

# **The estimation of the psychometric properties of the MHC-SF for the broad South African organizational context**

**Master Thesis**

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**Orientation:** Within the last decade mental health, as a construct, has grown in popularity. This increase in popularity was not only observable within the health sector, but also within the working environment. Governments and institutions have paid increased attention towards the concept of work-related health and wellbeing. More precisely, work-related health has been found to influence the productivity and absenteeism rates of employees. In this way, wellbeing has also been found to have an impact on the organizations. The importance of the wellbeing construct makes the accurate estimation of it a necessity. However, the psychometric properties of the MHC-SF, as promising measurement instrument for mental health and wellbeing, have not been investigated in a multi-cultural South African organizational context until now.

**Research purpose:** The purpose of this study is to investigate the psychometric properties of the Mental Health Continuum Short Form (MHC-SF) in a multi-cultural South African organizational context.

**Motivation for the study:** Several studies have examined the utility of the MHC-SF in different contexts, including e.g. the Dutch and the US population. Nevertheless, the MHC-SF has not been used within a sample containing several cultural influences at the same time. Additionally, the MHC-SF has not been validated for the organizational context. The popularity of the mental health construct within the working environment makes the accurate investigation of this construct a necessity.

**Research design, approach and method:** A cross sectional research design was used. The MHC-SF, the WES and the SWLS were filled in by a South African sample ( $N = 624$ ) aged between 12 and 60 years and older. The factorial validity, measurement invariance, reliability and convergent validity of the MHC-SF were examined.

**Main findings:** A three-factor structure consisting of emotional, social and psychological wellbeing was confirmed for the MHC-SF. Measurement invariance, in the form of configural, metric, scalar and full uniqueness invariance show that male and female participants interpreted the questions of the MHC-SF in a similar way. Cronbach's alpha and composite reliability rho coefficients indicated that the MHC-SF is a reliable measurement instrument for the multi-cultural South African organizational context. Furthermore, the MHC-SF has been correlated to the WES and to the SWLS, demonstrating convergent validity. Work engagement and life satisfaction both predicted mental health and wellbeing.

**Practical/ managerial implications:** A valid and reliable instrument for the measurement of mental health in the form of emotional, psychological and social wellbeing will be available for the comprehensive South African organizational context. This will, on the one hand, contribute to the measurement of wellbeing within this context and thus also to the understanding of wellbeing within this context. On the other hand, governments can be informed, allowing them to develop interventions and strategies to enhance mental health and wellbeing within the organizational context.

**Contribution/value-add:** This research investigates the psychometric properties of the MHC-SF in a comprehensive South African organizational context, which can be used as basis for future research. Furthermore, the value of the current study lies in the research sample, which includes diverse cultural backgrounds and languages.

#### **Key terms:**

Psychometric properties, Mental Health Continuum-Short Form (MHC-SF), South Africa, organizational context

#### **Abbreviations:**

Mental Health Continuum-Short Form (MHC-SF), Work Engagement Scale (WES), Satisfaction With Life Scale (SWLS), Confirmatory Factor Analysis (CFA), Flourishing at Work Scale (FAWS)

## Introduction

In today's work environment an increase in job demands can be observed. A survey of the European Agency for Safety and Health at Work (2014) found out that about 66% of the workers identified excessive workload as a cause of work related stress. Job demands refer among others to work overload, work pressure or to the feeling of having too much work to do for the allowed amount of time (Van Yperen, Wörtler, & De Jonge, 2016). These factors within the working environment are assumed to have a negative impact on wellbeing and health. Moreover, individuals with low amounts of wellbeing have a high probability of absenteeism, decreased productivity and workdays reduced to the half (Bonde, 2008; Keyes, 2002). In this way, job demands have also a negative impact on the productivity of organizations and lead to severe costs (Son, Kim, & Kim, 2014). In contrast, individuals who displayed high amounts of wellbeing and health, and who additionally have the idea of fitting into their work and organizational setting have a high tendency of feeling and functioning well. Those individuals are engaged and motivated with respect to their work, and are more likely to experience positive affects, job satisfaction, and wellbeing (van Rensburg, Rothmann, & Diedericks, 2017). Work related health seem thus to compensate for the negative impact of job demands. Leading to the fact that the promotion of workplace health and employee wellbeing, as well as the growth of mental health costs gain increased attention in the current years (Milner et al., 2013). For example, work-related health and wellbeing is within the South African government a major priority. The government of South Africa spends 30 billion Rand per year in the organizational health context (Mayer & Boness, 2011).

Mental health, as a construct of interest has long been defined as the absence of mental illness (Keyes, 2002, 2007; Westerhof & Keyes, 2008). Nowadays, through the entrance of positive psychology the concept of positive mental health has been modified (Burns, Anstey, & Windsor, 2011). As defined by Keyes (2005) mental health is conceptualized as a "complete state in which individuals are free of psychopathology and flourishing with high levels of emotional, psychological and social wellbeing" (p. 539). Mental health can be seen as a construct consisting of symptoms of positive functioning, which includes more than the absence of mental illness (Keyes, 2002, 2005). Moreover, mental health and mental illness can be described through a dual continuum model. Within this model mental health and mental illness are distinct but correlated dimensions (Keyes, 2002, 2005, 2007). This means, as stated by Keyes (2005, 2007) that individuals free of mental illness will not automatically possess mental health and that individuals free of mental health will not automatically possess mental illness.

Subjective mental health, as a concept, compounds high states of emotional, psychological and social wellbeing (Keyes, 2002; Westerhof & Keyes, 2008). Within the scientific study of mental health and wellbeing a distinction can be made between two contemporary theories of wellbeing. These two theories are firstly hedonic theories and secondly eudaimonic theories of wellbeing. The term hedonic refers to the pleasant life. Within the hedonic theories, wellbeing has been conceptualized as subjective or emotional wellbeing. Approaches about these forms of wellbeing typically take the cognitive and affective evaluations of life as a whole into account (Burns et al., 2011; Gallagher, Lopez, & Preacher, 2009). Individuals are regarded to have high amounts of subjective or emotional wellbeing if they "experience [...] high levels of pleasant emotions and moods, low levels of negative emotions and moods, and high life satisfaction" (Burns et al., 2011, p.2). The concept of eudaimonic wellbeing refers to the meaningful life (Gallagher et al., 2009). Eudaimonic wellbeing can also be conceived as psychological wellbeing. Psychological wellbeing includes six different levels: autonomy, self-acceptance, personal growth, purpose in life, environmental mastery, and positive relations with others (Gallagher et al., 2009; Keyes 2007; Westerhof & Keyes, 2008). Individuals are considered to possess high amounts of psychological wellbeing when they like themselves, have close and warm relationships with others, have a goal and a direction in life, and are able to satisfy their needs (Keyes, 2002). As a

consequence of the conceptualization of psychological wellbeing, primarily including private and personal phenomena for evaluation, a third concept has been introduced: social wellbeing. Social wellbeing, compared to psychological wellbeing, focuses primarily on public phenomena, as the social dimensions of everyday life. Social wellbeing includes five different components: social acceptance, social actualization, social contribution, social coherence, and social integration (Gallagher et al., 2009; Keyes 2002, 2007; Westerhof & Keyes, 2008). Individuals with high amounts of social wellbeing consider society as being meaningful and understandable, as possessing potential for growth, as being an accepted member of it, as acceptable in most parts and when they understand themselves as contributing to society (Keyes, 2002).

In addition to emotional, psychological and social wellbeing, flourishing and languishing, as states of complete and incomplete mental health can be distinguished. Individuals with complete mental health are considered flourishing with high amounts of emotional, psychological and social wellbeing. Individuals with incomplete mental health are considered languishing, with low levels of wellbeing and health. Individuals in between flourishing and languishing are regarded to be moderate (Keyes, 2002, 2005, 2007; Westerhof & Keyes, 2008). Completely mentally healthy or flourishing individuals were found to have “the fewest workdays missed, less cutbacks of work, lowest levels of health limitations [...], the fewest chronic physical diseases [...], the lowest health care utilization, and the highest levels of psychological functioning” (Keyes, 2007, p.100). In turn, mentally unhealthy or languishing individuals are considered to function “worse than all others on every criterion” (Keyes, 2007, p. 100). Additionally, languishing was found to be “as bad as, and sometimes worse than, the presence of [...] mental illness” (Keyes, 2005, p.546). Completely mentally healthy individuals are thus considered to function better than incomplete or moderate mentally healthy individuals. Besides, everything less than flourishing can be seen as a strain for the self and society (Keyes, 2002, 2007).

Further, mental health or wellbeing has been associated with various positive individual and organizational outcomes. Individuals with high amounts of wellbeing were, for example, found to display higher amounts of resilience (Burns et al., 2011), and optimism (Carver & Scheier, 2014; Peters, Flink, Boersma, & Linton, 2010; Wu et al., 2013), and were additionally found to make use of adequate coping strategies (Carver & Connor-Smith, 2010), and psychological flexibility (Kashdan & Rottenberg, 2010; Woodruff et al., 2014). With respect to the organizational level, individuals with high amounts of wellbeing were among others found to function superior at the workplace. This excellent functioning is illustrated through the increased efficiency and capacity to perform at work, through the enhanced initiative, interest and responsibility, as well as through a raise in concern for the organization and the colleagues (Fairbrother & Warn, 2003). The beneficial effects of mentally healthy employees for organizations, as well as the possibility to influence wellbeing through the use of simple interventions, have increased the popularity of wellbeing and mental health promotion within the working environment (Bonde, 2008; Milner et al., 2013).

Given that mental health is such a beneficial component for both individual and organizational outcomes, it is imperative to measure it accurately within organizational contexts. A questionnaire suitable to measure all the different facets of wellbeing is the Mental Health Continuum Short Form (MHC-SF). The MHC-SF is based on several former questionnaires measuring emotional, psychological and social wellbeing and is one of the most completely measurement instruments (Westerhof & Keyes, 2008). It was developed due to the missing of a brief questionnaire measuring all the three dimensions of mental health and wellbeing (Lamers, Westerhof, Bohlmeijer, Klooster, & Keyes, 2011). The items of the MHC-SF represent each one of the dimensions of emotional, psychological and social wellbeing (Joshanloo, Wissing, Khumalo, & Lamers, 2013; Keyes et al., 2008; Lamers et al., 2011; Westerhof & Keyes, 2008). The setup of the MHC-SF makes it possible to examine, on the one hand, the individual

scores on the three subscales of wellbeing and, on the other hand, to determine the total score of mental health. The individual mental health score can then be categorized into languishing, flourishing or moderate (Westerhof & Keyes, 2008).

The MHC-SF has been used in various cultural contexts, as for example in the Dutch population (Lamers et al., 2011), in South Africa (Keyes et al., 2008), in Iran (Joshanloo et al., 2013), in Argentinia (Perugini, de la Iglesia, Salano, & Keyes, 2017), and in the US (Keyes, 2007). Overall the MHC-SF produced promising results in terms of validity and reliability (Joshanloo et al., 2013; Keyes, 2007; Lamers et al., 2011; Perugini et al., 2017).

Although the MHC-SF has been used in various cultural contexts, little is known about its suitability when confronted with multi-cultural influences. Taken for example the study conducted by Keyes et al. (2008), who mainly focused on one subpopulation of the multi-cultural South African context. South Africa as a country is often referred to as a “rainbow nation of diversity” (South Africa, n.d.). The country includes a variety of cultural influences, for example the Black, White, Coloured, and Indian citizens. Besides, a huge amount of different languages are spoken. The languages cover among others English, Africans, Zulu, Tswana, and Sepedi (Kotzé, 2016).

Further, the increase in popularity of the mental health and wellbeing construct within the working environment, makes the accurate investigation of these constructs a necessity. Yet only a few studies are available, where the MHC-SF was used within a multi-cultural organizational context. The different understandings of the research constructs by the diverse ethnic groups might influence the results of the MHC-SF. The MHC-SF may thus manifest differently in the South African organizational context. The multi-cultural South African organizations present therefore an interesting context for the investigation of the psychometric properties of the MHC-SF. The aim of the current study is thus to answer the question if the MHC-SF is a suitable measurement instrument for the investigation of mental health and wellbeing, when confronted with different cultural influences. For this, the psychometric properties of the MHC-SF should be investigated by determining the factorial validity, measurement invariance, reliability and convergent validity.

### **Factorial Validity**

Factorial validity is the degree to which the properties of a measurement instrument equals the theoretical definition of the construct (Hoyle, 2005). This means that the theoretical three-factor structure of mental health, consisting of emotional, psychological and social wellbeing will also be confirmed for the MHC-SF. Several different studies investigated the factorial validity of the MHC-SF and indeed affirmed the three-factor structure (Doré, O'Loughlin, Sabiston, & Fournier, 2017; Gallagher et al., 2009; Joshanloo et al., 2013; Joshanloo, Jose, & Kielpikowski, 2017; Joshanloo & Lamers, 2016; Keyes et al., 2008; Lamers et al., 2011; Robitschek & Keyes, 2009; Schutte & Wissing, 2017). For instance, Lamers et al. (2011) revealed that the three factors of emotional, psychological and social wellbeing explained 58% of the variance in the scores obtained in a Dutch sample. Additionally, all items were found to have the highest factor loadings on their intended factor. Almost every item of the MHC-SF had a factor loading above 0.40 on the intended factor. Only two items (item 4 and 5) on the social wellbeing subscale were found to have rather low factor loadings of 0.34 (Lamers et al., 2011). Supplementary, confirmatory factor analysis was conducted, indicating that the three-factor model of emotional, psychological and social wellbeing fits the data of the Dutch sample best (Lamers et al., 2011). The good fit of the three-factor model was also established by Keyes et al. (2008) for the South African Setswana-speaking context. The three-factor structure of the MHC-SF was, in addition, indirectly confirmed for the South African organizational context. Diedricks and Rothmann (2014) investigated the relationship between flourishing and individual and organizational outcomes. The

model which was found to represent the relation at best included the concept of flourishing, i.e. mental health and consisted of the three emotional, the five social and the six psychological wellbeing factors. However, Gallagher et al. (2009) established also a single-factor model. This integrated model of wellbeing consists of the three factors of emotional, the six factors of psychological and the five factors of social wellbeing. Together these 14 factors can be determined as correlated first-order factors, which were additionally found to adequately represent mental health. Although, Gallagher et al. (2009) found support for the single-factor model it has to be mentioned that the 14 components of wellbeing can also be integrated into a three-factor model, consisting of emotional, psychological and social wellbeing. This three-factor model has additionally been found to represent the wellbeing construct best (Gallagher et al., 2009).

Based on these results, it is hypothesized that the current study confirms the three-factor structure of emotional, psychological and social wellbeing, too. The items of the three subscales emotional, psychological and social wellbeing are assumed to have the highest factor loadings on their intended factor (*Hypothesis 1*).

### Measurement Invariance

Measurement invariance investigates if measurement operations of an instrument, such as the MHC-SF, hold the same attributes to members of different populations (Steenkamp & Baumgartner, 1998). It considers thus the amount of comparability of scores across different groups (Mostert, Theron, & de Beer, 2017). Measurement invariance is crucially important when comparing different groups (Cheung & Rensvold, 2002), otherwise, as stated by Horn (1991; as cited by Steenkamp & Baumgartner, 1998), conclusions about the found between-group differences cannot be considered as plain. For the purpose of the current study, measurement invariance should be determined across gender (male/female). Four different types of measurement invariance should be distinguished. First, configural invariance should be established. Configural invariance is concerned with the question if members from different cultural groups conceive the constructs in the same way (Cheung & Rensvold, 2002; He & van de Vijver, 2012; Mostert et al., 2017). It investigates if “the same theoretical construct is measured in each culture” (He & van de Vijver, 2012, p. 8). Second, metric invariance should be investigated. Metric invariance indicates that measures have the same measurement unit but different origins (He & van de Vijver, 2012). This type of invariance is also often referred to as “equal factor loadings” (Mostert et al., 2017, p.3). This means that the parameters of the factor loadings are equal across groups (Cheung & Rensvold, 2002). Metric invariance did not mean that scores on instruments can be compared across groups, but that “scores can be compared within gender groups [...] and mean patterns and correlations across gender groups” (He & van de Vijver, 2012, p.8). The third type of invariance, which should be examined in the current study, is scalar invariance. Scalar invariance states that individuals who have same values on the latent construct under investigation should also have similar values on the observed variable (Mostert et al., 2017). Fourth, full uniqueness invariance should be established. This type of invariance means that factor loadings, variable intercepts and error variances are the same for different groups, indicating that the latent construct is measured identically (De Bolle, 2014; van de Schoot, Lutig, & Hox, n.d.).

Several studies confirmed the different forms of invariance with respect to the MHC-SF. Joshanloo et al. (2013) investigated acceptable configural invariance, full metric invariance and partial scalar invariance for the MHC-SF across the Dutch, South African and Iran population. The invariance of the MHC-SF across gender is in addition to the investigation of invariance across different nationalities also established. Joshanloo (2017) confirmed e.g. configural invariance, full metric invariance and partial scalar invariance for the MHC-SF across gender. Doré et al. (2017) on the other hand, found slightly different levels of invariance for the MHC-SF. Like Joshanloo (2017), Doré et al. (2017) investigated

the invariance of the MHC-SF across gender and confirmed acceptable configural invariance, full metric and scalar invariance. Joshanloo et al. (2017), Joshanloo (2016), and Karas', Cieciuch and Keyes (2014) determined also the measurement invariance of the MHC-SF across gender. Within these three studies the MHC-SF was on the contrary found to contain full configural, full metric and full scalar invariance (Joshanloo, 2016; Joshanloo et al., 2017; Karas' et al., 2014). Different studies confirm thus slightly divergent levels of measurement invariance for the MHC-SF, but at least all studies reported acceptable invariance.

Within the current study it is thus assumed that the MHC-SF demonstrates at least acceptable measurement invariance with respect to gender (male/female) for the South African organizational context (*Hypothesis 2*).

### **Reliability**

Reliability, as a construct, is often included when the psychometric properties of a measurement instrument should be investigated (Carmines & Zeller, 2014). It determines the consistency of the results across items of a measurement instrument (SimplyPsychology, n.d.). The MHC-SF, measuring mental health and wellbeing, has been found to be a reliable measurement instrument (Bolier et al., 2014; Diedericks & Rothmann 2013; 2014; Doré et al., 2017; Karas' et al., 2014; Keyes et al., 2008; Koen, Eeden, & Wissing, 2011; Lamers, Glas, Westerhof, & Bohlmeijer, 2012; Schutte & Wissing, 2017). Although, the studies made use of different reliability indicators. Most of the studies made use of Cronbach's alpha to give an indication of the reliability. Additionally, some studies made use of composite reliability rho. Within the current study Cronbach's alpha as well as composite reliability rho should be calculated. The composite reliability rho coefficient yields, compared to Cronbach's alpha, the advantage that it is not based on the assumption that the factor loadings and error variances are restricted to be equal. The violation of these assumptions when using Cronbach's alpha often leads to an over- or underestimation of the reliability (Doré et al., 2017). The coefficient rho, which measures levels of variance caught by a measurement instrument in relation to the variance caused by random measurement error, corrects for the over- or underestimation of reliability (Doré et al., 2017; Olckers & van Zyl, 2016; Wang et al., 2008). Studies conducted within the organizational context using Cronbach's alpha as reliability estimator found rather high reliability values. Bolier et al. (2014) established for instance an alpha-value of 0.93, indicating high internal reliability for the total MHC-SF. Diedericks and Rothmann (2013; 2014) and Koen et al. (2011) on other hand indicated also high internal reliability for the subscales of the MHC-SF. The alpha-values found by Diedericks and Rothmann (2014) varied between 0.82 for social wellbeing and 0.87 for emotional wellbeing. Again, the total MHC-SF was found to contain high internal reliability with an alpha of 0.91. The lowest Cronbach's alpha value of 0.77 was ascertained by Koen et al. (2011) for the social wellbeing scale. However, the studies which made use of the composite reliability coefficient rho found similar high reliability levels. For instance, Doré et al. (2017) found rather promising rho coefficients of 0.90 for emotional, 0.85 for psychological, and 0.78 for the social wellbeing subscale. This is in line with the findings of Schutte and Wissing (2017), who established values of 0.88, 0.90 and 0.86 for the MHC-SF. Based on these results, it is hypothesized that the MHC-SF is a reliable measurement instrument, with  $\alpha \geq 0.70$  and  $\rho \geq 0.70$  (*Hypothesis 3*).

### **Convergent Validity**

Convergent validity includes the validation of a measurement instrument by correlating it to an instrument, which is assumed to measure the same underlying construct (Dooley, 2009a). The convergent validity should be determined by correlating the MHC-SF to the Work Engagement Scale (WES) and to the Satisfaction With Life Scale (SWLS). Concerning the relation between work engagement, as measured through the WES, and wellbeing can be stated that engagement represents correlations with work related wellbeing and health (Buitendach, Bobat, Muzvidziwa, Kanengoni, 2016;

Moster & Rothmann, 2006). Individuals with high levels of work engagement are assumed to have the skills to deal effectively with the demands of their job (Schaufeli & Bakker, 2004). This was also confirmed by Harter (2001; as cited by Olivier & Rothmann, 2007), who found a relation between the amount of work engagement and business outcomes. Engaged workers are more often presented in well performing units than non-engaged workers. Additionally, highly engaged individuals seem to experience pleasure, while dealing with the demands of their job (Jackson, Rothmann, & van de Vijver, 2006). With respect to the concept of life satisfaction, as measured through the SWLS, can be stated that life satisfaction plays a major role within the conceptualization of emotional wellbeing (Burns et al., 2011; Gallagher et al., 2009; Keyes 2002, 2005, 2007). According to Pavot and Diener (1993) this comes due to the fact that both constructs depend on evaluative appraisals. In the studies conducted by Keyes et al. (2008) and by Perugini et al. (2017) the highest correlations were found between the emotional wellbeing scale and the SWLS. Furthermore, both studies indicated low to moderate correlations between the SWLS and the psychological and social wellbeing subscales (Keyes et al., 2008; Perugini et al., 2017). The correlation of the total MHC-SF and the SWLS differ among the two studies. Keyes et al. (2008) confirmed a correlation of 0.37 and Perugini et al. (2017) found a correlation of 0.54 between the MHC-SF and the SWLS. Du Plessis and Guse (2017) confirmed also a correlation between the MHC-SF and the SWLS, but compared to Keyes et al. (2008) and Perugini et al. (2017), the correlation is with 0.62 somewhat larger. Lim (2014) confirmed the relation between the SWLS and the MHC-SF for the Korean context. However, within the study of Lim (2014) the strongest correlations were found between the SWLS and the psychological wellbeing scale. At the same time Lim (2014) confirmed a strong correlation of 0.51 between the SWLS and the emotional wellbeing scale.

With respect to the current study it is assumed that the scores on the Satisfaction With Life Scale (SWLS) and the Work Engagement Scale (WES) will correlate positively with the scores on the Mental Health Continuum-Short Form (MHC-SF). More precisely, high correlations are expected for the SWLS and the emotional wellbeing scale. On the other hand, low to moderate correlations are expected between the SWLS and the psychological and social wellbeing scale (*Hypothesis 4*).

## Research design

### Research approach

Within the current study a quantitative cross-sectional survey-based research design was used. The quantitative design can be described as a method, which makes use of large samples and standardized measures for the collection of observations (Dooley, 2009b). Besides, Du Plooy (2002; as cited by Mostert et al., 2017) states that the cross sectional research design includes the benefit of studying the respondents at a relatively exact point in time. The cross-sectional design is ecological and cost-effective (Mostert et al., 2017).

### Research method

#### Research participants

For the aim of the current study a convenient sample, consisting of 624 research participants was used. The majority of the research sample were White ( $N = 286$ , 45.8%), married females ( $N = 290$ , 46.5%;  $N = 285$ , 45.7%), aged between 30 to 39 years ( $N = 182$ , 29.2%). Additionally, most of them spoke Afrikaans ( $N = 216$ , 34.6%), had at least a master's degree ( $N = 272$ , 43.6%), and were permanently employed ( $N = 614$ , 98.4%). More specific information with respect to the research sample is presented in Table 1 below.

### Procedure

The current research sample of 624 participants consisted of individuals within the organizational context and contained industrial psychologists, selected Blue Chip Financial Companies, and a Public Utility. The respondents stem from three independent studies within the organizational context. All three studies made use of the MHC-SF, the SWLS, and the WES to measure wellbeing and mental health, life satisfaction, and work engagement. The electronic surveys were distributed across the broad South African context using *LimeSurvey™*. The data of the three independent surveys was stored on a secure SQL server and was downloaded in MS Excel format. The data was prepared for analysis in SPSS as well as for Mplus.

**Table 1.** Descriptive of the research sample.

Variable	Category	Frequency	Percentage
<i>Gender</i>	Male	285	45.7
	Female	339	54.3
<i>Age</i>	12-19	25	4.0
	20-29	133	21.3
	30-39	182	29.2
	40-49	131	21.0
	50-59	93	14.9
	60 + years	60	9.6
<i>Race</i>	White	286	45.8
	African	203	32.5
	Coloured	61	9.8
	Indian	47	7.5
	Other	27	4.3
<i>Language</i>	Afrikaans	216	34.6
	English	166	26.6
	Sepedi	15	2.4
	Zulu	129	20.7
	Sotho	19	3.0
	Tswana	38	6.1
	Swati	2	.3
	Tsonga	7	1.1
	Venda	8	1.3
	Ndebele	10	1.6
	Xhosa	13	2.1
	Other	1	.2
<i>Education</i>	No Education	1	.2
	Grade 12/High School	149	23.9
	National Certificate	72	11.5
	Higher Certificate	30	4.8
	Degree	97	15.5
	Masters	272	43.6
	Doctorate	3	.5
<i>Employment</i>	Permanent Employment	614	98.4
	Part Time Employment	10	1.6
<i>Martial Status</i>	Single	128	20.5
	Married	290	46.5
	Divorced	138	22.1
	Widowed	59	9.5
	Living with Partner	9	1.4

Note. N = 624.

## Measuring instruments

In order to obtain data for the study, four measuring instruments were used:

### *Socio-demographic questionnaire:*

A socio-demographic questionnaire was included, covering questions about the gender, age, ethnicity, predominant home language, highest education achieved, employment status, and the marital status of the research participants.

### *Mental Health Continuum-Short Form (MHC-SF):*

The MHC-SF is a short questionnaire measuring mental health and wellbeing. It consists of 14 items arranged across three subscales of emotional, psychological, and social wellbeing. Emotional wellbeing (*in the past month, how often did you feel happy?*) is measured through the use of three items, the psychological wellbeing scale (*in the past month, how often did you feel that you liked most parts of your personality?*) includes six items, and the social wellbeing construct (*in the past month, how often did you feel that people are basically good?*) is measured through the use of five items. Research respondents are asked to rate the prevalence of every feeling on a 6-point Likert scale, running from 1 (*never*) to 6 (*every day*) (Keyes et al., 2008; Lamers et al., 2011). Furthermore, the MHC-SF is suitable to distinguish languishing, moderate and flourishing individuals. To be diagnosed as languishing, individuals have to score on the lower tertile on the MHC-SF, whereas individuals have to score on the upper tertile to be diagnosed as flourishing. Individuals scoring in between languishing and flourishing are considered moderately mentally healthy (Keyes, 2002, 2005, 2007; Westerhof & Keyes, 2008). In general, the MHC-SF has been found to be a reliable measurement instrument, with  $\alpha$ -values varying between 0.89 (Lamers et al., 2011) and 0.74 (Keyes et al., 2008) for the total MHC-SF. The reliability of the subscales apart within the South African context varies between 0.74 for social wellbeing, 0.77 for emotional wellbeing, and 0.79 for psychological wellbeing (Joshanloo et al., 2013).

### *The Work Engagement Scale (WES):*

An extended version of the Work Engagement Scale (WES), developed by May, Gilson and Harter (2004), was used as measurement of work engagement. The self-reporting questionnaire reflects each of the three dimensions of Kahn's (1990) conceptualization of work engagement (as cited by Van Zyl, Deacon and Rothmann, 2010). These three dimensions include cognitive ("*Time passes quickly when I perform my job*"), emotional ("*I really put my heart into my job*"), and physical engagement ("*I take work home to do*"). Respondents are asked to rate their agreement on the 17 items on a 5-point Likert scale ranging from 1 (*never*) to 5 (*always*). Van Zyl et al. (2010) found a reliable one factor model consisting of cognitive, emotional, and physical engagement ( $\alpha = 0.93$ ). These findings were also confirmed by May et al. (2004), and Olivier and Rothmann (2007), who made use of fewer items to measure work engagement. Moreover, Van Zyl et al. (2010) used the WES within South Africa, indicating that the WES can be used for the examination of work engagement in the South African context.

### *Satisfaction With Life Scale (SWLS):*

The SWLS aims to investigate the hedonic component of subjective wellbeing in the form of life satisfaction. A sample item includes "in most ways my life is close to my ideal" (item 1). Respondents can thus make use of their own unique values while assessing the quality of their own lives. The SWLS, as a brief measurement instrument, is composed of five items, together representing a single factor which accounts for 66% of the variance of the scale. Respondents are asked to rate their agreement on five statements on a 7-point Likert scale running from 1 (*strongly disagree*) to 7 (*strongly agree*) (Pavot & Diener, 1993; Tomás, Gutiérrez, Sancho, & Romero, 2015). Diener, Emmons, Larsen and Griffin (1985; as cited by Pavot & Diener, 1993) found the SWLS to contain high internal reliability with an alpha-

value of 0.87. Furthermore, the SWLS has been validated in different cultures, as for example in Angola (Tomás et al., 2015), in Bangladesh (Sagar & Karim, 2014), and in the Netherlands (Arrindell, Heesink, & Feij, 1999).

### Statistical analysis

Both SPSS vs 24 (IBM, 2017) as well as Mplus version 8 (Muthén & Muthén, 2017) were used for the examination of the psychometric properties of the MHC-SF. First, descriptive statistics were computed. Mean-values ( $\bar{x}$ ), standard deviations ( $\sigma$ ), Skewness, Kurtosis, and Person product-moment correlations were used to describe the basic properties of the data. Second, factorial validity was estimated by making use of confirmatory factor analysis (CFA). The three-factor model was compared to a single-factor model representing mental health as 14 correlated first-order factors. The maximum likelihood estimator was used as input. Several fit indices were regarded to evaluate the suitability of the model: the Chi-square ( $\chi^2$ ), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the trucker-lewis index (TLI), and the standardized root mean square residual (SRMR). Byrne (2001; as cited by Mostert et al., 2017) states that the CFI and TLI need to indicate values of 0.90 and higher to demonstrate an acceptable fit of the model. Hu and Bentler (1999; as cited by Keyes et al., 2008) state that the fit of a model is best if the GFI is closest to 1. With respect to the RMSEA, as stated by Browne and Cudeck (1993; as cited by Mostert et al., 2017), the value has to be between 0.05 and 0.08 to indicate an acceptable model fit. With respect to the SRMR values less than 0.05 are considered to indicate a well-fitting model and values as high as 0.08 are considered as indicating acceptable model fit (Hooper, Coughlan, & Mullen, 2008). Furthermore, the Akaike information criterion (AIC) and the Bayesian information criterion (BIC) were included to compare the fit of the different models. Van de Schoot, Lugtig and Hox (2012; as cited by Mostert et al., 2017) state that lower AIC and BIC values illustrate the best fitting model.

Third, measurement invariance was investigated based on gender. Measurement invariance was tested for by determining the importance of the configural, metric, scalar and full unique models compared against each other. The  $\Delta$ CFI test was conducted to indicate that the models did not differ significantly. Cheung and Rensvold (2002; as cited by Joshanloo et al., 2013) stated that an absolute difference in the CFI score less than or equal to 0.01 indicates invariance.

Fourth, reliability was determined through the traditional Cronbach's alpha values and further through composite reliability rho coefficients (Wang & Wang, 2012). Composite reliability rho is assessed as the proportion variance explained by a factor divided by the total variance (Olckers & van Zyl, 2016). Composite reliability rho coefficient is thus in contrast to alpha not based on the assumption of equal factor loadings and equal error variances. Composite reliability corrects thus for the over- or underestimation of the reliability (Doré et al., 2017). In line with Kline (2000, as cited by Lamers et al., 2011),  $\alpha$ - and  $\rho$ -values of  $\geq 0.70$  are considered as acceptable and values  $\geq 0.80$  are expected to indicate high internal consistency.

Fifth, convergent validity was tested through Person product-moment correlation coefficients. The total MHC-SF and the emotional, psychological, and social wellbeing subscales were correlated to the WES, and the SWLS. The cut-off value for statistical significance was set at a 99% level ( $p \leq 0.01$ ). To indicate the significance of the correlation, effect sizes were applied. Correlations of 0.50 were regarded as strong, indicating a large effect. Correlations of 0.30 were regarded as moderate effect (Mostert et al., 2017; StatisticsSolutions, 2017). Additionally, as part of the convergent validity testing a structural model was examined, stating that work engagement and life satisfaction predict mental health and wellbeing. Again, fit indices like the Chi-square ( $\chi^2$ ), the root mean square error of approximation (RMSEA), the comparative fit index (CFI), the trucker-lewis index (TLI), and the standardized root

mean square residual (SRMR), were used to evaluate the overall fit of the model. Furthermore, regression paths were evaluated making use of Beta coefficients ( $\beta$ ), standard errors, and p-values.

## Results

In this section the results based on the factorial validity, measurement invariance with respect to gender, reliability, and convergent validity should be presented. The findings are illustrated through the use of tables and descriptions.

### Factorial validity

The factorial validity of the MHC-SF for the multi-cultural South African organizational context was ascertained through Confirmatory Factor Analysis (CFA). Within the CFA approach two competing models were tested. The first model was the hypothesized three-factor model consisting of emotional wellbeing (specified as first factor with three items loading on this dimension), social wellbeing (specified as second dimension with five items loading on it), and psychological wellbeing (specified as third factor with six items loading on it). Competing was a one-factor model representing mental health and wellbeing as 14 observed variables. The items of both models were allowed to correlate freely. Table 2 shows the results of the comparison between the three-factor and one-factor model.

The results presented in Table 2 indicate the superiority with respect to the fit of the three-factor model (Model 1). The three-factor model fitted the data significantly better, compared to the one-factor model ( $\Delta\chi^2 = 1700.19$ ;  $\Delta df = 4$ ;  $p < 0.01$ ). The results can thus be seen as support for Hypothesis 1 – stating that the three-factor structure of emotional, psychological and social wellbeing will be confirmed.

**Table 2.** Results of the measurement models.

Model	$\chi^2$	df	TLI	CFI	RMSEA	SRMR	AIC	BIC
<b>Model 1</b>	436.24	46	0.94	0.92	0.03	0.05	23983.94	24188.08
<b>Model 2</b>	2136.43	77	0.64	0.57	0.21	0.178	25676.13	25862.45

Note.  $\chi^2$  = Chi-square; df = Degrees of freedom; TLI = Trucker-lewis index; CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = standardized root mean square; AIC = Akaike information criterion; BIC = Bayesian information criterion.

Standardized factor loadings of the items for the latent variables are displayed in Table 3. Table 3 suggests that the items loaded sufficiently on the intended factor. The small standard errors, varying between 0.02 and 0.03, indicate accurate estimation of the items to the factors. All items of the emotional wellbeing subscale displayed loadings of 0.81. The factor loadings for the items of the social wellbeing subscale ranged between 0.62 (*item 4: in the past month, how often did you feel that you have something important to contribute to society*) and 0.84 (*item 6: in the past month, how often did you feel that our society is becoming a better place to people*). The psychological wellbeing subscale displays factor loadings varying between 0.57 (*item 9: in the past month, how often did you feel that you liked most parts of your personality*) and 0.79 (*item 14: in the past month, how often did you feel that your life has a sense of direction or meaning to it*). The standardized factor loadings of the whole MHC-SF subscales range between 0.71 for social wellbeing and 0.98 for psychological wellbeing.

**Table 3.** Standardized factor loadings of the items for the latent variables.

Factor	Item text	Loading	S.E.
<i>In the past month, how often did you feel...</i>			
EWB	MHC 1 Happy	0.81*	0.02
	MHC 2 Interested in life	0.81*	0.02
	MHC 3 Satisfied	0.81*	0.02
SWB	MHC 4 That you have something important to contribute to society	0.62*	0.03
	MHC 5 That you belonged to a community (like a social group, your neighborhood, your city)	0.84*	0.02
	MHC 6 That our society is becoming a better place to people	0.84*	0.02
	MHC 7 That people are basically good	0.76*	0.02
	MHC 8 That the way our society works makes sense to you	0.73*	0.02
PWB	MHC 9 That you liked most parts of your personality	0.57*	0.03
	MHC 10 Good at managing the responsibilities of your daily life	0.68*	0.02
	MHC 11 That you had warm and trusting relationships with others	0.64*	0.03
	MHC 12 That you have experiences that challenge you to grow and become a better person	0.63*	0.03
	MHC 13 Confident to think or express your own ideas and opinions	0.72*	0.02
	MHC 14 That your life has a sense of direction of meaning to it	0.79*	0.02
	EWB	0.77*	0.03
MHC	SWB	0.71*	0.03
	PWB	0.98*	0.03

Note. EWB = Emotional wellbeing; SWB = Social wellbeing; PWB = Psychological wellbeing; MHC = Mental health/wellbeing;

\*Correlation is significant at the 0.01 level (2-tailed); S.E. = Standard error.

### Measurement invariance

Measurement invariance was tested for gender. The first group consisted of males (285 participants) and the second group of females (339 participants). Table 4 illustrates the results for the invariance testing. As can be seen in Table 4, the MHC-SF displays strong measurement invariance for gender. For one, the fit of the model (M1) established configural invariance. On the other hand, no significant differences were found between metric and configural (M2), between scalar and metric (M3), and between full uniqueness and scalar invariance (M4). The  $\Delta\text{CFI}$  for all invariance tests was below the threshold of  $\leq 0.01$ . These findings support Hypothesis 2 – that the MHC-SF demonstrates high measurement invariance across gender.

**Table 4.** Testing for measurement invariance across gender.

Model	$\chi^2$	df	TLI	CFI	RMSEA	SRMR	AIC	BIC	Model Comparison	$\Delta\chi^2$	$\Delta\text{CFI}$
M1 Configural Invariance	436.24	46	0.94	0.92	0.03	0.05	23983.94	24188.08	-	-	-
M2 Metric Invariance	552.94	78	0.92	0.93	0.05	0.06	23889.52	24235.55	M2 vs M1	116.70*	-0.01*
M3 Scalar Invariance Full	537.62	92	0.92	0.93	0.03	0.06	23902.20	24310.33	M3 vs M2	-15.32*	0.00*
M4 Uniqueness Invariance	561.05	78	0.92	0.93	0.03	0.06	23897.64	24243.66	M4 vs M3	23.43*	0.00*

Note.  $\chi^2$  = Chi-square; df = Degrees of freedom; TLI = Trucker-lewis index; CFI = Comparative fit index; RMSEA = Root mean square error of approximation; SRMR = standardized root mean square; AIC = Akaike information criterion; BIC = Bayesian information criterion; CFI = Comparative fit index; \* Correlation is significant at the 0.01 level (2-tailed).

## Reliability

The reliability of the measurement instruments used was determined using Cronbach's alpha and composite reliability (rho coefficients). The results displayed in Table 5 show that the scales and subscales of the MHC-SF can be conceived as reliable. Cronbach's alpha ( $\alpha$ ) ranges between 0.78 for the total MHC-SF and 0.87 for social wellbeing. Composite reliability rho-coefficients ( $\rho$ ) on the other hand varies between 0.94 for the total MHC-SF and also 0.87 for the social wellbeing scale. The found reliability coefficients providing support for Hypothesis 3 – that the MHC-SF, as well as its subscales illustrate a reliable measurement instrument.

## Convergent validity

The convergent validity of the research model is illustrated within the correlation matrix for latent variables in Table 5. The WES and the SWLS were correlated to the total MHC-SF and to its subscales apart. The correlations between the WES and the total MHC-SF and its subscales emotional and social wellbeing can be described as moderate ( $r = 0.37$ ;  $r = 0.39$ ;  $r = 0.30$ ), whereas the correlation between the WES and the subscale psychological wellbeing has been found to indicate a large effect ( $r = 0.94$ ). Significant and positive relationships were also found for the correlation of the MHC-SF with the SWLS. For example, strong correlations were found between the total MHC-SF and the SWLS ( $r = 0.57$ ), and between the subscale emotional wellbeing and the SWLS ( $r = 0.58$ ). The correlations of the psychological and social wellbeing subscales and the SWLS can be described as moderate ( $r = 0.48$ ;  $r = 0.40$ ). The findings support Hypothesis 4 – stating that the WES and the SWLS will correlate positively with the MHC-SF.

**Table 5.** Cronbach's alpha, rho coefficients and Pearson's correlations for the latent variables.

Variable	$\bar{x}$	$\sigma$	Skewness	Kurtosis	$\rho$	$\alpha$	1	2	3	4	5
<b>Overall Mental Health</b>	4.33	0.88	-0.57	0.31	0.94	0.78	-	-	-	-	-
<b>EWB</b>	4.71	0.99	-1.13	1.38	0.85	0.85	0.81*	-	-	-	-
<b>PWB</b>	4.74	0.89	-0.94	1.07	0.83	0.83	0.86*	0.62*	-	-	-
<b>SWB</b>	3.54	1.27	-0.13	-0.87	0.87	0.87	0.86*	0.47*	0.62*	-	-
<b>WE</b>	2.67	1.01	1.94	-0.92	0.96	0.96	0.37*	0.39*	0.94*	0.30*	-
<b>SWL</b>	4.97	1.33	-0.95	0.30	0.90	0.87	0.57*	0.58*	0.49*	0.40*	0.64*

Note.  $N = 624$ ;  $\bar{x}$  = Mean;  $\sigma$  = Standard deviation;  $\alpha$  = Cronbach's alpha;  $\rho$  = Rho coefficient; EWB = Emotional wellbeing; PWB = Psychological wellbeing; SWB = Social wellbeing; WE = Work engagement; SWL = Satisfaction with Life; \* Correlation is significant at the 0.01 level (2-tailed).

Additionally, a structural model was tested, stating that work engagement and life satisfaction predicted mental health and wellbeing, as well as emotional, psychological, and social wellbeing. The fit of the structural model was sufficient ( $\chi^2 = 2234.93$ ; CFI = 0.91; TLI = 0.90; RMSEA = 0.07; SRMR = 0.06). Table 6 illustrates the regression results. The results indicate that work engagement had a significant positive relationship with the overall mental health level ( $\beta = 0.40$ ;  $p < 0.01$ ), as well as with emotional ( $\beta = 0.30$ ;  $p < 0.01$ ), psychological ( $\beta = 0.80$ ;  $p < 0.01$ ), and social wellbeing ( $\beta = 0.30$ ;  $p < 0.01$ ). The same pattern was found for the relation between life satisfaction and mental health. Life satisfaction had a significant positive relationship with the overall mental health level ( $\beta = 0.70$ ;  $p < 0.01$ ), with emotional ( $\beta = 0.72$ ;  $p < 0.01$ ), psychological ( $\beta = 0.62$ ;  $p < 0.01$ ), and also with social wellbeing ( $\beta = 0.47$ ;  $p < 0.01$ ). The found relations can be seen as additional support for Hypothesis 4.

**Table 6.** Regression results for the structural model.

Regression path	$\beta$	S.E.	<i>p</i>
<b>Work Engagement → Overall Mental Health</b>	0.40	0.04	0.00
<b>Work Engagement → Emotional Wellbeing</b>	0.30	0.04	0.00
<b>Work Engagement → Psychological Wellbeing</b>	0.80	0.04	0.00
<b>Work Engagement → Social Wellbeing</b>	0.30	0.04	0.00
<b>Life Satisfaction → Overall Mental Health</b>	0.70	0.03	0.00
<b>Life Satisfaction → Emotional Wellbeing</b>	0.72	0.03	0.00
<b>Life Satisfaction → Psychological Wellbeing</b>	0.62	0.03	0.00
<b>Life Satisfaction → Social Wellbeing</b>	0.47	0.04	0.00

Note.  $\beta$  = Beta coefficient; S.E. = Standard error; *p* = two tailed statistical significance.

## Discussion

The purpose of the current study was to examine the psychometric properties of the MHC-SF for the multi-cultural South African organizational context. This was done by determining the factorial validity, measurement invariance, reliability, and convergent validity. All in all, as indicated within the results, the Mental Health Continuum-Short Form (MHC-SF) is a suitable measurement instrument to investigate mental health and wellbeing within the multi-cultural South African organizational context. Until today, the MHC-SF as measurement instrument to investigate mental health and wellbeing has been validated and used in several contexts, as for example in South Africa (Keyes et al., 2008), in the Netherlands (Lamers et al., 2011), and in the US (Keyes, 2007). Even though the MHC-SF has been validated within South Africa, it has to be mentioned that the included cultural context was rather limited. Instead of including the broad South African culture, Keyes et al. (2008) focused mainly on one subpopulation. Secondly, several different studies used the MHC-SF within the organizational working environment (Bolier et al., 2014; Diedericks & Rothmann 2013; 2014; Koen et al., 2011), although it was not specific developed for this context.

The factorial validity of the MHC-SF was examined by testing the fit of two competing measurement models. A three-factor model, consisting of emotional, psychological and social wellbeing was compared to a one-factor model, consisting of 14 observed variables. The hypothesized three-factor model fitted the data significantly better, indicating that the three-factor structure of mental health is confirmed. Additionally, all items were found to have the highest factor loadings on their intended factor. The three-factor structure found within the current study is also in line with the predominant literature on the MHC-SF (Doré et al., 2017; Gallagher et al., 2009; Joshanloo et al., 2013; Joshanloo et al., 2017; Joshanloo & Lamers, 2016; Keyes et al., 2008; Lamers et al., 2011; Robitschek & Keyes, 2009; Schutte & Wissing, 2017). The three-factor structure of the MHC-SF is in addition to the general validation studies also confirmed for the organizational context. Diedericks and Rotmann (2014), who examined the relation between flourishing and different individual and organizational outcomes, found support for a model which conceptualized flourishing, i.e. mental health as three factors. Flourishing, was found to be best represented by three correlated but distinct factors of emotional, psychological and social wellbeing. Besides, the study was conducted within the South African organizational context (Diedericks & Rothmann, 2014), illustrating thus additional support for the current findings. Apart from the study of Diedericks and Rothmann (2014) who used the MHC-SF, as measure of flourishing within

the organizational setting, several studies used the Flourishing at Work Scale (FAWS). The FAWS was developed by Rothmann (2013) who expanded the MHC-SF of Keyes to the work environment (as cited by van Rensburg et al., 2017). The FAWS and the MHC-SF can thus be considered as related measurement instruments. The FAWS conceptualized flourishing, in line with the MHC-SF, as consisting of the three dimensions of emotional, psychological and social wellbeing. Emotional wellbeing is within the FAWS defined as including positive affect, negative affect and job satisfaction. Psychological wellbeing is conceived as consisting of autonomy, competence, relatedness, learning, meaning and purpose, and engagement. Social wellbeing is within the FAWS conceptualized as social acceptance, social growth, social coherence and social integration (van Rensburg et al., 2017). The conceptualization of the three factors included within the two measurement instruments contain thus a huge amount of overlap. One of the main differences between the FAWS and the MHC-SF is the number of items used. The FAWS consists of 40 items, whereas the MHC-SF includes only 14 items. Nevertheless, the huge amount of overlap between those two measurement instruments illustrates their relatedness. With respect to the factorial validity of the FAWS, it has to be mentioned that a three-factor model of flourishing at work was found to fit the data superior compared to the one- and two-factor models (van Rensburg et al., 2017). This three-factor model of flourishing at work was also confirmed by Rautenbach (2015). Given the similarities between the two measurement instruments, it can be stated that the three-factor structure of the FAWS supports the found three-factor structure of the MHC-SF. Concerning next the main differences between the one- and three-factor model it has to be mentioned that the one-factor model investigates a single factor as representation of mental health and wellbeing. As stated by Gallagher et al. (2009) the correlated first-order factors of the MHC-SF were found to adequately represent mental health, however the three-factor model fitted the data significantly better. Although, the three-factor model has been supported within the current study it has to be mentioned that also a bifactor model of wellbeing might have fit the results as well. The bifactor model, consisting of a general factor of wellbeing and the three specific factors of emotional, psychological and social wellbeing, has been found to be the best-fitting solution for the MHC-SF compared to the three-factor model (De Bruin & Du Plessis, 2015; Hides et al., 2016; Jovanovic, 2015). The question which model will fit the data better should be investigated in the future. With respect to the current findings it can be stated that a three-factor model was confirmed to represent the data at best. Additionally, all items were found to have the highest factor loadings on their intended factor. This finding indicates firstly supplementary support for the three-factor structure and secondly illustrates an accurate estimation of these three factors. In sum, the current findings indicate for one that the subscales of the MHC-SF can be used for the investigation of mental health and wellbeing within the South African organizational context. Secondly, the fact that the three-factor model has been found to illustrate the best fitting-solution indicates that the items of emotional, psychological and social wellbeing reflect three distinct but correlated factors. Thirdly, increases or decreases in one of the three wellbeing factors may also lead to increases or decreases in the other two wellbeing factors.

Measurement invariance, as a requirement for the comparison of scores across different groups (Cheng & Renzvold, 2002), was investigated by the determination of configural, metric, scalar, and full uniqueness invariance. This study focusses on the measurement invariance between male and female respondents. The comparison of the configural, metric, scalar, and full uniqueness invariance models revealed no significant differences. The MHC-SF can thus be considered as demonstrating measurement invariance with respect to gender. This finding is in line with predominant literature on the invariance of the MHC-SF. For instance, Joshanloo et al. (2013) investigated the invariance of the MHC-SF for the South African population. Joshanloo (2017), Doré et al. (2017) and Karas' et al. (2014) on the other hand investigated the invariance of the MHC-SF across gender. In sum, the MHC-SF has been found to demonstrate at least acceptable levels of invariance for gender (Joshanloo, 2016; Joshanloo et al., 2017; Karas' et al., 2014). Based on the findings within the reported studies, it was hypothesized that the

MHC-SF will also demonstrate measurement invariance for the South African organizational context. Although, none of the reported studies investigated the measurement invariance of the MHC-SF within the organizational context, it has to be mentioned that the invariance across gender was sufficient established to assume that it would apply to the South African organizational context as well. With respect to the current findings it can be stated that the MHC-SF illustrates sufficient measurement invariance across gender. More specifically, configural invariance was established, indicating that male and female respondents were found to perceive the constructs, included in the MHC-SF, in the same way. Thus, no difference was found in the perception of male and female respondents with respect to the construct of mental health, as well as of emotional, psychological and social wellbeing. The current finding, with respect to configural invariance, illustrates that the same theoretical constructs are measured within male and female respondents. The metric invariance between male and female respondents indicates that the same measurement units can be used. Scores of respondents within a certain gender group can be compared against each other, illustrating for example certain kind of fluctuations within the levels of wellbeing. Furthermore, metric invariance enables the comparison of mean patterns and correlations across male and female respondents, enabling a general comparison between gender groups. The third supported type of invariance is scalar invariance. Scalar invariance renders the possibility to group individuals. It states that individuals with similar values on the latent construct should reach also similar values on the observed variable. This means that respondents with similar values on emotional, psychological and social wellbeing should achieve similar values on the total MHC-SF. The fourth investigated invariance type, full uniqueness, confirms that the constructs of emotional, psychological and social wellbeing are measured identically for the two gender groups. The results illustrate that the MHC-SF can be used successfully for the investigation of mental health and wellbeing, as well as for the examination of emotional, psychological and social wellbeing across gender groups.

Cronbach's alpha coefficients and composite reliability coefficients rho were computed to determine the reliability of the MHC-SF. Overall, the MHC-SF was found to illustrate high internal consistency. Cronbach's alpha and composite reliability coefficients ranged between 0.78 and 0.94 for the total MHC-SF. Besides, also the subscales of the MHC-SF revealed high reliability values varying between 0.83 for psychological wellbeing and 0.87 for social wellbeing. The estimated reliability of the MHC-SF is among others further supported by the studies of Bolier et al. (2014), Diedericks and Rothmann (2013; 2014), Doré et al. (2017), Koen et al. (2011), and Schutte and Wissing (2017). The studies conducted within the organizational context made use of Cronbach's alpha as an estimator of internal consistency. Bolier et al. (2014), Diedericks and Rothmann (2013; 2014), as well as Koen et al. (2011) found rather high reliability values, ranging between 0.77 and 0.93. The found Cronbach's alpha values are thus in line with other studies, conducted within the organizational context. Especially, when considering the alpha-values found by Diedericks and Rothmann (2013; 2014) and by Koen et al. (2011), who conducted the studies not only in the organizational but also in the South African context. However, the studies which used the composite reliability coefficient rho found similar high internal reliability values ranging between 0.78 and 0.90 (Doré et al., 2017; Schutte & Wissing, 2017). Contrary to the assumption, composite reliability revealed no significant higher internal consistency values. More precisely, no difference was found for the composite reliability and the alpha-values of the subscales emotional, psychological and social wellbeing. The only difference between the two reliability estimators was found for the reliability of the total MHC-SF. The established reliability indicates that the items of the MHC-SF consistently measure mental health and wellbeing, conceptualized as emotional, psychological and social wellbeing within the multi-cultural South African organizational context.

The convergent validity of the MHC-SF was established by correlating it to the Work Engagement Scale (WES) and to the Satisfaction With Life Scale (SWLS). Pearson's correlations revealed that the MHC-SF, as well as its subscales apart, were positively correlated to the WES and to the SWLS. More specifically, moderate to strong correlations were found. The strongest relationship was found between the MHC-SF subscale psychological wellbeing and the WES. Additionally, as expected, the relation between the SWLS and the MHC-SF was strongest for the emotional wellbeing subscale. This pattern was also confirmed through investigating the structural model. All the regression paths within the structural model were significant and in the predicted direction, indicating that the amount of work engagement and life satisfaction forecast the level of mental health and wellbeing.

More specifically, the results showed that work engagement was significantly positive related to the overall mental health level, as well as to emotional, psychological, and social wellbeing. Although, the strongest relation was found between work engagement and psychological wellbeing ( $\beta = 0.80$ ). This strong relation is explainable through the similarities between the impact of work engagement and psychological wellbeing on an individual. Work engagement, as a construct, can be conceptualized as a state in which the employee shows excellent performance at work (Fourie, Rothmann, & van de Vijver, 2008), can deal effectively with the demands of the specific job (Schaufeli & Bakker, 2004), and expresses higher levels of optimism and pleasure when considering the working environment and dealing with the demands of the job (Jackson et al., 2006). More specifically, the influence of job demands on work engagement is clarified within a meta-analytic study conducted by Crawford, LePine and Rich (2010; as cited by Buitendach et al., 2016). The influence of job demands on work engagement is determined through the fact that demands can be perceived as a challenge or a hindrance. Challenging demands are rather viewed as the ones who encourage "mastery, personal growth, and future gains" (Buitendach et al., 2016, p. 55-56). Besides, employees are regarded to view these demands as opportunities to grow, learn, and to achieve and demonstrate competence. Whereas hindrance demands are perceived as inhibiting personal growth and learning, as well as goal attainment. Additionally, those demands are regarded as "barriers [...] that hinder progress toward[s] effective performance" (Buitendach et al., 2016, p. 56). Firstly, the distinction between those two kinds of demands illustrates that demands did not necessarily need to have a negative effect. Challenging demands can also have a positive and beneficial effect with respect to the level of work engagement displayed by the individual. Individuals who undergo challenging demands were found to possess higher amounts of work engagement (Jackson et al., 2006). Moreover, according to Nelson and Simmons (2003; as cited by Jackson et al., 2006), the effect of challenging demands is found to enhance wellbeing. Secondly, the individual effects of challenging demands possess similarities with the conceptualization of psychological wellbeing. More precisely, psychological wellbeing includes among others personal growth, purpose in life, and environmental mastery (Gallagher et al., 2009; Keyes 2007; Westerhof & Keyes, 2008). Additionally, having a direction and a goal in life as well as the ability to satisfy the own needs are assumed to contribute to psychological wellbeing (Keyes, 2002). Given the similarities between the effects of challenging demands and the conceptualization of psychological wellbeing, it can be assumed that challenging demands seem to enhance and promote psychological wellbeing.

The relation between work engagement and the overall mental health of an individual is explainable through the findings of Crawford, LePine and Rich (2010; as cited by Buitendach et al., 2016), who found that work-related health and wellbeing depend on the way in which the employee experiences the work environment. In line with the conceptualization of work engagement, employees express higher states of wellbeing if they perceive their working environment rather in an optimistic way than in a pessimistic way (Buitendach et al., 2016).

The results concerning the relation between life satisfaction and mental health illustrate that life satisfaction was significantly positive related to the overall mental health level, as well as to the emotional, psychological, and social wellbeing level apart. The strongest relation was found between life satisfaction and emotional wellbeing ( $\beta = 0.72$ ). This relation is explainable through the conceptualization of life satisfaction and emotional wellbeing. Emotional wellbeing, as a concept, is associated with the hedonic tradition. The hedonic tradition refers above all to the pleasant life and includes furthermore the amount and duration of positive and pleasant feelings (Burns et al., 2011; Gallagher et al., 2009; Keyes et al., 2008; Lamers et al., 2011). Emotional wellbeing includes thus the experience of higher amounts of positive emotions and moods (Gallagher et al., 2009). Emotional wellbeing implies, next to the increased experience of positive emotions, also a “long-term assessment of one’s life” in the form of life satisfaction (Keyes et al., 2008, p.182). Life satisfaction, as an evaluation about the quality of one’s life as a whole (Sagar & Karim, 2014), is thus a component of emotional wellbeing (Burns et al., 2011; Gallagher et al., 2009; Keyes et al., 2008; Lamers et al., 2011).

In conclusion, the results of the current study confirmed the validity of the MHC-SF for the multi-cultural South African organizational context, making use of factorial validity, measurement invariance, reliability and convergent validity. Besides, the MHC-SF was significantly related to work engagement and life satisfaction. In sum, the MHC-SF was found to be a valuable measurement instrument. Future research within the multi-cultural South African organizational context might thus make use of the MHC-SF.

### **Limitations and recommendations**

The current study presents promising results with respect to the evaluation of the psychometric properties of the MHC-SF for the multi-cultural South African organizational context. Nevertheless, some limitations and recommendations should be mentioned. First, the present study made use of a rather highly educated research population and most of the research participants were permanently employed. Future research should investigate the psychometric properties of the MHC-SF for less educated individuals within South Africa. Additionally, the fact that most of the research participants were recruited permanently might have influenced the general level of wellbeing, work engagement and life satisfaction. Future research should thus also include more individuals which are recruited for part-time employment. Second, future research should be conducted to investigate the usability of the MHC-SF for cross-national populations. Also the study sample consisted of members of different cultures, it has to be mentioned that the MHC-SF has not been validated for general cross-national use. Third, the current study made use of a cross-sectional research design. This type of study design is not appropriate to investigate causal relationships between the study variables. On the other hand, a longitudinal study design enables the formulation of more specific conclusions with respect to the found relation between mental health and work engagement and between mental health and life satisfaction (Dooley, 2009c). Furthermore, the longitudinal study design makes it possible to investigate the long-term effects of the relation between mental health, work engagement and life satisfaction (Dooley, 2009c). Future research should thus make use of a longitudinal design to explore the causal relationships between the research variables. Fourth, future research should aim at testing the fit of the bifactor model. As found within the literature, the bifactor model might represent the factor structure of the MHC-SF in a more accurate way.

### **Practical implications**

The Mental Health Continuum-Short Form is a promising measurement instrument for the investigation of mental health and wellbeing and has been used and validated in several cultural contexts. Nevertheless, little is known about its usefulness when confronted with several multi-cultural influences at the same time. Additionally, the MHC-SF has not been developed to be used preliminary within the

organizational context. The current study investigated the psychometric properties of the MHC-SF within the organizational context and when confronted with several cultural influences. The results indicated that the MHC-SF is a suitable measurement instrument to measure mental health and wellbeing within this context. The findings of the present study can be used to obtain a general indication of the level of wellbeing, work engagement and life satisfaction of the South African organizational context. Furthermore, organizations within South Africa can use the results to develop supporting structures and interventions to enhance the levels of work-related wellbeing. On the other hand, interventions can be developed to improve the working conditions of the employees, which might also improve the levels of work engagement, wellbeing and life satisfaction.

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