

**Validation of the Questionnaire for Eudaimonic Well-being in a South African context**

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**13012584**

Dissertation (article format) submitted in partial fulfilment of the requirements for the degree

Magister Scientiae in Clinical Psychology at the North-West University,

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## Acknowledgements

First and foremost I want to thank my Heavenly Father for the opportunity not only to express myself in my work, but also to experience meaning and purpose in my life. May I continue seeking what I was meant to be in life and live my life accordingly. Soli Deo Gloria.

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## Summary

Validation of the Questionnaire for Eudaimonic Well-Being in a South African Context

### Keywords:

Questionnaire for Eudaimonic Well-Being, eudaimonia, validation, item parcelling, factor structure, measurement, South Africa

Explicating the nature and concomitants of eudaimonic well-being is currently at the forefront of research on a fulfilling life and functioning well. However, the strength of research conducted on constructs is dependent on the quality of instrumentation. In view of this notion, Waterman et al. (2010) developed the Questionnaire for Eudaimonic Well-Being (QEWB) to operationalise their conceptualisation of eudaimonic well-being and explored the scale's validity in American student samples. In particular, they confirmed a good fit of a unidimensional factor structure by using parcelled indicators in confirmatory factor analysis. Research on the applicability of this measure within the other cultural contexts needs to take cognisance of aspects such as conceptual equivalence, translation issues, and validity criteria. To contribute to the adaptation of the QEWB for the multilingual South African context, the aim of this study was to explore the structural and external validity of English, Afrikaans, and Setswana versions of the QEWB.

A cross-sectional questionnaire survey design was used for data gathering. The sample ( $n = 975$ ) consisted of students from a large university in South Africa, who completed either the English ( $n = 325$ ), Afrikaans ( $n = 478$ ), or Setswana ( $n = 172$ ) version of the scale. To investigate the structural validity of the scale, descriptive statistics, reliability coefficients, and the scale's factor structure were scrutinised. Regarding the latter,

confirmatory factor analyses with both parcel- and item-level indicators, as well as principal component analyses were examined to assess the fit of a one-factor model. Exploratory factor analyses were conducted to further explore the dimensionality of the scale. External validity was examined by considering the attenuation corrected correlational patterns between scores on the QEWB and measures of well-being and ill-being.

Results showed that item- and scale-level scores were mostly negatively skewed, with high average scores. Internal consistency reliability statistics indicated satisfactory reliability, except for a small mean interitem correlation for the Setswana instrument. Although adequate goodness of fit statistics of parcel-level confirmatory factor analyses supported Waterman et al.'s (2010) notion of a one-factor structure, the assumption of unidimensionality within parcels was not satisfied, which suggested that these analyses could have masked multidimensionality. A lack of fit of the one-factor model was shown by a number of small or negative interitem and item-total correlations, insufficient fit indices for item-level confirmatory factor analyses, and a small proportion of variance explained by the first unrotated component in principal component analysis. Exploratory factor analyses indicated a three-factor model, where the factors Sense of Purpose, Active Involvement in Beliefs, and Effortful Engagement were distinguished. For the English scale, a four-factor model was also sensible. Items that may need modification for the current context were identified. Support for convergent and discriminant validity was established.

This study contributed to a further validation of the QEWB and highlighted its multidimensional structure for the groups involved. Further evaluation of the scale on conceptual and empirical levels is indicated, also specifically for applicability within the South African multilingual context.

## Opsomming

Validering van die Vraelys vir Eudaimoniese Welstand [Questionnaire for Eudaimonic Well-Being] binne 'n Suid-Afrikaanse Konteks

### Sleutelterme:

Vraelys vir Eudaimoniese Welstand [Questionnaire for Eudaimonic Well-Being], eudaimonia, validering, itempakkies, faktorstruktuur, meting, Suid-Afrika

Die verheldering van die aard en samehangende fasette van eudaimoniese welstand is tans op die voorpunt van navorsing oor 'n vervullende lewe en goeie funksionering. Die waarde van navorsing oor konstruke is egter afhanklik van die kwaliteit van die meetinstrumente. In die lig hiervan het Waterman et al. (2010) die Vraelys vir Eudaimoniese Welstand [Questionnaire for Eudaimonic Well-Being (QEWB)] ontwikkel om hul konseptualisering van eudaimoniese welstand te operasionaliseer. Hulle het die skaal se geldigheid vir Amerikaanse studente steekproewe verken en, met die gebruik van itempakkies as indikatore in bevestigende faktoranalise, gevind dat 'n eendimensionele faktorstruktuur goed pas. Navorsing oor die toepaslikheid van hierdie meetinstrument binne ander kulturele kontekste moet aspekte soos konseptuele ekwivalensie, vertaalkwessies en geldigheidskriteria in oorweging neem. Ten einde by te dra tot die aanpassing van die QEWB vir 'n meertalige Suid-Afrikaanse konteks was die doel van hierdie studie om die strukturele en eksterne geldigheid van Engelse, Afrikaanse en Setswana-weergawes van die QEWB te verken.

'n Dwarssnit-vraelys-opname-ontwerp is gebruik vir data-insameling. Die steekproef ( $n = 975$ ) het uit studente by 'n groot universiteit in Suid-Afrika bestaan wat die Engelse ( $n =$

325), Afrikaanse ( $n = 478$ ) of Setswana ( $n = 172$ )-weergawe van die skaal voltooi het. Om die strukturele geldigheid van die skaal te ondersoek, is beskrywende statistiek, betroubaarheidskoeffisiënte en die skaal se faktorstruktuur bestudeer. Met betrekking tot laasgenoemde is die passing van 'n een-faktormodel met behulp van bevestigende faktoranalises met beide itempakkie- en item-vlakindikatore, sowel as hoofkomponentanalises ondersoek. Verkennende faktoranalises is gebruik om die dimensionaliteit van die skaal verder te verken. Eksterne geldigheid is met behulp van attenuasie-gekorregerde korrelasiepatrone tussen tellings op die QEWB en tellings op meetinstrumente van psigologiese welstand en siekte verken.

Resultate het getoon dat item- en skaal-vlaktellings meestal negatief skeef was, met hoë gemiddelde tellings. Interne konsekwenheid-betroubaarheidsindekse het op bevredigende betroubaarheid gedui, behalwe vir 'n klein gemiddelde interitemkorrelasie vir die Setswana-skaal. Alhoewel voldoende passingsmaatstawwe by itempakkie-vlak bevestigende faktoranalises Waterman et al. (2010) se idee van 'n een-faktorstruktuur ondersteun het, is die aanname van eendimensionaliteit binne itempakkies nie bevredig nie, wat daarop dui dat analises multidimensionaliteit moontlik kon verdoesel. 'n Swak passing van die een-faktormodel is getoon deur 'n aantal klein of negatiewe interitem- en item-totaal-korrelasies, onvoldoende passingsindekse vir item-vlak bevestigende faktoranalises en 'n klein proporsie variansie verklaar deur die eerste ongeroteerde komponent in hoofkomponentanalise. Verkennende faktoranalises het op 'n drie-faktormodel gedui, waar die faktore Doelbeleving [Sense of Purpose], Aktiewe Betrokkenheid by Oortuigings [Active Involvement in Beliefs] en Inspanningsvolle Betrokkenheid [Effortful Engagement] onderskei is. Vir die Engelse skaal was 'n vier-faktormodel ook sinvol interpreteerbaar. Items wat vir wysiging in die huidige konteks oorweeg kan word, is geïdentifiseer. Ondersteuning vir konvergente en diskriminantgeldigheid is gevind.

Hierdie studie het bygedra tot 'n verdere validering van die QEWB en het die skaal se multidimensionele struktuur vir die betrokke groepe beklemtoon. Verdere evaluasie van die skaal op konseptuele en empiriese vlakke word aangedui, ook spesifiek vir toepaslikheid binne die Suid-Afrikaanse meertalige konteks.

Woordtelling: 484

## Table of Contents

1. Preface	3
1.1. Article format	3
1.2. Selected journal	3
1.3. Permission from co-authors	3
2. Author Guidelines and Manuscript	5
2.1. Instructions to authors	6
2.2. Manuscript	9
Abstract	10
Keywords	10
Introduction	11
The QEWB	12
Cross-Cultural Scale Use	14
The Present Study	15
Method	16
Research Design and Participants	16
Measures	17
Procedure	22
Ethical Considerations	22
Data Analysis	23
Results	24
Descriptive Statistics and Reliability Analysis	24
Factor Structure	26
External Validity	31
Discussion	32

Limitations and Directions for Future Research	36
References	38
Tables and Figures	47
Table 1: Ranges of item-level descriptive statistics for scores on the QEWB for all versions	47
Table 2: Internal consistency reliability indices and scale total descriptive statistics for scores on the QEWB for all versions	48
Table 3: Fit indices for CFAs of scores on the QEWB for all versions	49
Table 4: Component loadings of first component and item communalities for principal component analysis of scores on the QEWB for all versions	50
Table 5: Pattern matrices of three-factor principal axis factor analyses with oblimin rotation of scores on the QEWB for all versions	52
Table 6: Attenuation corrected Pearson correlations between scores on the QEWB and criterion measures for all versions	55
Figure 1: Scree plots for all versions from EFAs where principal axis factoring was used	57

## **1. Preface**

### **1.1. Article format**

This dissertation was done in article format as indicated by rule A.7.5.4.3 of the General Academic Rules of the North-West University.

### **1.2. Selected journal**

The target journal for publication is *Assessment*.

A longer version of the manuscript is handed in for examination. The manuscript that will be submitted to *Assessment* will be 'n shortened version, in accordance with the journal's guidelines.

The referencing style and editorial approach for this manuscript is in line with the prescriptions of the *Publication Manual* (6<sup>th</sup> edition) of the American Psychological Association (APA), except where the requirements of *Assessment* differs and the journal's guidelines were followed.

For the purpose of the dissertation the pages were numbered consecutively. However, the manuscript will be numbered starting from page 1 for submission to the journal.

### **1.3. Permission from co-authors**

A letter signed by the co-authors giving authorisation for use of this manuscript for the purpose of submission for a M.Sc. Degree follows on the next page.

**Letter of Permission**

We, the co-authors, hereby give consent that Lusilda Boshoff, first author, may submit the manuscript *Validation of the Questionnaire for Eudaimonic Well-Being in a South African Context* for the purpose of a dissertation. It may also be submitted to *Assessment* for review.

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Prof. M. P. Wissing

Co-author and Supervisor

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Dr. I. P. Khumalo

Co-author and Co-supervisor

## **2. Author Guidelines and Manuscript**

Validation of the Questionnaire for Eudaimonic Well-Being in a South African Context

## 2.1. Instructions to authors

### **Target journal: *Assessment***

The editor invites manuscripts covering a broad range of topics and techniques in the area of psychological assessment. These may include empirical studies of assessment of personality, psychopathology, cognitive functions or behavior, articles dealing with general methodological or psychometric topics relevant to assessment, or comprehensive literature reviews in any of these areas. Research participants may represent both clinical and nonclinical populations.

In general, regular articles should not exceed 20 pages of text, excluding Title Page, Abstract, Footnotes and Reference list; review articles should not exceed 35 pages. Brief reports are encouraged and should be limited to 1500 words.

Authors submitting manuscripts to the journal should not simultaneously submit them to another journal, nor should manuscripts have been published elsewhere, including the World Wide Web, in substantially similar form or with substantially similar content.

### **Manuscript Submission:**

Manuscripts must be submitted in Microsoft Word or Rich Text Format (rtf) electronically at <http://mc.manuscriptcentral.com/asmnt>. Figures may be submitted using any of the formats listed below. **If requesting a masked blind review, please ensure that both a manuscript file with no identifying author information and a separate title page with author details are included in your submission.** Questions should be directed to the *ASSESSMENT*

Editorial Office by email: [assessment.editorial@gmail.com](mailto:assessment.editorial@gmail.com).

### **Preparation of Manuscripts:**

Authors should carefully prepare their manuscripts in accordance with the following instructions.

Authors should use the *Publication Manual of the American Psychological Association* (6th edition, 2009) as a guide for preparing manuscripts for submission. All manuscript pages, including reference lists and tables, must be typed double-spaced.

The first page of the paper (the title page) should contain the article title, the names and affiliations of all authors, authors' notes or acknowledgments, and the names and complete mailing addresses of the corresponding author. *If requesting a masked blind review, the first page should contain only the article title and the title page should be uploaded as a separate document.*

The second page should contain an abstract of no more than 150 words and five to seven keywords that will be published following the abstract.

The following sections should be prepared as indicated:

*Tables.* Each table should be fully titled, double-spaced on a separate page, and placed at the end of the manuscript. Tables should be numbered consecutively with Arabic numerals. Footnotes to tables should be identified with superscript lowercase letters and placed at the bottom of the table. All tables should be referred to in the text.

*Figures.* Electronic copies of figures can be submitted in one of the following file formats: TIFF, EPS, JPEG, or PDF. All figures should be referred to in text. Each figure should appear on a separate page at the end of the manuscript but before the tables, and all titles should appear on a single, separate page.

*Endnotes.* Notes should appear on a separate page before the References section. Notes should be numbered consecutively and each endnote should be referred to in text with a corresponding superscript number.

*References.* Text citations and references should follow the style of the *Publication Manual of the American Psychological Association* (6th edition, 2009).

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## **2.2. Manuscript**

Validation of the Questionnaire for Eudaimonic Well-Being in a South African Context

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### Abstract

The aim of this study was to explore the structural and external validity of Waterman et al.'s (2010) Questionnaire for Eudaimonic Well-Being (QEWB) among South African student samples for English ( $n = 325$ ), Afrikaans ( $n = 478$ ), and Setswana ( $n = 172$ ) versions of the scale. This study highlighted the scale's multidimensional structure for the groups involved. Waterman et al. reported a unidimensional factor structure for the QEWB, using parcelled indicators in confirmatory factor analysis for American student samples. Our findings showed support for a one-dimensional structure at parcel-level, but also showed that the use of parcelling was not justified as the assumption of unidimensionality within parcels was not satisfied. Exploratory factor analyses indicated a three-factor model consisting of the dimensions of Sense of Purpose, Active Involvement in Beliefs, and Effortful Engagement. The scale showed good convergent and discriminant validity. Further conceptual and empirical exploration of this scale is indicated.

Word count =150

Keywords: Questionnaire for Eudaimonic Well-Being, eudaimonia, validation, item parcelling, factor structure, measurement, South Africa

Interest in what constitutes psychosocial well-being receives extensive attention in current literature. Two main streams of thought are often distinguished, namely the hedonic view, which focuses on “feeling good” (Diener, 1984; Kahneman, Diener, & Schwarz, 1999) and the eudaimonic perspective, which is concerned with “functioning well” (Deci & Ryan, 2008; Huta & Ryan, 2010; Waterman, 1993b; Waterman et al., 2010). While the separation of hedonic and eudaimonic perspectives is debated much in the literature (cf. Biswas-Diener, Kashdan, & King, 2009; Huta & Ryan, 2010; Kashdan, Biswas-Diener, & King, 2008; Vittersø, 2011; Waterman, 2008), most researchers acknowledge that each approach denotes important aspects of well-being (Henderson & Knight, 2012). In the past, well-being was particularly studied from a hedonic perspective with little attention to the eudaimonic view. Recently, however, research on eudaimonic well-being (EWB) became centre stage, and the need for assessment measures for the evaluation of facets of eudaimonic well-being is noted (Waterman et al., 2010).

EWB has lately been studied from different angles and with different interpretations of the implications of eudaimonic philosophy for psychological characteristics. For example, Waterman’s work on personal expressiveness (1990, 1993b, 2008), Ryff’s work on psychological well-being (Ryff, 1989; Ryff & Singer, 2008) and Ryan and Deci’s work on self-determination and self-realisation (Ryan & Deci, 2000) are associated with EWB. Much research related to EWB has also been done under the heading of “meaning in life” (Frankl, 1963; Morgan & Farsides, 2009; Ryff, 1989; Ryff & Singer, 2008; Steger, 2009; Steger, Frazier, Oishi, & Kaler, 2006; Wong, 2011).

The endeavour to study EWB depends on the development of high quality assessment measures for the evaluation of facets of EWB (Waterman et al., 2010). The Questionnaire for Eudaimonic Well-Being (QEWB) was developed by Waterman et al. with this purpose in mind.

## **The QEWB**

The QEWB was developed as an operational definition of EWB and items that Waterman et al. (2010) considered to be closely related to contemporary philosophical views on eudaimonia were included. The questionnaire included items from both the objective understanding of eudaimonia (i.e., qualities associated with eudaimonic functioning, such as the pursuit of excellence and self-realisation) and from the subjective stance (i.e., subjective experiences of eudaimonia, such as feelings that one is engaged in activities that are personally expressive). Eudaimonic identity theory (Waterman, 1992, 1993a, 2004, 2007; Waterman et al., 2010), which aims to link eudaimonist philosophy with the study of psychological functioning, formed the bridging framework in the construction of the QEWB. It integrates facets of the psychosocial view on identity formation (Erikson, 1968; Marcia, 1966; Waterman, 1982) with intrinsic motivation in the self-determination theory (Deci & Ryan, 1985) by considering objective and subjective constructs from the eudaimonist philosophy, such as the daimon or true self, the pursuit of excellence, self-realisation, and the subjective experience of eudaimonia. The interrelated categories of self-discovery, perceived development of one's best potentials, sense of purpose and meaning in life, investment of significant effort in pursuit of excellence, intense involvement in activities, and enjoyment of activities as personally expressive formed the basis for item formulation and content.

Waterman et al. (2010) followed Simms' (2008) guidelines for proper scale construction in the development of the QEWB. Simms proposed that scale development involves three stages: firstly, the substantive validity phase, where theory-informed conceptualisations of the construct are formed and the need for the scale is established; secondly, the structural validity phase, where the psychometric properties of items are evaluated and provisional scales are created; and thirdly, the external validity phase, where convergent, discriminant, and criterion-related validity is assessed. In their validation of the

QEWB, Waterman et al. (2010) gave extensive consideration to Simms' first and third phases. Regarding the first, they provided a substantial discussion of the theoretical definition of EWB that was to be operationalised by the QEWB, and concerning the latter, they tested a number of hypotheses about relationships between scores on the QEWB and scores on indicators of the development of identity commitments, other forms of well-being, identity exploration, personality traits, and positive and negative psychological functioning. However, Simms' second phase, which concerns the structural validity of the scale, was attended to only briefly.

In their discussion of the structural validity of the QEWB, Waterman et al. (2010) provided descriptive statistics for the scale's total scores, but not for individual items. The item-level psychometric examination of the scale using descriptive statistics is valuable as it can, for example, provide information regarding univariate normality (Bandalos & Finney, 2010). Cronbach's alpha coefficient was provided to indicate the internal consistency reliability of the scale, but additional measures, such as the mean interitem correlation and item-total correlations, will add further information. Waterman et al. used confirmatory factor analysis (CFA) to verify their hypothesis that the QEWB has a unidimensional structure, but no exploratory factor analysis (EFA) was reported to investigate possible multidimensionality. In the CFA, which was applied via structural equation modelling, Kline's (2005) recommendation that "no more than 5-6 indicators should be used to define a latent variable" (Waterman et al., 2010, p. 52) was followed. Therefore, Waterman et al. used parcelled indicators where adjacent items were summed to form five parcels. However, Kline (2011) indicated that parcelling only suffices when items that are combined into parcels are unidimensional and that the use of parcelling when items that are combined are not unidimensional may lead to deceptive conclusions. A first step would therefore be to examine the feasibility of the assumption of unidimensionality of the parcels. If the assumption proves

to be viable, the parcelling approach suffices for the sample under study. If not, additional approaches, such as item-level exploratory factor analyses, should be used to explore the scale's dimensionality for the group involved.

Waterman et al. (2010) correlated scores on the QEWB with scores on a variety of other scales to establish the external validity of the scale, which is Simms' (2008) third stage of scale development. These scales covered a broad range of psychological functioning, but only two came from the well-being research: one tapping on so-called "subjective well-being" (which concerns positive emotions and life satisfaction) and the other on "psychological well-being" (which involves functioning well). It will be useful to correlate scores on the QEWB with scores on a wider range of well-being scales to further explore the nomological net of EWB as operationalised by the QEWB in order to ascertain the scale's convergent and discriminant validity.

### **Cross-Cultural Scale Use**

Waterman et al. (2010) developed the QEWB within a Western context and explored its validity among students at American universities. Research on the applicability of this measure within other cultural contexts needs to take cognisance of conceptual equivalence, translation issues, the desirability of the construct in the various cultures, response style, item functioning, self-presentation concerns, memory bias, and validity criteria (Oishi, 2010). In the present study, the validity of the English QEWB, as well as Afrikaans and Setswana translations of the scale was explored among South African students. A study of the validity of this instrument within different contexts and cultural groups will enhance a better understanding of the psychometric properties of the scale, establish its applicability in a wider range of settings, test Waterman et al.'s theory of self-expression within different cultural contexts, and broaden and deepen our understanding of EWB as it manifests in different cultures and contexts.

Van de Vijver and Poortinga (2005) distinguished three types of bias that deserve attention when scales are used cross-culturally: (a) construct bias, which refers to dissimilarities of the constructs across cultures; (b) method bias, which concerns nuisance factors that arise from methodological aspects, such as differences in administration conditions; and (c) item bias, which refers to anomalies of items, such as poor translations. This study provides preliminary information on the first and third forms of bias.

### **The Present Study**

The first aim of this research was to explore the structural validity of the QEWB in various South African groups by considering English, Afrikaans, and Setswana versions of the scale. This included an investigation of the psychometric properties of the individual items, the scale's internal consistency reliability, the unidimensional factor structure proposed by Waterman et al. (2010), as well as possible alternative factor structures. In particular, our goal was to scrutinise the parcelling approach used by Waterman et al. to confirm the unidimensional structure of the scale. We hypothesised that the unidimensional factor structure that Waterman et al. confirmed through parcelling would not optimally explain the structure of the items in our groups. Although a single higher-order factor may underlie the QEWB, our conjecture was that item-level exploratory and confirmatory techniques would reveal a multidimensional factor structure.

Our second aim was to explore the scale's external validity (convergent and discriminant) with specific focus on correlations between scores on the QEWB and scores on other well-being scales as well as a measure of psychological ill-being. This was done through calculation of attenuation corrected correlations between scores on the QEWB and other measures in the family of EWB, measures more prominently associated with hedonic well-being, and a measure of depression. Our hypotheses were that scores on the QEWB would have high positive correlations with scores on other measures in the family of EWB to

confirm convergent validity and moderate correlations with scores on measures of hedonic well-being, as well as negative correlations with scores on the depression measure to establish discriminant validity.

This study will contribute to the clarification of the structural and external validity of the QEWB as operationalisation of eudaimonic well-being, and to the validation of the QEWB within a South African context as part of the second phase of the Eudaimonic and Hedonic Happiness Investigation (EHHI) project (cf. Delle Fave, Brdar, Freire, Vella-Brodrick and Wissing [2011] for a description of the first phase).

## **Method**

### **Research Design and Participants**

This was a quantitative study using a cross-sectional questionnaire survey. The sample ( $n = 975$ ) consisted of students from three campuses of a large university in South Africa, who completed either the English ( $n = 325$ ,  $M = 80$ ,  $F = 242$ , three unspecified), Afrikaans ( $n = 478$ ,  $M = 171$ ,  $F = 307$ ), or Setswana ( $n = 172$ ,  $M = 48$ ,  $F = 124$ ) version of the scale. These are the main official languages in the area where the survey was conducted. The average age in years was 21.03 ( $SD = 4.09$ ), 19.78 ( $SD = 3.14$ ), and 21.85 ( $SD = 5.04$ ), respectively. South Africa is a multicultural, multilingual country, and of the group who preferred to complete the English scale, 18% indicated English as home language, while the rest ticked Afrikaans (7%), Setswana (18%), or Other (55%), or did not answer (1%). For the Afrikaans version, 99% indicated that they were home language Afrikaans speaking, while 80% of the group who completed the Setswana scale ticked Setswana as home language, with 6% English and 14% Other. Of the samples that completed the English, Afrikaans, and Setswana scales, 28%, 60%, and 81% respectively were in their first academic year, 57%, 20%, and 9% in their second year, and 12%, 18%, and 5% in their third year, while the remainder of the respondents were in their fourth academic year, busy with postgraduate

studies, or did not answer. Of the sample that completed the English instrument, 61% studied human and social sciences or arts and 19% health sciences. Of the sample that completed the Afrikaans scale, 54% studied health sciences and 22% natural sciences, and 88% of the group that filled in the Setswana translation studied human and social sciences or arts.

### **Measures**

The QEWB was administered as part of a battery of psychological well-being and ill-being scales that were used to determine the external validity the scale.

**QEWB (Waterman et al., 2010).** The QEWB consists of 21 Likert scale items and was developed to measure well-being in a manner consistent with how it is conceptualised in the model of Waterman et al. (2010), based within the eudaimonist philosophy. Seven of the items are phrased in a negative direction and need reversed scoring. The original QEWB by Waterman et al. requests participants to rate their agreement with each statement on a scale ranging from 0 (*strongly disagree*) to 4 (*strongly agree*). However, in this study, a scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) was used in accordance with a follow-up of the international Eudaimonic and Hedonic Happiness Investigation project Phase 1 (Delle Fave et al., 2011). Weijters, Cabooter and Schillewaert (2010) stated that the use of seven response options is acceptable when working with student samples. Waterman et al. showed sufficient reliability ( $\alpha = .86$ ) and convergent, discriminant, construct, and incremental validity for the scale among a group of mainly Western students. We could not find other validation studies of the QEWB. Validity and reliability results for the QEWB, as calculated in the present study, are reported in the Results section.

**Mental Health Continuum – Short Form (Keyes, 2002, 2006, 2009).** This 14-item questionnaire measures positive mental health. Respondents rate the frequency of each statement occurring in the past month on a Likert scale ranging from 0 (*never*) to 5 (*every day*). It includes three items of emotional well-being in terms of positive affect and

satisfaction with life, five items of social well-being based on Keyes' (1998) model of social well-being (with one item representing each dimension in his model, namely social well-being, social integration, social contribution, social coherence, social actualisation, and social acceptance), and six items of psychological well-being as described in Ryff's (1989) model (with an item on each dimension of self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth). Keyes et al. (2008) validated the Setswana version of this scale for a mainly Setswana-speaking community sample and found sufficient reliability ( $\alpha = .72$ ) as well as construct, convergent, and discriminant validity of the scale for this group. Lamers, Westerhof, Bohlmeijer, Ten Klooster, and Keyes (2011) confirmed the cross-cultural potential of the scale when they showed construct, convergent, and discriminant validity as well as reliability ( $\alpha = .89$ ) of the scale for a representative Dutch sample. In the present study, Cronbach's alpha coefficients for the English, Afrikaans, and Setswana versions respectively were .77, .79, and .74 (Emotional Well-Being subscale), .72, .76, and .71 (Social Well-Being subscale), and .79, .83, and .72 (Psychological Well-Being subscale). Fit indices for CFAs resulted in comparative fit indices (CFIs) of .88, .92, and .87 for the English, Afrikaans, and Setswana questionnaires respectively and root mean square error of approximation (RMSEA) values of .084 (CI = [.072, .096]), .074 (CI = [.065, .084]), and .074 (CI = [.056, .092]).

**Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985).** This instrument intends to measure a respondent's own assessment of the satisfaction with his or her life as a whole on a cognitive-judgemental level and consists of five 7-point Likert-type items, with anchor labels ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). Diener et al. (1985) showed that the scale had good psychometric properties ( $\alpha = .87$ ) for samples of mainly American students, while construct validity and cross-cultural applicability of the scale were reported extensively in Pavot and Diener (1993, 2008). Within the South African

context, Wissing and Van Eeden (2002) obtained sufficient reliability levels ( $\alpha = .70 - .86$ ) and construct validity of the English version of the scale in a multicultural South African sample, while Wissing et al. (2010) showed acceptable reliability ( $\alpha = .67$ ) and construct validity for the Setswana version of the scale. For respectively the English, Afrikaans, and Setswana instruments, the Cronbach's alpha coefficients were .74, .84, and .76 in the present study, and for the CFAs the CFIs were .98, .98, and .98 and the RMSEA .066 (CI = [.017, .115]), .083 (CI = [.049, .121]), and .064 (CI = [.000, .135]).

**Meaning in Life Questionnaire (Steger et al., 2006).** This scale contains two five-item subscales measuring presence of and search for meaning in life, respectively. Respondents rate their degree of agreement on a 7-point Likert scale, ranging from 1 (*absolutely untrue*) to 7 (*absolutely true*). Steger et al. (2006) showed that the two subscales were reliable for mainly student samples, with the Cronbach's alpha values for the Presence subscale ranging from .82 to .86 and for the Search subscale from .86 to .87. They also indicated construct, convergent, and discriminant validity of the instrument. The reliability and validity of translated versions of this scale in other countries have been showed, for example among Chinese (Liu & Gan, 2010; Wang & Dai, 2008) and Portuguese (Simões, Oliveira, Lima, Vieira, & Nogueira, 2010) groups. We could not find any applications of this scale within the South African context. In the present study, Cronbach's alpha coefficients for the English, Afrikaans, and Setswana questionnaires respectively were .85, .88, and .72 (Presence subscale), and .85, .84, and .72 (Search subscale). Fit indices for CFAs resulted in CFIs of .95, .96, and .95 for the English, Afrikaans, and Setswana versions, respectively, and RMSEA values of .076 (CI = [.058, .094]), .073 (CI = [.060, .088]), and .076 (CI = [.058, .094]).

**Sense of Coherence Scale (Antonovsky, 1987, 1993).** This 29-item scale measures an individual's cognitive self-evaluation of the world and his or her life in it, with regard to

the extent that it is experienced as comprehensible, manageable, and meaningful, using a 7-point Likert scale with different anchor labels for each question. Antonovsky (1993) indicated a high level of content, face, and criterion validity, with Cronbach's alpha scores in 26 studies ranging from .82 to .95. Strümpfer and Wissing (1998) reported reliability indices ranging from .52 to .97, with an average alpha of .87 in 27 South African studies implementing the English version. Wissing et al. (2010) showed that the Setswana version of the scale holds only moderate promise for applicability. Although the Cronbach's alpha was acceptable ( $\alpha = .70$ ) and the one-factor structure confirmed, interitem correlations were low and only 11.8% of the variance was explained by the single factor with particularly low loadings on items 5 and 20. They suggested that future research should be conducted in this regard. Despite problematic psychometric properties, this measure is included for purposes of this validation study, because there are very few translated measures from an EWB perspective available in South Africa, and because previous research on the instrument (Antonovsky, 1993) attests to its applicability in various cultural contexts. For respectively the English, Afrikaans, and Setswana scales, the Cronbach's alpha coefficients were .82, .89, and .79 in the present study, and for the CFAs the CFIs were .53, .72, and .55 and the RMSEA .084 (CI = [.079, .089]), .079 (CI = [.075, .083]), and .770 (CI = [.069, .085]).

**Spiritual Well-Being Scale (Paloutzian & Ellison, 1982).** This 20-item instrument contains two 10-item subscales, namely Religious Well-Being, which focuses on a person's satisfaction with his or her relationship with God (the vertical dimension) and Existential Well-Being, which is concerned with a person's life satisfaction and experience of meaning and purpose (the horizontal dimension). The total score of the two subscales provides a general measure for spiritual well-being. The scale has a 6-point Likert scale, with response options ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Good reliability and validity of the scale was found in several studies (Bufford, Paloutzian, & Ellison, 1991; Ellison, 1983;

Ellison & Smith, 1991), for example Ellison (1983) reported Cronbach's alpha values of .87 and .78 for the Religious and Existential Well-Being subscales, respectively. Temane and Wissing (2006) reported Cronbach's alpha values of .92 and .88 for the total scale (English version) for predominantly white and black samples, respectively. In the present study, Cronbach's alpha coefficients for the English, Afrikaans, and Setswana versions respectively were .89, .93, and .72 (Religious Well-Being subscale), and .85, .91, and .79 (Spiritual Well-Being subscale). Fit indices for CFAs resulted in CFIs of .88, .91, and .61 for the English, Afrikaans, and Setswana scales, respectively and RMSEA values of .070 (CI = [.062, .078]), .083 (CI = [.076, .089]), and .114 (CI = [.103, .125]).

**Patient Health Questionnaire-9 (Kroenke, Spitzer, & Williams, 2001).** This nine-item Likert scale measure consists of the actual nine DSM-IV criteria for diagnosis of a major depressive episode and can be used as a self-administered screening instrument to establish the diagnosis of depressive disorders and determine the severity of depressive symptoms. Respondents rate whether each symptom occurred 0 (*not at all*) to 3 (*nearly every day*) over the past two weeks. Kroenke et al. (2001) found the measure to have sufficient reliability ( $\alpha = .86 - .89$ ), specificity, sensitivity and validity in a sample of American primary care and obstetrics-gynaecology clinic patients. A vast number of studies have shown the validity of the scale in various populations, for example among Nigerian students (Adewuya, Ola, & Afolabi, 2006) and Brazilian women (De Lima Osório, Mendes, Crippa, & Loureiro, 2009). Botha (2011) showed that the English version of the scale was valid and reliable ( $\alpha = .86$ ) for a multicultural South African sample. For respectively the English, Afrikaans, and Setswana measures, the Cronbach's alpha coefficients were .82, .84, and .82 in the present study, and for the CFAs the CFIs were .93, .91, and .90 and the RMSEA .075 (CI = [.055, .095]), .094 (CI = [.079, .109]), and .086 (CI = [.057, .115]).

## **Procedure**

**Preparation of scales.** The selected scales were translated and culture-sensitively adapted using a research committee approach, where the scales were translated into Afrikaans and Setswana by translators, back-translated into English by other translators and then compared to the original questionnaires by a research committee (Brislin, 1973; Van de Vijver & Leung, 1997). Native Afrikaans- and Setswana-speaking academics, also fluent in English, formed the research committees for the two respective translations. The translated scales were evaluated preliminary using small pilot samples to determine comprehensibility and cultural appropriateness of the words, phrases, and technical aspects of the questionnaire.

**Preparation for fieldwork.** Authorities of the sites where data was gathered were contacted to obtain permission, discuss ethical considerations, and make practical arrangements for data gathering. Assistants who helped with data gathering were trained prior to their fieldwork.

**Data gathering.** Volunteers from the selected sites were recruited to participate in the study. Each participant was asked to complete the battery of scales in his or her native language or language of preference, should it be English, Afrikaans, or Setswana, or in the language of choice if none of these was his or her native language. Trained fieldworkers helped with data gathering.

## **Ethical Considerations**

This project formed part of the FORT 3 project that had been approved by the Ethics Committee of the North-West University, South Africa, with project number NWU 00002-07-A2. Written informed consent was obtained from respondents prior to participation and responses were anonymous. Opportunities for debriefing were provided.

## Data Analysis

IBM SPSS Statistics 20 was used for all statistical analyses, except for the CFAs, for which IBM SPSS Amos 20 was used. Descriptive statistics (mean, standard deviation, skewness, kurtosis, interitem correlations, and item-total correlations) and reliability coefficients (Cronbach's alpha and average interitem correlation) were calculated. CFAs were conducted via structural equation modelling (the confirmatory option) to establish construct validity, using both parcelled indicators, similar to Waterman et al. (2010), and the individual items as indicators. The proposed unidimensional structure of the scale was further tested with principal component analysis. EFAs were conducted to explore the multidimensionality of the scale. External validity (convergent and discriminant) was explored by examining the attenuation corrected correlational patterns between scores on the QEWB and measures of well-being and ill-being. The attenuation correction was done by dividing the observed correlation coefficient by the square root of the product of the two scales' Cronbach's alpha values to compensate for the unreliability of the measures. However, caution should be applied when interpreting these corrected correlations, since alpha is a lower boundary for reliability, and division by alpha will then lead to overestimates of the corrected correlation (Bryant, King, & Smart, 2007).

Although the sample size of the group who completed the Setswana scale can be seen as small, particularly for the performance of CFA and EFA, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy gave satisfactory results: For the English, Afrikaans, and Setswana versions we obtained KMO-values of .82, .87, and .74 respectively, which are all above .70 and can therefore be considered "good" (Hutcheson & Sofroniou, 1999). Nonetheless, the small sample that completed the Setswana instrument remains a limitation.

## Results

Results of analyses that investigated the structural validity (descriptive statistics, measures of internal consistency reliability, and factor structure) and external validity of the QEWB are now presented.

### Descriptive Statistics and Reliability Analysis

As an initial exploration of the data, we calculated descriptive statistics of the individual items for each of the versions of the scale. After the calculation of reliability measures for the scale, descriptive statistics were also computed for the scale's total score.

**Item-level descriptive statistics.** Following Clark and Watson (1995), we started our investigation by inspecting the response distributions of the individual items before conducting more complex structural analyses. Blunch (2008) suggested that good items for summated scales require large variances, expected values near the middle value, positive inter-correlations of similar magnitude, and positive correlations with the sum of the remainder of the items. Item-level descriptive statistics also provide a way to explore the multivariate normality, an assumption for methods such as maximum likelihood CFA, on a univariate level (Bandalos & Finney, 2010). Table 1 provides the ranges of the statistics over all items for each language version of the scale. The reversed-phrased items' scores were reversed prior to these analyses for the purpose of comparability.

<Insert Table 1 approximately here>

The mean scores for most items lay above the centre point of the scale, which indicated that responses were more to the positive end of the scale (all items' mean values were larger than 4.00, the centre point of the Likert scale, except for one item in the English scale and two items in the Setswana scale; furthermore, for the English, Afrikaans, and Setswana scales, there were respectively 13, 11, and 15 items with mean scores above 5.00). This was confirmed by the mostly negative skewness statistics. Relatively small standard deviations for

a number of items further implied the limited variability of certain items. Skewness and kurtosis values of less than  $|2.00|$  can be considered acceptable deviations from normality, but more liberal standards allow for values less than  $|7.00|$  (Bandalos & Finney, 2010). In this study, most skewness and kurtosis values were less than  $|2.00|$  and all were less than  $|7.00|$ . For all versions, there were items that had negative correlations with other items and small or negative item-total correlations, which pointed towards problems with the proposed unidimensionality of the scale (Blunch, 2008).

**Internal consistency reliability and scale total descriptive statistics.** Cronbach's alpha coefficient, for which values larger than .70 are often deemed adequate (Kline, 2011), and the average interitem correlation, which should fall between .15 and .50 (Clark & Watson, 1995), were used to ascertain internal consistency reliability. These indices, together with the descriptive statistics for the total scores of the QEWB, are reported in Table 2.

<Insert Table 2 approximately here>

The reliability indices showed satisfactory internal consistency reliability for most versions, but the small average interitem correlation for the Setswana instrument pointed towards questionable reliability for this translation. While scale total scores could range from 21 to 147 with a centre point of 84.00 in this scale, the obtained mean and range scores indicated that respondents' total scores lay more towards the high EWB end of the scale. Note that the mean total score minus 1.5 times the standard deviation of the total scores was still larger than 84.00 for each version (87.92, 86.61, and 88.96 for the English, Afrikaans, and Setswana instruments, respectively). In order to compare the average scores in our samples with the mean scores reported by Waterman et al. (2010), we transposed our samples' average scores by dividing it by 7 and multiplying it by 5 (for transposition from our 7-point to Waterman et al.'s 5-point scale), and then subtracting 21 from the answer (to compensate for the fact that our lowest response option was 1, while Waterman et al.'s Likert

scale started at 0). The transposed averages for the English, Afrikaans, and Setswana measures were 58.88, 56.54, and 57.54, respectively, which were slightly higher than Waterman et al.'s two samples' means of 56.83 and 54.63. Although Waterman et al. noted that their reported levels of EWB were in the moderate range and not concentrated in the upper part of the range, we were of the opinion that the means we obtained were considerably larger than 42.00, the centre point of the scale used by Waterman et al. This was confirmed by negative skewness values for all versions. Standard deviation and range scores showed a slightly larger dispersion of scores for the English scale. The skewness and kurtosis values of the scales' total scores were less than  $|2.00|$ , which could be seen as only slight departures from normality (Bandalos & Finney, 2010).

### **Factor Structure**

Waterman et al. (2010) confirmed the unifactorial structure of the QEWB by obtaining adequate fit indices when using parcelled indicators in CFA. Although this could have suggested that a higher order factor underlay the scale, we suspected that a more nuanced understanding of the scale's dimensionality might have arisen if the data was analysed on item level. We were also concerned that the crucial assumption for parcelling, namely unidimensional parcels, may not have held. We started our investigation of the scale's underlying factor structure for our samples by testing the proposed unidimensional structure of the QEWB using both parcelled and item-level indicators in CFA. We also examined loadings on the first unrotated component in principal component analysis. We then explored possible multidimensional structures by means of EFAs.

*Parcel-level CFA.* Waterman et al. (2010) examined the unifactorial structure of the QEWB by using five parcels, created by summing the responses to adjacent items 1-4, 5-8, 9-12, 13-16, and 17-21 as indicators in CFA. Standard structural equation modelling fit criteria indicated that deviation from a perfect fit to the data was small.

We created parcels in our data similar to Waterman et al. (2010) and used CFA with maximum likelihood estimation to assess the fit of a unidimensional structure. We followed Bandalos and Finney (2010) in reporting criteria from each of the three broad classes of fit indices in Table 3: the CFI from the incremental indices group (values larger than .95 are considered a sign of good fit); the RMSEA with its associated 90% confidence interval from the parsimonious indices group (values should fall below .05 for a well-fitting model or below .08 to show that the fit is acceptable); and the chi-square test statistic, its number of degrees of freedom, and the resulting  $p$ -value from the absolute indices group (small  $p$ -values show that the fit between the hypothesised model and the perfect fit of the data is not adequate). Note that the chi-square test tests the null hypothesis that the model holds exactly in the population, which is unrealistic. Furthermore, the chi-square test statistic tends to be large when the sample size is large, leading to rejection of the null hypothesis even if the model fits the data well. The chi-squared test is therefore reported, but not used for interpretation. Both the RMSEA and CFI values suggested that the model fitted the data well.

We have concerns about the use of parcelling in this manner. Parcelling is “controversial because it assumes that items within each parcel are unidimensional” (Kline, 2011, p. 181). Kline (2011) expanded his argument:

Parceling is *not* recommended if unidimensionality cannot be assumed. Specifically, parceling should not be part of an analysis aimed at determining whether a set of items is unidimensional. This is because it is possible that parceling can mask a multidimensional factor structure in such a way that a seriously misspecified model may nevertheless fit the data reasonably well. (pp. 181-182)

Waterman et al. (2010) parcelled adjacent items, but gave no theoretical justification for or statistical test of the unidimensionality of items that were combined into parcels. They stated that item formulation was based on six interrelated categories of EWB, but on face

value it seemed to us as if items that were combined into parcels often belonged to different theoretical categories. To empirically investigate the assumption of unidimensionality of the parcels, we examined the internal consistency of the parcels by means of Cronbach's alpha coefficient. As explained by Clark and Watson (1995), "internal consistency is a necessary but not sufficient condition for . . . unidimensionality" (p. 315). Therefore, for items to be unidimensional, they have to be internally consistent, but internal consistency does not imply unidimensionality. For the English scale, the five parcels' Cronbach's alpha scores were .44, .52, .26, .39, and .46; for the Afrikaans scale .47, .39, .53, .43, and .51; and for the Setswana scale .27, .38, .37, .22, and .48. These values clearly indicate a lack of internal consistency for most parcels and by implication a lack of unidimensionality.

The rationale for parcelling lies in the fact that ordinal data (such as Likert scale data) often does not satisfy the assumptions of continuity and multivariate normality that various estimation techniques in structural equation modelling, such as maximum likelihood estimation, rely on, while total scores of ordinal items tend to be continuous and normally distributed (Kline, 2011). However, Blunch (2008) stated that ordinal variables can be treated as if they were normally distributed interval scaled variables if they can take on at least five possible values, if their skewness and kurtosis values are close to zero, and if a possible limited skewness goes to the same side for all variables. These pointers were satisfied in our study, since there were seven response options, skewness and kurtosis values on item level were within the limits of acceptable departures from normality as discussed before, and most items were slightly negatively skewed. By implication, commonly used estimation methods in CFA, like maximum likelihood, could be applied to our data. We therefore proceeded to conduct CFA with the items as indicators.

***Item-level CFA.*** CFAs were conducted with the items as indicators using maximum likelihood estimation to assess the fit of a unidimensional structure to the data. The fit

statistics, presented in Table 3, show that a unifactorial understanding of the QEWB does not adequately fit the data.

<Insert Table 3 approximately here>

***Principal component analysis to test for unidimensionality.*** Following Blunch (2008) and Clark and Watson (1995), the unidimensionality of the scale was further tested with principal component analysis, where the first unrotated component was scrutinised. To confirm unidimensionality, the first unrotated component should account for a large proportion of the variance (40% is an often recommended rule-of-thumb; Blunch, 2008). Items should have salient loadings on the first unrotated component and items with loadings of less than .30 to .40 are candidates for removal from the scale (Clark & Watson, 1995; Hair, Black, Babin, Anderson, & Tatham, 2010). Furthermore, communalities provide an index of the proportion of variance of an item that is accounted for by the component solution and, although no statistical guidelines exist to indicate exactly when a communality is “large” or “small” (Hair et al., 2010), we considered items with communalities of less than .30 to be potentially problematic.

<Insert Table 4 approximately here>

The loadings of the first unrotated component are reported in Table 4. Similar results were obtained when one factor was extracted with principal axis and maximum likelihood factor analysis. The percentage variance explained by one component was far below 40% for all versions (English: 23.66%; Afrikaans: 24.29%; Setswana: 19.56%), suggesting that more than one factor was needed to explain sufficient variance. For all versions, Items 3, 7, and 10 had small loadings on the first component and small communalities, which may suggest that these items need to be reviewed for the current context if the scale is meant to be unidimensional, not only for the translated versions of the scale, but also for the English version. Items 3 and 7 are negatively phrased, which could have caused confusion. Although

Item 10 has a positive direction, it is phrased in a double negative manner, which could have led to uncertainty. Other items with small factor loadings and communalities should be examined for problematic translations (Afrikaans and Setswana versions) or difficult or inappropriate wording and/or cultural inappropriateness (all versions).

*EFA.* Since the item-level CFAs and principal component analyses suggested that a unidimensional factor structure did not fit our data well, we conducted EFAs using both principal axis and maximum likelihood factoring with oblimin rotation to explore the dimensionality of the items. Similar results were obtained for the two methods of factor extraction and we therefore present the results for the principal axis factor analysis only.

The points of inflection for all scree plots, depicted in Figure 1, pointed towards multidimensionality. For the English and Afrikaans measures, the scree plots suggested three factors, while about two to five factors were implied for the Setswana questionnaire. For all versions, the pattern matrices of factor analyses with six, five, four, three, and two factors were explored for interpretability of the factors. We considered a factor a major factor when at least three items had loadings of .30 or larger on that factor and when there were no or few cross-loadings (Costello & Osborne, 2005). An analysis of the rotated pattern matrices revealed that the three-factor solution was interpretable and consisted of only major factors for all versions, while the four-factor solution was also sensible for the English scale. All other six-, five-, and four-factor solutions contained factors that could not be considered major factors according to the criteria, while the two-factor solutions were difficult to interpret and explained little variance.

The pattern matrices of the three-factor solution for all versions are presented in Table 5. We labelled the factors Sense of Purpose, Active Involvement in Beliefs, and Effortful Engagement. For the English instrument, the items that loaded high on the Active Involvement in Beliefs factor divided into two factors in the four-factor solution, while the

Sense of Purpose and Effortful Engagement factors remained the same. In particular, Items 18, 15, 10, and 17 had loadings larger than .30 on only the first divided factor, while Items 4, 13, and 5 had loadings larger than .30 on only the second divided factor. Item 8 had loadings of .35 and .34 on the two factors respectively, while Item 14 had loadings of .25 and .23 on the two factors. We labelled the two new factors Engagement in Rewarding Activities and Living from Beliefs, respectively. The three factors explained 41.99%, 40.10%, and 38.84% of the variance for the English, Afrikaans, and Setswana questionnaires, while four factors explained 47.60% of the variance for the English version.

<Insert Figure 1 approximately here>

<Insert Table 5 approximately here>

### **External Validity**

Table 6 contains the attenuation corrected Pearson correlations between scores on the QEWB and measures of psychological well-being and ill-being. The QEWB scores had large ( $|r| > .50$ ) positive correlations with scores on other measures in the family of EWB (Meaning in Life Questionnaire: Presence, Sense of Coherence Scale, Mental Health Continuum – Short Form: Psychological Well-Being, and Spiritual Well-Being Scale: Existential Well-Being). Correlations between scores on the QEWB and the Spiritual Well-Being Scale – Religious Well-Being, which can also be related to EWB for especially religious people, were medium ( $|r| \approx .30$ ). Scores on the QEWB had medium to large positive correlations with scores on measures more associated with hedonic well-being (Mental Health Continuum – Short Form: Emotional Well-Being and Satisfaction with Life Scale), but these correlations were consistently lower than the correlations between scores on the QEWB and the other measures associated with EWB. Medium to large negative correlations were found with scores on an index of depression (Patient Health Questionnaire – 9). There were small ( $|r| \approx .10$ ) negative correlations between QEWB and the Meaning in Life Questionnaire: Search

scores, which is in line with Steger et al.'s (2006) negative correlations between the scores on this subscale and measures tapping on presence of meaning in life.

<Insert Table 6 approximately here>

### **Discussion**

The first aim of this research was to explore the structural validity of the QEWB in various South African groups by considering English, Afrikaans, and Setswana versions of the scale. Findings showed support for a one-dimensional structure at parcel level, but also revealed that the use of parcelling was not justified as the assumption of unidimensionality within parcels was not satisfied within the current context. A lack of fit of the unidimensional factor structure was shown by a number of small or negative interitem and item-total correlations, inadequate fit indices for item-level CFAs, and the small proportion of variance explained by the first unrotated component in principal component analysis, as well as small component loadings and communalities for a number of items. EFAs indicated a three-factor model consisting of the dimensions of Sense of Purpose, Active Involvement in Beliefs, and Effortful Engagement in the current study for all versions. For the English scale, the Active Involvement in Beliefs factor divided into Engagement in Rewarding Activities and Living from Beliefs factors in the four-factor solution. These findings provided support for our hypothesis that a multidimensional factor structure would better explain the data for the groups involved.

Our second aim was to build on Waterman et al.'s (2010) foundation and further explore the scale's external validity (convergent and discriminant) with specific focus on the attenuation corrected correlations between scores on the QEWB and scores on other well-being scales, as well as a measure of psychological ill-being. Our hypotheses were supported: Convergent validity was established by large positive correlations with scores on other measures in the family of EWB, while discriminant validity was shown by medium to large

(but consistently smaller) positive correlations with scores on measures of hedonic well-being and medium to large negative correlations with scores on a depression scale.

With regard to the descriptive statistics, reliability indices and principal component analyses to assess the unidimensionality of the scale for the current context, some remarks are warranted. Item-level and scale total score descriptive statistics showed that most individual items and the scales' total scores were negatively skewed, with average scores above the centre point and relatively small standard deviations on a number of the items. This could suggest that the scale did not account that well for low EWB, or that EWB, as operationalised by the QEWB, was indeed above average for the university student samples in this study. Internal consistency reliability statistics indicated satisfactory reliability of the scale for all versions, except for the Setswana instrument, where the small mean interitem correlation may have pointed towards problems in this regard. The small component loadings of certain items (especially Items 3, 7, and 10) on the first unrotated component in principal component analysis, as well as their small communalities, suggest that these items may need revision for the current context if the scale was expected to be unidimensional. However, these items did not perform poorly in the multifactorial solutions, where they had salient loadings on major factors. We conclude that these items may be retained in the scale, as long as the multidimensionality of the scale is recognised.

A three-factor structure emerged and the latent dimensions were sense of purpose, active involvement in beliefs, and effortful engagement. Linkages were found between these dimensions and theory in EWB literature. The dimensions also related to the six interlinked categories of EWB defined by Waterman et al. (2010), which served as basis for item content in the QEWB. Although Waterman et al. did not specify the categories to which the items belong, we related the items to the categories according to our own judgement.

Items that loaded high on the Sense of Purpose factor were concerned with especially self-knowledge and a sense of purpose in life. The items linked particularly with Waterman et al.'s (2010) categories of self-discovery and sense of purpose and meaning in life (e.g. Items 2 and 9). An item from the intense involvement in activities category (Item 1) also featured in this factor. A sense of meaning and purpose in life is often considered an integral part of well-being in EWB literature. For example, Steger et al.'s (2006) presence of meaning in life construct, which involves the subjective sense that one lives a meaningful life, Ryff's (1989) purpose in life construct, which has to do with a comprehension of life's purpose, goal directedness, and intentionality, and Wong's (2010, 2011) meaning-centred orientation towards therapy and well-being resonate with the content of this factor.

Items that loaded high on the Active Involvement in Beliefs factor concerned full and active engagement in activities that the individual finds meaningful. Waterman et al.'s (2010) categories of intense involvement in activities (e.g., Item 18) and enjoyment of activities as personally expressive (e.g., Item 5) were especially recognised in items that loaded on this factor. The perceived development of one's best potentials (Items 6 and 15) and investment of significant effort in pursuit of excellence (Item 8) categories also contributed to this factor. For the English measure, this factor divided into two separate factors in the four-factor solution. The first, which we labelled Engagement in Rewarding Activities, entails the value the individual places on doing things that he or she finds fulfilling, rewarding, and personally expressive. The second, labelled Living from Beliefs, involves the importance of living from one's convictions. The content of this factor resonates with Fowers' (2012a, 2012b) ideas on a virtue ethics perspective on eudaimonia and flourishing as ongoing participation in characteristically human goods, such as knowledge and belonging, through virtuous activities. This factor is also related to the notions of intrinsic motivation, which involves the pursuit of an activity because of its inherent interest, and autonomy, which entails that a

person reflectively embraces activities as his or her own, in the self-determination theory (Ryan, Huta, & Deci, 2008).

The Effortful Engagement factor represented a willingness to put effort into matters, even if it is difficult, and to take responsibility for one's life direction. Waterman et al.'s (2010) categories of investment of significant effort in pursuit of excellence (e.g., Item 19), intense involvement in activities (e.g., Item 20), and self-discovery (e.g., Item 7) are especially prominent in the items that loaded high on this factor. The content of this factor resonates with ideas on flow and optimal experience (Delle Fave & Massimini, 2005; Nakamura & Csikszentmihalyi, 2009), which involves the experience of complete absorption in the present moment when attention is fully invested in the task at hand, a state of deep engagement and concentration where challenges and skills meet. It is noteworthy that high factor loadings ( $> .30$ ) on the Effortful Engagement factor came exclusively from reversed-phrased items. In fact, all reversed-phrased items had loadings larger than .20 on this factor for all versions, with the exception of the Afrikaans Item 16. When considered as representative of a negative construct, this factor relates to the Delle Fave and Massimini's understanding of apathy as the negative pole of experience fluctuation, characterised by disengagement and a disruption of attention.

Although the basic three factors were similar for the English, Afrikaans, and Setswana questionnaires, the items that represented the constructs differed in some instances. This may be due to emphasis shifts in the translations, or due to actual differences in the way these constructs manifest in the different cultural groups. For example, loadings of the Setswana Items 17 and 21 in the three-factor EFA differed from the loadings in the other language versions. An investigation revealed that the Setswana translations did not carry the original meaning and need modification. For Items 11 and 16, loadings were different for the Setswana scale, but further examination did not point towards differences in translation.

These reversed-phrased items loaded on the Sense of Purpose factor for the English and Afrikaans scales and on the Effortful Engagement factor for the Setswana translation. However, loadings on the Effortful Engagement factor were mostly also larger than .20 for the English and Afrikaans versions. A possibility is that agreement with these statements, which relates to a hesitation to put effort into finding one's purpose and talents, can be associated with both effortful engagement and a sense of purpose, which could have led to double loadings. A qualitative investigation of the understanding of the items by the different cultural groups will be valuable. Item 6 loaded on the Sense of Purpose factor for the English scale, but on the Active Involvement in Beliefs factor for the other versions. Confusion may have been caused by the fact that this question actually consists of two questions: the first relates to whether one knows what your best potentials are (which is related to self-discovery and in that sense much related to our Sense of Purpose factor), while the second concerns whether one actually tries to develop your best potentials (which is more related to our Active Involvement in Beliefs factor). This item may need modification for clarity.

Finally, note that a number of items had cross-loadings (i.e., multiple loadings larger than .30) in the multifactor solutions and, if the aim is to establish a scale with related but distinct subscales, these items may need to be reworked for the current context. Furthermore, some items had nonsalient primary loadings (i.e., loadings on all factors smaller than .30) and may need modification for the present context.

### **Limitations and Directions for Future Research**

This study had some limitations. Firstly, the sample in this study had restrictions. The entire sample consisted of university students, who were, although ethnically diverse, homogeneous in terms of educational background. Although the sample was comparable to Waterman et al.'s (2010) exclusively student samples, future research should validate the scale for a broader population. The Setswana sample was small and cross-validation of the

findings with larger samples is needed. All samples were convenience samples, making inference to the populations from which they were drawn impossible. Secondly, the QEWB and all criterion measures were self-report measures and behavioural measures of the constructs will be valuable. Thirdly, this study did not include a qualitative evaluation of the applicability of Waterman et al.'s conceptualisation of EWB within the South African context. Qualitative research that investigates the meaning of EWB within the current context will be of much value. Adaptation of the English version of the scale for the South African population may be needed.

In summary, explicating the nature and concomitants of EWB is currently at the forefront of research on a fulfilling life and functioning well. However, as indicated by Waterman et al. (2010), the strength of research conducted on constructs is dependent on the quality of instrumentation. The current study contributed to a further validation of the QEWB, and highlighted its multidimensional structure for the groups involved. Further evaluation of the scale on theoretical and empirical levels will guide the adaptation of the current scale, also specifically for applicability within the South African multilingual context. We recommend a meticulous investigation of the scale on item level, focusing on univariate psychometric properties and on the performance of the items via item response theory. Findings with regard to the multidimensionality of the scale have to be cross-validated in other studies and scrutinised on both theoretical and empirical levels with consideration of the socio-cultural context. An exploration of structural invariance and differential item functioning of the various translations of the scale is called for.

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Table 1

*Ranges of Item-Level Descriptive Statistics for Scores on the QEWB for All Versions*

Group	<i>M</i>	<i>SD</i>	Skew	Kur	IIC	ITC
Eng ( <i>n</i> = 325)	3.99 – 6.28	1.19 – 2.19	-2.35 – 0.04	-1.37 – 6.42	-.12 – .58	.03 – .58
Afr ( <i>n</i> = 478)	4.07 – 6.01	1.11 – 1.95	-1.73 – -0.19	-1.26 – 2.97	-.07 – .64	.19 – .59
Set ( <i>n</i> = 172)	3.17 – 6.08	1.18 – 2.15	-1.63 – 0.52	-1.42 – 2.66	-.25 – .52	-.07 – .49

*Note.* QEWB = Questionnaire for Eudaimonic Well-Being; Eng = English sample; Afr = Afrikaans sample; Set = Setswana sample; *M* = mean; *SD* = standard deviation; Skew = skewness; Kur = kurtosis; IIC = interitem correlation; ITC = corrected item-total correlation.

Table 2

*Internal Consistency Reliability Indices and Scale Total Descriptive Statistics for Scores on the QEWB for All Versions*

Group	$\alpha$	AICC	<i>M</i>	<i>SD</i>	Skew	Kur	Range
Eng ( <i>n</i> = 325)	.80	.18	111.83	15.94	-0.7	1.36	37-147
Afr ( <i>n</i> = 478)	.82	.19	108.55	14.63	-0.2	-0.05	64-146
Set ( <i>n</i> = 172)	.72	.13	109.96	14.00	-0.2	-0.43	75-142

*Note.* QEWB = Questionnaire for Eudaimonic Well-Being; Eng = English sample; Afr = Afrikaans sample; Set = Setswana sample;  $\alpha$  = Cronbach's alpha; AICC = average interitem correlation; *M* = mean; *SD* = standard deviation; Skew = skewness; Kur = kurtosis.

Table 3

*Fit Indices for CFAs of Scores on the QEWB for All Versions*

Group	$\chi^2$	<i>df</i>	<i>p</i>	CFI	RMSEA	90% CI
Parcel-level CFA						
Eng ( <i>n</i> = 325)	5.1	5	.40	1	.008	[.000, .078]
Afr ( <i>n</i> = 478)	13.39	5	.02	0.99	.059	[.022, .099]
Set ( <i>n</i> = 172)	7.57	5	.18	0.98	.055	[.000, .128]
Item-level CFA						
Eng ( <i>n</i> = 325)	772.57	189	<.01	0.62	.097	[.090, .105]
Afr ( <i>n</i> = 478)	723.07	189	<.01	0.74	.077	[.071, .083]
Set ( <i>n</i> = 172)	463.91	189	<.01	0.54	.092	[.081, .102]

*Note.* QEWB = Questionnaire for Eudaimonic Well-Being; CFAs = Confirmatory factor analyses; Eng = English sample; Afr = Afrikaans sample; Set = Setswana sample; AIIC = average interitem correlation;  $\chi^2$  = chi-square test statistic; *df* = degrees of freedom; CFI = comparative fit index; RMSEA = root mean square error of approximation; 90% CI = 90% confidence interval of the RMSEA.

Table 4

*Component Loadings of First Component and Item Communalities for Principal Component Analysis of Scores on the QEWB for All Versions*

Item	Eng (n = 325)	Afr (n = 478)	Set (n = 172)
1	.53 (.28)	.58 (.34)	<b>.34</b> (.12)
2	.63 (.39)	.64 (.41)	.50 (.25)
3	<b>-.17</b> (.03)	<b>-.27</b> (.07)	<b>.08</b> (.01)
4	.59 (.35)	.48 (.24)	<b>.34</b> (.12)
5	.50 (.25)	.40 (.16)	<b>.25</b> (.06)
6	.70 (.48)	.64 (.41)	.60 (.36)
7	<b>-.38</b> (.15)	<b>-.25</b> (.06)	<b>-.35</b> (.12)
8	.49 (.24)	<b>.37</b> (.14)	.41 (.17)
9	.63 (.39)	.70 (.49)	<b>.33</b> (.11)
10	<b>.09</b> (.01)	<b>.24</b> (.06)	<b>.35</b> (.12)
11	-.50 (.25)	-.53 (.28)	-.45 (.20)
12	<b>-.31</b> (.09)	-.47 (.22)	<b>-.37</b> (.14)
13	.49 (.24)	.47 (.22)	.61 (.37)
14	.52 (.27)	.53 (.29)	.46 (.22)
15	.61 (.38)	.47 (.22)	.54 (.30)
16	<b>-.38</b> (.14)	-.45 (.20)	<b>-.23</b> (.05)
17	.49 (.24)	.59 (.35)	.52 (.27)
18	.46 (.21)	.42 (.18)	.70 (.49)
19	<b>-.32</b> (.10)	<b>-.32</b> (.10)	-.48 (.23)

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20	-48 (.23)	-.44 (.19)	<b>-.17</b> (.03)
21	.49 (.24)	.70 (.49)	.61 (.37)

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*Note.* QEWB = Questionnaire for Eudaimonic Well-Being; Eng = English sample; Afr = Afrikaans sample; Set = Setswana sample; (R) = Reversed-phrased item. Component loadings < .40 are in boldface. Component loadings are presented first, followed by communalities in parentheses.

Table 5

*Pattern Matrices of Three-Factor Principal Axis Factor Analyses with Oblimin Rotation of Scores on the QEWB for All Versions*

Item	Sense of Purpose			Active involvement in beliefs			Effortful Engagement			
	Eng	Afr	Set	Eng	Afr	Set	Eng	Afr	Set	
	1. I find I get intensely involved in many of the things I do each day.	<b>.31</b>	<b>-.33</b>	<b>-.30</b>	.22	<b>.35</b>				
2. I believe I have discovered who I really am.	<b>.72</b>	<b>-.65</b>	<b>-.85</b>							
3. I think it would be ideal if things came easily to me in my life. (R)							.23	<b>.38</b>	<b>.48</b>	.26
4. My life is centered around a set of core beliefs that give meaning to my life.	<b>.33</b>		<b>-.32</b>	<b>.36</b>	<b>.33</b>					
5. It is more important that I really enjoy what I do than that other people are impressed by it.				<b>.36</b>	<b>.33</b>	<b>.40</b>				
6. I believe I know what my best potentials are and I try to develop them whenever possible.	<b>.50</b>	-.20		.25	<b>.43</b>	<b>.49</b>				
7. Other people usually know better what would be good for me to do than I know myself. (R)								<b>.47</b>	<b>.40</b>	<b>.36</b>

8. I feel best when I'm doing something worth investing a great deal of effort in.				<b>.57</b>	<b>.23</b>	<b>.36</b>			
9. I can say that I have found my purpose in life.	<b>.77</b>	<b>-.76</b>	<b>-.58</b>						
10. If I did not find what I was doing rewarding for me, I do not think I could continue doing it.				<b>.30</b>	<b>.30</b>	<b>.34</b>			
11. As yet, I've not figured out what to do with my life. (R)	<b>-.47</b>	<b>.49</b>					<b>.26</b>	<b>.27</b>	<b>.65</b>
12. I can't understand why some people want to work so hard on the things that they do. (R)							<b>.39</b>	<b>.37</b>	<b>.54</b>
13. I believe it is important to know how what I'm doing fits with purposes worth pursuing.				<b>.63</b>	<b>.53</b>	<b>.53</b>			
14. I usually know what I should do because some actions just feel right to me.				<b>-.27</b>	<b>.39</b>	<b>.50</b>	<b>.42</b>		<b>.22</b>
15. When I engage in activities that involve my best potentials, I have this sense of really being alive.				<b>.48</b>	<b>.59</b>	<b>.52</b>			<b>-.23</b>
16. I am confused about what my talents really are. (R)	<b>-.31</b>	<b>.46</b>					<b>.35</b>		<b>.54</b>
17. I find a lot of the things I do are personally expressive for me.				<b>-.38</b>	<b>.39</b>	<b>.56</b>			
18. It is important to me that I feel fulfilled by the activities that I engage in.				<b>-.20</b>	<b>.67</b>	<b>.67</b>	<b>.58</b>		
19. If something is really difficult, it probably isn't worth doing. (R)							<b>.67</b>	<b>.50</b>	<b>.65</b>

20. I find it hard to get really invested in the things that I do. (R)				<b>.55</b>	<b>.41</b>	<b>.42</b>
21. I believe I know what I was meant to do in life.	<b>.71</b>	<b>-.80</b>	-.23			<b>.45</b>

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*Note.* QEWB = Questionnaire for Eudaimonic Well-Being; Eng = English sample; Afr = Afrikaans sample; Set = Setswana sample; (R) =

Reversed-phrased item. Factor loadings < .20 are suppressed and > .30 are in boldface.

Table 6

*Attenuation Corrected Pearson Correlations between Scores on the QEWB and Criterion Measures for All Versions*

	Eng ( <i>n</i> = 325)	Afr ( <i>n</i> = 478)	Set ( <i>n</i> = 172)
MHC-SF	0.63	0.70	0.43
MHC-SF-EWB	0.53	0.59	0.32
MHC-SF-PWB	0.73	0.76	0.57
MHC-SF-SWB	0.40	0.52	0.26
SWLS	0.53	0.66	0.34
MLQ	0.62	0.61	0.53
MLQ-P	0.80	0.84	0.80
MLQ-S	-0.07	-0.23	0.00
SOC	0.62	0.69	0.68
SWS	0.52	0.68	0.46
SWS-RWB	0.27	0.46	0.33
SWS-EWB	0.63	0.77	0.52
PHQ-9	-0.42	-0.52	-0.41

*Note.* QEWB = Questionnaire for Eudaimonic Well-Being; Eng = English sample; Afr = Afrikaans sample; Set = Setswana sample; MHC-SF = Mental Health Continuum – Short Form; MHC-SF-EWB = MHC-SF Emotional Well-Being; MHC-SF-PWB = MHC-SF Psychological Well-Being; MHC-SF-SWB = MHC-SF Social Well-Being; SWLS = Satisfaction with Life Scale; MLQ = Meaning in Life Questionnaire; MLQ-P = MLQ Presence; MLQ-S = MLQ Search; SOC = Sense of Coherence Scale; SWS = Spiritual Well-

Being Scale; SWS-RWB = SWS Religious Well-Being; SWS-EWB = SWS Existential Well-Being; PHQ-9 = Patient Health Questionnaire-9.

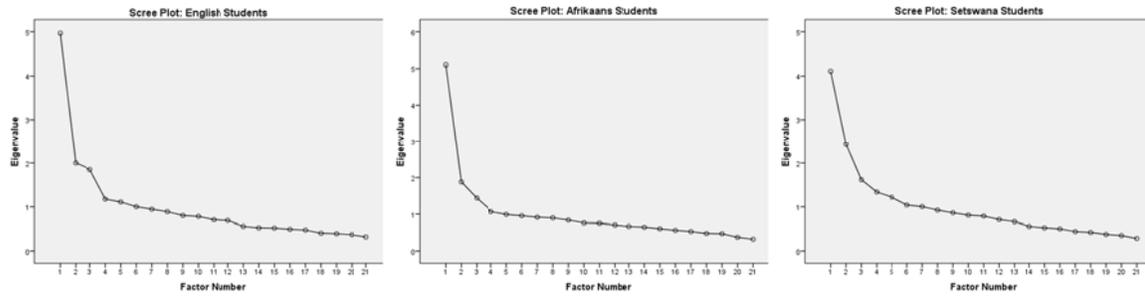


Figure 1. Scree plots for all versions from EFAs where principal axis factoring was used.