small and consisted predominantly of a female population. Future research may want to draw on larger heterogeneous samples to increase the generalisability of the study. Interestingly, in the present study, female participants had greater experiences of fatigue than male participants. As the reason for this result is unclear, future research could explore this specific result in greater detail.

- The study utilised a cross-sectional research methodology for explanation purposes. Future research could include longitudinal studies to gain greater insights into the interaction between the same constructs and to establish the true causal effects of the mediation analysis.

- This study was conducted during the Covid-19 pandemic which may have had an unconscious effect on the participants' state of mind at the time of completing the questionnaire. Future research may want to explore the relationship dynamics between these same constructs at a later stage should the world move to a post-pandemic state.

6.4.2 Practice

In light of the findings of this study, the following recommendations are suggested for coping and well-being support practices in order to further the field of Industrial and Organisational Psychology which focuses on enhancing employee behaviour and their well-being at work.

6.4.2.1 Individual level

- Employees should be allowed to participate in decision-making in an effort to increase their work-related sense of coherence levels (Bauer & Jenny, 2007).

- Employees should take advantage of training and development opportunities that will help them embrace technological change and that will help them to optimise their person-job fit (Chen, 2011).

- Organisations need to make use of the 360° appraisal and feedback methods. These methods are particularly helpful in identifying where employees are lacking or struggling with some elements of their psychological resource capabilities (including work-related sense of coherence), which could prompt the organisation's human resource professional or industrial psychologist to engage in the necessary interventions.

6.4.2.2 Group level

- Career development practices may include regular discussions about employees' experiences of their careers in the organisation, the support they need for goal achievement, the meaningfulness of their work and careers, and the manner in which the career and job fit into the larger purpose of the organisation (Ferreira et al., 2019). These practices should look at the employees' appraisal of their jobs to see if they regard their jobs as comprehensible, manageable and meaningful; and whether or not the employees have the required resources to deal positively with stressful stimuli in the work environment.

- Employers should offer employees: management and social support (Bauer & Jenny, 2007). A supportive organisational culture is highly recommended by Steyn (2018) as support shows a negative linear relationship with burnout (Johnston, 2018).

- Industrial psychologists and human resource professionals should develop group-specific interventions to strengthen the coping ability of employees.

6.4.2.3 Organisational level

- Since there exists a negative relationship between work-related sense of coherence and fatigue, it is important for organisations to ensure that employees have adequate resources that strengthen their work-related sense of coherence. For example, employers can create structure by implementing work processes in a clear, understandable and consistent manner (Bauer & Jenny, 2007).

- From the research results, it is recommended that employers pay more attention to female employees and help countermeasure their experiences of fatigue.

- Workplaces can also implement the following to alleviate fatigue experiences: create awareness; identify and manage risks; conduct risk assessments; and implement employee well-being plans.

- Organisational career support practices are important for creating the psychological conditions that employees need to cope with and adapt to changing technological work contexts (Ferreira et al., 2019). Such support may help with the cognitive restructuring of change into a sense of efficiency and meaningfulness, rather than helplessness in coping.

6.5 EVALUATION OF CONTRIBUTION

This study makes a contribution to the field of Industrial and Organisational Psychology on a theoretical, empirical and practical level. It also contributes to the researcher's graduateness as a Master's student.

6.5.1 Contribution to theory

- On a theoretical level, the study offers a better understanding of the constructs of work-related sense of coherence, career well-being and fatigue experiences.
- The study has broadened the knowledge on the relationship between work-related sense of coherence, career well-being and fatigue experiences which may inform employee well-being support practices.
- Placing this study in an Industry 4.0 and post-COVID-19 context added an immediate applicable quality.
- As explained earlier in this chapter, the research results also relate to Hobfoll's (1989) Conservation of Resources (COR) theory and corroborated work-related sense of coherence as an important COR resource to counteract fatigue experiences for service industry employees.

6.5.2 Contribution to research

- The current research has determined the relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences which seems to be an under-studied area. More specifically, the research added new insights about the positive link between work-related sense of coherence and the under-researched construct of career wellbeing.
- The research corroborated the inverse association between work-related sense of coherence and fatigue experiences.
- The present study has indicated that female employees in the South African Service industries have more fatigue experiences than male employees.
- The research was conducted during the Covid-19 pandemic. The findings in this study may assist with the development and discussions in future papers on psychological resources to help employees cope better during the pandemic.

6.5.3 Contribution to practice

- Within the South African context and given the challenges that come with Industry 4.0 and the COVID-19 pandemic, the research findings of this study suggest that high levels of

coping resources such as work-related sense of coherence and career well-being are important in modern times in order to avoid fatigue experiences.

- At a practical level, the findings of the current study may help industrial psychologists and human resource professionals develop a greater understanding of work-related sense of coherence, career well-being and fatigue experiences; and their dynamic interaction within an Industry 4.0, post-COVID-19 context. This could result in suggesting well-being support practices in the workplace. Additionally, this study could help with enhancing people behaviour and well-being in an organisational context.

6.5.4 Contribution to the Graduateness as a Master's student

- By means of the research project, the researcher has learnt how to conduct empirical social science research through the answering of questions and the solving of problems in a scientific, justifiable manner (Babbie & Mouton, 2001).
- Firstly, the research proposal taught the researcher to properly plan the research project before executing the research.
- The researcher now knows how to conduct a thorough literature review. The researcher was required to read broadly and deeply in the area of the self-chosen research topic.
- The researcher learnt not to commit any plagiarism by submitting her own work and acknowledging the work of others by adhering to the APA standard of referencing.
- Furthermore, the researcher learnt to comply with the ethical guidelines of research.
- Other skills acquired by the researcher during the completion of the current research project included the ability to think critically, to write in an academic/scientific style, effective time management as well as communication skills especially with her supervisor.

6.6 CHAPTER SUMMARY

In this final chapter, the outcomes of the study were integrated which enabled the researcher to draw certain conclusions from the study relating to the research aims for both the literature review and the empirical study. The limitations of the research concerning the literature review and the empirical study were also deliberated. The researcher was able to offer recommendations for future research concerning the relationship dynamics between work-related sense of coherence, career well-being and fatigue experiences; and the moderating effects of the socio-demographic variables on this relationship. The chapter concluded by critically evaluating the study and research

outcomes and their theoretical, empirical and practical contribution to the field of Industrial and Organisational Psychology.

Accordingly, the following research aim was achieved in Chapter 6:

Research aim 5: To formulate conclusions and recommendations for industrial psychologists and human resource professionals with regards to well-being support practices.

This concludes the research project.

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Appendix 1: UNISA Ethical Clearance

UNISA

UNISA CEMS/IOP RESEARCH ETHICS REVIEW COMMITTEE

NHREC Registration # : (If applicable)
ERC Reference # : ***2021_CEMS/IOP_020***
Name : Ms. Chandré Bouman
Student #: 53083687
Staff #: N/a

31 May 2021

Dear Ms. Chandré Bouman,

Decision: Ethics approval from 01 June 2021 to 01 June 2024

Researcher(s): Name: Ms. Chandré Bouman
Address: 3 Clyde Street, Oakdale, Bellville, 7530
E-mail address, telephone: 53083687@mylife.unisa.ac.za, 0739445350

Supervisor (s):) Name: Prof Melinde Coetzee
Address: Unisa, Muckleneuk Campus, Preller Street, Pretoria, 0003
E-mail address, telephone: Coetzm1@unisa.ac.za, 0124298204

Employees' work-related sense of coherence and career well-being as countermeasures for fatigue experiences.

Qualification: Masters (MCom)- Post graduate degree

Thank you for the application for research ethics clearance by the Unisa CEMS/IOP Research Ethics Review Committee for the above-mentioned research. Ethics approval is granted for **Three** years.

*The **low risk application** was **reviewed** by the CEMS/IOP Research Ethics Review Committee on the 25th May 2021 in compliance with the Unisa Policy on Research Ethics and the Standard Operating Procedure on Research Ethics Risk Assessment. The decision was approved on 31st May 2021.*

The proposed research may only commence with the provision that:

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1. ***The researcher will ensure that the research project adheres to the relevant guidelines set out in the Unisa COVID-19 Position Statement on research ethics dated 26 June 2020 which is attached.***
2. The researcher(s) will ensure that the research project adheres to the values and principles expressed in the Unisa Policy on Research Ethics.
3. Any adverse circumstance arising in the undertaking of the research project that is relevant to the ethicality of the study should be communicated in writing to the Unisa CEMS/IOP Research Ethics Review Committee.
4. The researcher(s) will conduct the study according to the methods and procedures set out in the approved application.
5. Any changes that can affect the study-related risks for the research participants, particularly in terms of assurances made with regards to the protection of participants' privacy and the confidentiality of the data, should be reported to the Committee in writing, accompanied by a progress report.
6. The researcher will ensure that the research project adheres to any applicable national legislation, professional codes of conduct, institutional guidelines and scientific standards relevant to the specific field of study. Adherence to the following South African legislation is important, if applicable: Protection of Personal Information Act, no 4 of 2013; Children's act no 38 of 2005 and the National Health Act, no 61 of 2003.
7. No field work activities may continue after the expiry date **(01 June 2024)**
8. Submission of a complete research ethics progress report will constitute an application for the renewal of Ethics Research Committee approval.

Note:

*The reference number **2021_CEMS/IOP_020** should be clearly indicated on all forms of communication with the intended research participants, as well as with the Committee.*

Yours sincerely,

Signature
Chair of IOP ERC
E-mail : vnieka2@unisa.ac.za
Tel: (012) 429-8231

Signature
Acting Executive Dean : CEMS
E-mail: Mpofurt@unisa.ac.za
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