

Measuring spirituality in South Africa: Validation of instruments developed in the USA

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Abstract

Spirituality is receiving increased attention in the context of the workplace. Research consistently shows that spirituality is significantly correlated with mental health and well-being. Most of the research on spirituality, particularly in the context of the workplace, is conducted with instruments developed in the USA. However, the inter-cultural measurement of constructs remains a concern, because instruments developed in one culture are not necessarily transferable to another culture. In the current study, the transferability of two spiritual measures developed in the USA, namely the Human Spirituality Scale (HSS) and the Organizational Spirituality Values Scale (OSVS) are considered for a sample from South Africa. The results confirm the construct validity of the HSS and the OSVS, but indicate that the factor structures of the HSS and the OSVS should be analysed and reconfirmed when used, particularly in a South African sample. The study provides evidence that the HSS and the OSVS cannot be transferred indiscriminately to a South African sample. This insight contributes to the quality of future research studies in South Africa, not only on the important aspect of spirituality, but also when applying instruments developed elsewhere in the world.

Introduction

Spirituality is a construct with central importance in psychiatry, psychology and organizational behaviour. Research has shown consistently that spirituality holds positive outcomes for both the individual and the organization. Previous studies have established that spirituality advances individuals' mental health and well-being (Hadzic, 2011; Rosmarin et al., 2013), and positive organizational outcomes (Altaf & Awan, 2011; Clark et al., 2007). These and other associations which have been reported regarding spirituality have led to increased focus on spirituality, particularly in the context of the workplace. This increased acknowledgement that spirituality is an acceptable topic for scientific enquiry has led to the topic being studied worldwide and in different cultures. Such research has been done with measuring instruments that have been developed and standardized mainly in the USA. However, assessments of the validity of these instruments have been limited (De Klerk et al., 2009). This is a concern when taking into consideration that cultural differences may affect responses to measuring instruments, thereby reducing the validity of an instrument for a particular group.

Defining spirituality

The definition of spirituality should allow for the difference between spirituality on personal or individual level and spirituality on organizational level, or workplace spirituality (Kolodinsky et al., 2004). On the personal level, spirituality can be defined as a sense of life meaning, fulfilment and a feeling of connectedness with others (Krishnakumar & Neck, 2002; Milliman et al., 2003). The connectedness dimension in the definition of spirituality can manifest in religious undertones. However, spirituality and religion should not be equated. Even though religion may have spiritual attributes, religion has an additional element of theological structure, such as dogma, rituals and formality (Davis et al., 2003). These may be conducive to enhancing an individual's experience of spirituality, but often it may also be restrictive and destructive, and thus be contradictory to the unrestricted nature of spirituality. The construct of spirituality is much more encompassing than religion and these constructs can exist independently.

In the organizational definition of workplace spirituality, the focus is on the spiritual nature of the organization itself rather than the individual (Kolodinsky et al., 2004, 2008). According to this

perspective, an organization can be regarded as being spiritual if it strongly adheres to spiritual values such as benevolence, generativity, humanism, justice, receptivity, respect, self-transcendence, trust and mutuality (Giacalone & Jurkiewicz, 2003), even though the members of the organization may not necessarily be spiritually orientated.

Ashmos and Duchon (2000:140) define workplace spirituality as 'the recognition of an inner life that nourishes and is nourished by meaningful work that takes place in the context of community'. Giacalone and Jurkiewicz (2003) define organizational spirituality as the framework of organizational values that promotes employees' experience of transcendence through the work, facilitating their sense of connectedness in a way that provides feelings of completeness and fulfilment. Combining these definitions, one can define workplace spirituality as the spiritual nature of the organization itself (Kolodinsky et al., 2008), evidenced by spiritual organizational values that facilitates employees' experience and sense of connectedness and feelings of completeness and fulfilment (Giacalone & Jurkiewicz, 2003), with the recognition of an inner life that nourishes and is nourished by meaningful work (Ashmos & Duchon, 2000).

The importance of studying spirituality in the workplace

Spirituality has been researched mainly in the fields of psychology and psychiatry, and lately also in the field of organizational behaviour. Early measures of spirituality focused predominantly on individual spirituality and did not study the phenomenon in the context of the workplace. It was only in 2000 that researchers started measuring workplace spirituality (Ashmos & Duchon, 2000). Kolodinsky et al. (2004, 2008) developed the Organizational Spirituality Values Scale (OSVS) to assess an individual's perceptions of spiritual values exhibited by his or her organization. Other instruments to measure workplace spirituality followed, such as Kinjerski and Skrypnik's (2005) Spirit at Work Scale, which measures spirit at work in terms of engaging work, sense of community, spiritual connection, and mystical experience.

Studies have consistently shown correlations between personal spirituality and positive life effects, such as positive life experiences, well-being (Visser et al., 2010), life satisfaction, subjective well-being (Pagnini et al., 2011; Pashak & Laughter, 2012), happiness, self-esteem, hope, optimism (Emmons, 1999), success (Ashar & Lane-Maher, 2004), and honesty (Wagner-Marsh & Conley, 1999). In the workplace, research consistently confirmed significant

correlations between personal spirituality and positive outcomes, such as performance (Thompson, 2000), commitment (Rego & Cunha, 2008), involvement, organizational identification (Milliman et al., 2003; Kolodinsky et al., 2008), ethical behaviour (Giacalone & Jurkiewicz, 2003), emotional intelligence and self-efficacy (Hartsfield, 2003). In contrast, spirituality has been found to be negatively correlated with depression (Hodges, 2002), loneliness (Ellison, 1983), negative moods (Fehring et al., 1987), end-of-life despair, desiring hastened death, and suicidal ideation (McClain et al., 2003).

Workplace spirituality has not been researched as extensively as personal spirituality. However, research over the past 20 years has shown organizational spirituality to correlate with employee performance, organizational effectiveness (Karakas, 2010), leadership (Nooralizad et al., 2011; Phipps, 2012), life satisfaction, subjective well-being (Pagnini et al., 2011; Pashak & Laughter, 2012), work values, work ethic (Issa & Pick, 2011), and social justice (Prior & Quinn, 2012). Most of these studies were conducted in Northern America.

Although spirituality is often interpreted as broader in scope, meaning and purpose in life seem to be at the core of the spirituality construct. Meaning in life has been researched empirically for more than 40 years. These studies have consistently shown correlations between meaning in life and positive life affects, emphasizing the importance of meaning in life as an essential element of spiritual wellness (De Klerk, 2005, 2006, 2009). In contrast, meaninglessness has consistently been shown to correlate with a lack of psychological well-being and the presence of psychopathologies. Several of these studies have been conducted in countries outside North America with similar results. For instance, studies were conducted in South Africa, Britain, New Zealand, Australia, Israel and the Netherlands. However, little to no attention was given to assess the cultural transferability of the Life Regard Index (LRI) to the different cultures in most of these studies (De Klerk et al., 2009), providing evidence for a somewhat reckless inconsideration by many researchers to cultural transferability of instruments to other cultures.

The consistency in the findings from these studies supports the construct validity of a spiritual dimension which can be measured scientifically across different cultures. Research also confirms the important role that spirituality plays in a person's life and work, and that spirituality appears to be one of the usual properties of normal functioning and well-being. The study of spirituality should therefore remain an important focus area of psychological research across the world. Therefore, it is important that research regarding personal spirituality and workplace spirituality continues in different cultures.

Transfer of psychometric instruments across cultures

The issue of cross-cultural measurement of psychological constructs is of universal concern. As globalization increases and behaviour continues to be studied all over the world, psychometric instruments developed elsewhere are increasingly applied in different countries and cultures. Measuring equivalence, reliability, and validity across cultures has become increasingly important (Campbell & Koutsoulis, 2004). Consequently, researchers must approach psychometric measurement with caution, as the same construct can be perceived differently by populations in different countries (Meiring et al., 2006). However, the problem should not be addressed by developing different measures for different countries, because it would be futile to try to devise an instrument that is free from cultural influences (De Klerk et al., 2009). Even this approach creates problems, as constructs could still be understood differently (Anastasi, 1990). Therefore, it seems more appropriate to satisfy construct and measurement equivalence (structural and measurement-unit equivalence) and to ensure comparability before conducting analyses (Myers et al., 2000).

When conducting empirical research it is essential that researchers ensure that measuring instruments are valid and reliable for a specific group. Cultural differences may affect the responses to psychometric instruments, which may reduce the validity of a particular instrument for a specific group (Meiring et al., 2006; Van Eeden & Mantsha, 2007). Applying psychometric instruments to people from different cultural backgrounds without first validating the instrument for that specific population is common practice (De Klerk et al., 2009), but should be questioned (Campbell & Koutsoulis, 2004). Each country is characterized by a unique pattern of socio-cultural behaviour patterns and values, expressed in unique ways by different cultural groups as attitudinal and behavioural phenomena. Specifically, an indefinite and potentially ambiguous construct such as spirituality, with all its emotional and cognitive attachments and affiliations, seems to be open to a range of interpretations and perceptions in different cultures (De Klerk et al., 2009).

Olckers et al. (2010) assert that a large number of psychometric instruments are taken directly from other countries and adapted for use in South Africa, and that several of these instruments have been shown to be unsuitable for use in the South African context. Although some measures can be transferred without any validation problems (e.g. De Bruin et al., 2004; Storm & Rothmann, 2003), many validity, reliability, and structural problems have been reported when measures are used in the South African context

without adaptations (e.g. Abrahams & Mauer, 1999; De Klerk et al., 2006, 2009; Gray & Durrheim, 2006; Meiring et al., 2006; Van Wyk et al., 1999). For example, De Klerk et al. (2009) investigated the transferability of Battista and Almond's (1973) LRI, which was developed in the USA as a measure of meaning in life to a South African sample. Although their results confirm construct validity of the LRI, the factor structure had changed from a two factor to a one factor instrument, and two of the original 28 items were not part of the final structure. The study provides evidence that instruments related to spirituality, which were developed in another country, cannot be transferred indiscriminately to a South African sample without revalidating the instrument.

Differences in equivalences and validity problems are partly attributed to individuals perceiving social reality through their own subjective culture (Marsella et al., 2000; Prinsloo & Ebersöhn, 2002). Because people's behaviour is affected by their cultural milieu (Anastasi, 1990), it has an effect on how people interpret questions and respond to questionnaires (Prinsloo & Ebersöhn, 2002; Riordan & Vandenberg, 1994). The heterogeneous nature of the South African population complicates the matter even further (De Klerk et al. 2006). Therefore, cross-cultural and demographic equivalences need to be taken into consideration, because such equivalences may potentially lead to biased interpretations and erroneous conclusions. Abrahams and Mauer (1999) have found that some scales demonstrated acceptable validity when applied to South African samples, but only when applied to native English or Afrikaans speaking people.

Ensuring construct and measurement equivalence and comparability before analysing data will allow researchers to make meaningful comparisons between samples from different countries and cultures. Furthermore, it will increase the confidence that the instrument accurately measures what it is supposed to measure in the respective culture (Herdman et al., 1998), and it will enhance the integrity of the research, particularly when one explores a complex phenomenon such as spirituality (Parsian & Dunning, 2009). Researchers need to ensure that construct and measurement equivalence and validity principles are adhered to in order to ensure the legitimacy of their studies.

Most of the research on spirituality has been conducted in a westernized context (Petchsawanga & Duchon, 2009) with instruments developed in North America. However, inter-cultural measurement of psychological constructs is a concern, as psychometric instruments in one culture are not necessarily transferable to different cultures (De Klerk et al., 2009). It is thus necessary to determine the validity of these instruments for other cultures to ensure that

meaningful comparisons can be made between samples from different countries. Wheat (1991) developed the Human Spirituality Scale (HSS) to measure personal spirituality scientifically. Kolodinsky et al. (2004, 2008) amended the wording of the HSS in order to measure organizational (workplace) spirituality, and named it the Organizational Spirituality Values Scale (OSVS). Wheat's (1991) HSS and Kolodinsky et al.'s (2004, 2008) OSVS appear to be suitable instruments for measuring personal spirituality and workplace spirituality respectively. The HSS has been widely used and its validity as a measure of personal spirituality confirmed (Young et al., 1998; Giacalone & Jurkiewicz, 2003; Kolodinsky et al., 2004, 2008). Kolodinsky et al. (2004, 2008) developed the OSVS from the HSS as a separate and distinctive measure of organizational spirituality. As such, these two instruments complement each other well when measuring both individual and organizational spirituality. Both the HSS and the OSVS were developed in the USA. No previous studies could be traced that investigated the transferability of these instruments to other cultures or applied them to samples in South Africa.

The research objective of this study is to examine construct and measurement validity of the HSS and the OSVS to respectively measure personal spirituality and workplace spirituality in South Africa. Thus, the first research question is 'Would Wheat's (1991) HSS and Kolodinsky et al.'s (2004) OSVS show construct and measurement validity when applied to a South African sample?' The second research question is 'Would Wheat's (1991) HSS and Kolodinsky et al.'s (2004) OSVS yield three-dimensional structures when applied to a South African sample?'

Research design

A cross-sectional study was conducted in order to answer the research questions. Primary data were collected with a quantitative questionnaire. Ethical considerations such as anonymity, confidentiality, and informed consent were observed by the researcher. The data was collected by means of self-administered questionnaires. It seems that this data-collection method is the most effective for collecting data on a topic such as spirituality, because it allows respondents to answer questions anonymously and to reflect on questions before answering them. The self-administered questionnaires were distributed to the sample through the internal mail system of two organizations.

Research participants

The data was collected from individuals working in two different sectors in South Africa, namely the

private sector and the public sector. The sample consisted of white-collar workers who were randomly chosen from the two organizations referred to in the previous section. The study focused specifically on white-collar workers because work centrality and meaningful work seemed to be more important to them (De Klerk et al., 2006; Friedman & Havin-ghurst, 1954; Morse & Weiss, 1955). Stratified random sampling was used to draw a total sample of 600 subjects (243 from the private sector, and 357 from the public sector). A total of 242 questionnaires were returned, 164 respondents from the private sector, and 78 respondents from the public sector. The sample consisted predominantly female (78.3%), with only 21.7% male. Most of the respondents were in the 41–62 years age group ($N = 106$, 43.8%), with college or university of technology qualifications ($N = 83$, 34.3%). In terms of the respondents' ethnic distribution, most respondents (73.8%) were white, 17.5% African, 7% coloured, and 1.7% Asian.

The sample consisted predominantly of professional workers (38.7%) such as psychologists, pharmacists, doctors, and professional nurses. A large number of workers also fell into the administrative group (28.6%). The sample consisted largely of Christians (93.4%), 83.1% of whom reported to have either very strong or strong religious convictions. Similar findings have been obtained by other researchers conducting studies in South Africa (e.g. De Klerk et al., 2006, 2009).

Measuring instruments

Wheat's (1991) HSS is composed of 20 items divided into three subscales, namely, larger context from which to view the events of one's life (meaning and purpose), awareness of life, and compassion. The larger context subscale includes altruism or selflessness, truth, justice or morality, and meaning and purpose in life; the awareness of life subscale includes personal growth and wholeness, some aspects regarding sacredness or significance of life, and a connection with other life dimensions; the compassion subscale includes some aspects regarding sacredness or significance in life and awareness of pain and suffering (Wheat, 1991). The questionnaire consists of 20 items that are stated positively, except for one statement which is phrased negatively. The sum of these three subscales comprises the HSS. In developing the HSS, Wheat's (1991) data showed three strong factors, namely a sense of meaning and purpose in life, awareness of life, and compassion. He reported that the item discrimination index for each item exceeded the minimum desired value of 0.30, with a Cronbach's alpha of 0.89.

When analysing the three factors which were identified by Wheat (1991), a concern is raised regarding

factor distributions of the items on the HSS. The items are not in complete alignment with the three factors predicted, although Wheat (1991) indicates that strong parallels were obtained between the proposed factor structure and the structure obtained through analysis, and that the content dimensions were held together, in general.

The HSS measures the degree of an individual's personal spirituality, with scores ranging from 20 to 100. The individual's score is calculated by adding up the ratings given to the 20 items, with higher scores indicating higher levels of personal spirituality. It should be mentioned that no precise guidelines have been provided on what constitutes high levels or low levels of personal spirituality. Studies by Young et al. (1998), Giacalone and Jurkiewicz (2003), and Kolodinsky et al. (2004, 2008) confirm the reliability of the instrument, indicating a Cronbach's alpha of 0.86, 0.90, and 0.85, respectively, for the three subscales. The scores of the HSS obtained in Young et al.'s (1998) study are consistent with the findings of previous research, which adds credibility to the use of the HSS to measure personal spirituality unrelated to religious practice.

The OSVS was developed by Kolodinsky et al. (2004, 2008) and measures an individual's perceptions of the spiritual values evident within an organization. Statements in the OSVS are phrased to assess a person's perceptions of the spiritual values exhibited by the organization. The items consist of statements such as 'In this organization we are encouraged to actively seek a sense of purpose in our lives' and 'We are urged to set aside time for personal reflection and growth in this organization.' Similar to the HSS, the OSVS is composed of 20 items, 19 of the questions set positively and one negatively, divided into three subscales, namely larger context, awareness of life, and compassion. Scoring is done through a Likert-type scaling, ranging from 1 (completely false) to 5 (completely true). Kolodinsky et al. (2004, 2008) report an internal consistency reliability estimate of 0.93 for the OSVS. As far as it could be established, neither the HSS, nor the OSVS has been used in the South African context before this study.

Procedures

The questionnaire containing the HSS and the OSVS was administered in English. Because English is the official business language in both of the organizations from which the sample was drawn, it was expected that white-collar respondents in the sample would have demonstrated fluency in English before they could be placed in specific positions. Therefore, there was no substantive reason to translate the HSS or the OSVS into any of the other official languages used in South Africa. Similarly, in the absence of any

substantive reason to change the scales, the original five-point Likert scales of the HSS and the OSVS were honoured, so as not to put the validity and reliability of the instrument at risk. Biographical information was solicited in the questionnaire.

The BMPD, SAS and EQS statistical packages were used to analyse the data. In order to confirm the factor structure of the HSS and the OSVS, the responses to both these instruments were first analysed individually through the procedure of principal factor analysis (PFA) with direct quartimin rotation of the axes. This was done to determine whether the factor structure of each instrument was similar to the structure described in the theory and/or in previous studies. Eigenvalues were calculated to determine the factor structure of each instrument, after which each item was verified on the factor loadings of the factor structures. Items which did not show acceptable loadings (≥ 0.25) on only one factor were removed after the first round of factor analysis to minimize error variance (Bagozzi & Heatherton, 1994). The PFA was repeated until all the remaining items conformed to this requirement.

The next step was to subject the data of the 'clean' structure to Pearson correlation coefficient analysis to assess the discriminatory validity of the two instruments to measure distinctive constructs. Lastly, confirmatory factor analyses (CFA) were conducted to assess the goodness of fit of the data to the theoretical model (the instrument) and to confirm the results obtained in the PFA. This method is regarded as a good way to compare the equivalence of factor structures of psychometric instruments in different cultures (Watkins, 1989).

Once the factor structures of the HSS and the OSVS had been determined, construct and measurement validity and stability were assessed through examining the relationship of spirituality and workplace spirituality with biographical-type variables. Analysis of variance (ANOVA) was used to explore the relationship between personal spirituality and workplace spirituality with the biographic-type variables in order to control for external variance and to determine construct and measurement validity of the HSS and OSVS. In order to use ANOVA, it was assumed that each of the samples was drawn from a normally distributed population, which seems a reasonable assumption given the sample size of more than 240.

Results

Construct and measurement validity

The HSS and the OSVS are described as three-dimensional (Kolodinsky et al., 2004, 2008; Wheat, 1991). Therefore, three-factor solutions were tried in

the first PFA. The three-factor solution for the HSS accounted for 37.5% of the total variance, with factor 1 contributing 27.7%, factor 2 contributing only 5.5%, and factor 3 contributing only 4.3% of the total variance. The three factors of the HSS showed Cronbach's alpha of 0.81, 0.73, and 0.62, respectively. The correlation between the three factors varied between 0.36 and 0.87. The correlation between factors 1 (larger context) and 2 (awareness of life) was high, at 0.52, suggesting the possibility of one factor. The correlation between factors 1 and 3 and factors 2 and 3 was 0.36, suggesting that factor 3 (compassion) was not closely correlated with the other two factors. Due to the high correlations between the three factors, it was decided to execute a further factor analysis on a one-factor solution.

Responses to the HSS were consequently subjected to a second PFA, with a one-factor solution specified. This time, 19 of the 20 items loaded satisfactorily, but item 13 of the original HSS still failed to load $r \geq 0.25$. This item was removed, and the responses were subjected to a third PFA, again specifying a one-factor solution. This time, all 19 remaining items showed satisfactory loadings ($r = 0.34$ to 0.67), with a Cronbach's alpha of 0.88, explaining a total variance of 28.7%. Descriptive statistics of the HSS from this study cannot be compared directly with those from other studies, since an item has been removed. Nevertheless, the mean score for the HSS was 77.6 (standard deviation 9.1), which is, comparable with previous findings that showed mean scores between 76.04 and 77.15 (Kolodinsky et al., 2004, 2008; Young et al., 1998). The mean score of the HSS indicates that, on average, the respondents had a high level of personal spirituality.

A PFA was also initially executed on a three-factor solution for the OSVS. Two factors had eigenvalues of > 1.0 , and the item values obtained indicated that one strong factor could be identified (10.6). The other factor had an eigenvalue of 1.2. This indicates that a three-factor solution as proposed by the original instrument is not usable for this sample. Due to the strength of the strong factor identified, it was decided to execute a factor analysis on a one-factor solution for the OSVS. All the items, with the exception of item 13 (which showed no loading), showed satisfactory loadings ($r \geq 0.25$). Due to the unsatisfactory loading of item 13, it was decided to remove this item and repeat the PFA on a one-factor solution.

From the next PFA, all the items on the one-factor solution showed satisfactory loadings, with the lowest loading being 0.45, and the highest being 0.86. This indicates that for the 19 items, one factor can be clearly identified. This one factor showed a Cronbach's alpha coefficient of 0.95. This one factor (consisting of 19 items) explained 53.3% of the

total variance. The descriptive statistics of the OSVS from this study cannot be compared directly with those from other studies, since an item has been removed in this study. Nevertheless, the mean for the OSVS was 45.7, which was lower than the means (63.4) reported by Kolodinsky et al. (2008). In terms of research question 1, the results of the PFA support the construct and measurement validity of the 19-item HSS and OSVS for the South African sample.

From the ANOVA, personal spirituality only showed statistically significant associations ($p < 0.05$) with gender, ethnic grouping, strength of religious conviction and educational level. Female respondents showed slightly higher levels of personal spirituality than men, and people of colour slightly higher levels of personal spirituality than white people. These results are similar to what was found in previous research (Trott, 1996; Wheat, 1991). The strength of religious conviction correlated positively with higher scores on personal spirituality. This result is aligned with previous research (De Klerk et al., 2006, 2009) and the concept that spirituality may encompass religion. Higher levels of education correlated with higher levels of personal spirituality, possibly confirming that spirituality relates more to white collar workers (De Klerk et al., 2006, 2009).

Results from the ANOVA indicate that of all the biographic variables measured, only the employing organization (hospital or education) and respondents' age are significantly associated with organizational spirituality ($p < 0.05$). The public organization shows somewhat higher organizational spirituality than the private organization. The 30–40 and 41–62 year age groups experienced the highest levels of organizational spirituality. These groupings represent the life stages where meaning and purpose typically represent prominent issues in the workplace (De Klerk et al., 2009). Although the association between gender and the experience of organizational spirituality differ statistically significantly ($p < 0.05$), the results between the public and private organizations are inconsistent and conflicting, and therefore not regarded as of any practical relevance.

In order to investigate the relationship between personal spirituality and organizational spirituality, the Pearson correlation coefficients were determined. This analysis yielded a significantly weak and negative correlation ($r = -0.25$, $p < 0.0001$); both the weak correlation and its inverse relationship confirm the discriminatory validity of the two instruments to measure different constructs. The inverse correlation indicates that people who are spiritual, do not necessarily perceive their organizations as having spiritual values. These results, which are in line with previous findings, provide more evidence for the construct and measurement validity

of the HSS and the OSVS (see research question 1 at the end of the Transfer of psychometric instruments across cultures section above).

The next step was to subject the responses (on the 19 remaining items) of the HSS to CFA to assess the goodness of fit of the data with the three-factor and one-factor models. Hoyle (1995) notes that the most common index of fit between the model and the data is the Goodness of Fit Index (GFI), with values between 1.0 and 0.9 deemed acceptable. Rahim et al. (2002) suggested the use of the Normed Fit Index (NFI) and Comparative Fit Index (CFI), with a value of 0.9 being a respectable value on the NFI, and the root mean square error of approximation (RMSEA), with the acceptable range approaching zero (0.05 to 0.08). The results of the CFA are shown in Table 1.

The Likert-type data from the HSS are not continuous, and the normalized estimates for the one-factor and the three-factor solutions are 26.69 and 25.52, respectively, which are both much greater than 8.0, indicating that the data are not multivariate normal. The 'robust' goodness of fit indices will thus be reported.

From Table 1 it is clear that the indices do not indicate a very good fit between the data and the model for both the three-factor and the one-factor solutions. The GFI, Adjusted GFI (AGFI), NFI, Non-Normed Index (NNI), CFI and Incremental Fix Index (IFI) indices are all below 0.9, while the root mean square residual (RMR) and RMSEA estimates are higher than 0.05, and the 90% upper confidence limit of RMSEA is above 0.08. The indices of the three-factor solution are marginally higher on most of the indices, indicating a possible better fit with the model than is the case with the one-factor solution. However, the RMR of the one-factor model (.066) is slightly lower than the three-factor model (.069) which is closer to 0.08. In contrast with the results from the PFA, it appears that the three-factor solution yielded a slightly better fit with the data. However, with the relatively small sample ($n = 238$), it is prudent to also look at the parsimony-adjusted measures. These indices are indicated in Table 2.

Table 2. Parsimony-adjusted measures of Wheat's (1991) HSS.

Index	Three factors	One factor
PRATIO	0.879	0.889
PNFI	0.636	0.599
PCFI	0.708	0.661

In the parsimony-adjusted indices in Table 2, the PRATIO index of the one-factor solution (0.889) is slightly higher than that of the three-factor solution (0.879), while the Parsimony Adjusted Normed Fix Index and Parsimony Adjusted Comparative Fix Index indices are marginally lower in the one-factor model than in the three-factor model. From the results it appears as if Wheat's (1991) HSS can be used as either a one-factor model or a three-factor model. However, as neither model shows a good fit with the data, both models should be used with caution, and it would probably be more accurate to use the simpler model (the one-factor model). Although the one-factor model could be more appropriate and prudent to use, researchers using the HSS should analyse and reconfirm the instrument structure with their own data before making conclusions, particularly in a South African sample.

The 19 remaining items of Kolodinsky et al.'s (2004, 2008) OSVS were also subjected to CFA to assess the goodness of fit of the data with the two-factor and the one-factor models. The results of the CFA are shown in Table 3. The Likert-type data from the OSVS are not continuous. The normalized estimates for the one-factor and the three-factor solutions are 36.71 and 34.12, respectively, which are both much greater than 8.0, indicating that the data are not multivariate normal. The 'robust' goodness of fit indices was thus regarded to be the most appropriate to use.

With several of the indices above or approaching 0.9 (or below 0.08 for the RMSEA and the RMR, but not yet < 0.5), the indices in Table 2 indicate a reasonable fit between the data and the models for both the three-factor and the one-factor solutions. However, although the three-factor model has slightly

Table 1. CFA results of Wheat's (1991) HSS.

Index	Three factors	One factor
Goodness of Fit Index (GFI)	0.843	0.812
GFI Adjusted for Degrees of Freedom (AGFI)	0.803	0.765
Bentler and Bonnet's (1980) Normed Fit Index (NFI)	0.722	0.676
Bentler and Bonnet's (1980) Non-Normed Index (NNI)	0.803	0.740
Bentler's Comparative Fit Index (CFI)	0.827	0.769
Bollen's Fit Index (IFI)	0.830	0.773
Root mean square error of approximation (RMSEA) estimate	0.069	0.082
90% Confidence interval of RMSEA	(0.059; 0.72)	(0.071; 0.091)
Root mean square residual (RMR)	0.069	0.066

Table 3. CFA results of Kolodinsky et al.'s (2004) OSVS.

Index	Three factors	One factor
Goodness of Fit Index (GFI)	0.825	0.818
GFI Adjusted for Degrees of Freedom (AGFI)	0.780	0.773
Bentler and Bonnet's (1980) Normed Fit Index (NFI)	0.865	0.867
Bentler and Bonnet's (1980) Non-normed Index (NNI)	0.914	0.914
Bentler's Comparative Fit Index (CFI)	0.925	0.923
Bollen's Fit Index (IFI)	0.925	0.924
Root mean square error of approximation (RMSEA) estimate	0.067	0.070
90% Confidence of RMSEA	(0.057; 0.077)	(0.060; 0.081)
Root mean square residual (RMR)	0.062	0.064

higher GFI, AGFI, CFI and IFI indices, and slightly lower RMR and RMSEA indices, neither of the models is clearly stronger than the other. In contrast with the results from the PFA, it appears as if the three-factor solution yielded a slightly better fit with the model. However, with the relatively small sample ($N = 237$), it would be prudent to also examine the parsimony-adjusted measures. These indices are indicated in Table 4.

In the parsimony-adjusted measures in Table 4, all the indices of the one-factor solution are slightly higher than those of the three-factor solution. The parsimony-adjusted indices thus suggest that the one-factor model has a better fit with the data than is the case with the three-factor model. From the results, it appears as if Kolodinsky et al.'s (2004, 2008) OSVS can be used as either a one-factor model or a three-factor model. However, both models should be used with caution, and again it would probably be more accurate to use the simpler model (the one-factor model). Although the one-factor model may be more suitable and prudent to use, researchers using the OSVS should analyse and reconfirm the instrument structure with their own data before making conclusions, particularly when applied to a South African sample.

Discussion

The results from this study provide support for the metric acceptability of the HSS and the OSVS when applied to the South African sample used in the study, with the item (item 13) removed from both instruments. The 19-item scale for both the HSS and the

OSVS showed satisfactory loadings, with acceptable Cronbach's alphas of 0.88 and 0.95 respectively.

Although the descriptive statistics of the HSS from this study could not be compared directly with those from other studies (because an item was removed), significant correlations between personal spirituality and workplace spirituality and some of the biographical-type variables were reported. Personal spirituality showed statistically significant associations with gender, with women having higher levels of spirituality than men. Personal spirituality was also significantly associated with ethnic groupings. African people reported higher levels of spirituality than people of European descent. These results are consistent with previous research (Trott, 1996; Wheat, 1991) Strength of religious conviction was found to be significantly associated with spirituality, with people with very strong religious convictions having the highest levels of personal spirituality. This result is aligned with previous research (De Klerk et al., 2006, 2009) and the concept that spirituality may encompass religion. Higher levels of education correlated with higher levels of personal spirituality, possibly confirming that spirituality relates more to white collar workers (De Klerk et al., 2006, 2009).

Of all the biographic variables measured, only the employing organization and respondents' age are significantly associated with organizational spirituality, with the public organization showing somewhat higher organizational spirituality than the private organization. The 30–40 and 41–62 year age groupings experienced the highest levels of organizational spirituality. These groupings represent the life stages where meaning and purpose typically represent prominent issues in the workplace (De Klerk et al., 2009). The association between gender and the experience of organizational spirituality are inconsistent and conflicting, and therefore not regarded as of any practical relevance.

The Pearson correlation coefficients confirmed the discriminatory validity of the HSS and OSVS as distinctive instruments to measure personal and organizational spirituality respectively. In terms of the first research question, these results support the

Table 4. Parsimony-adjusted measures of Kolodinsky et al.'s (2004) OSVS.

Index	Three factors	One factor
PRATIO	0.879	0.889
PNFI	0.752	0.759
PCFI	0.791	0.794

construct and measurement validity of the 19-item HSS and the OSVS for a South African sample.

The indices from the CFA show that the data for the HSS do not represent a good fit with the measurement model, for both the one-factor and the three-factor structures. The GFI, AGFI, NFI, NNI, CFI, IFI indices are all below 0.9 implying that there is not a very good fit between the data and the model for both the three-factor and one-factor solutions. However, the RMSEA and RMR indices indicate that the three-factor solution show a better fit with the data, than the one-factor solution. The parsimony-adjusted PRATIO indices show that the one-factor solution (0.889) for the HSS is slightly higher than the three-factor solution (0.879), while the PNFI and PCFI are marginally lower in the one-factor model than in the three-factor model. Thus, the 19-item HSS can be used as either a one-factor model or a three-factor model. Although both models should be used with caution and researchers should reconfirm the instrument's structure when used for a South African sample, the one factor solution may represent a more judicious approach.

The indices from the CFA show that the data for the OSVS represents a reasonable fit for both the one-factor and the three-factor structures. The three-factor model has slightly higher GFI, AGFI, NFI, NNI, CFI and IFI indices and lower RMR and RMSEA indices, than the one-factor model. However, none of the models is clearly stronger than the other. As is the case with the HSS, the parsimony-adjusted indices (PRATIO, PNFI, PCFI) for the OSVS show that the one-factor solution has a better fit with the data than the three-factor model. The 19-item OSVS is thus not transferable as a three-dimensional instrument to the South African sample. The one-dimensional instrument should still be transferred with caution, and it is advised that researchers using the 19-item OSVS should analyse and reconfirm the instrument structure, particularly when applied to a South African sample.

Limitations from the study include the fact that the sample was rather homogeneous with regard to race, gender, education, religious orientation and strength of religious conviction. The sample can be described as well-educated, professional white Christian women with strong religious convictions. Although this might be representative of the white-collar worker population in the two participating organizations, one may argue that the sample is not representative of the South African demographics, and it does not seem to be much dissimilar to the samples from the Northern American studies. Within the South African context, there is a large diversity of other cultures with different cultural backgrounds and languages, which necessitates validation of the

HSS and the OSVS for such cultures. It also seems dangerous to form a generalization from the results of this study and to apply it to all cultures in South Africa, particularly indigenous African cultures. It is recommended that the current study be extended to include other cultures in South Africa and other countries.

The approach of performing PFA and CFA on data from the same sample, as was done in this study, is not an ideal approach. The significance of the findings and the generalizability of the results would have been stronger if the PFA and the CFA were applied to data sets from different samples. This aspect represents another limitation of this study.

The findings presented here provide valuable information on the transferability of instruments developed in the USA to measure personal spirituality and workplace spirituality when applied to a South African sample. The major contribution of this study is its confirmation of the importance that psychometric instruments be re-validated and 'cleaned' of non-contributing items to minimize error variance before they are applied to new cultures, and that data be subjected to statistical analysis. The fact that even for this carefully selected sample with many 'western' characteristics, one of the items had to be removed from both instruments and a different structure from the original one had to be obtained, emphasizes the necessity of following the above-mentioned procedures. Also, it appears as though psychometric instruments lose their sensitivity to measure different factors or dimensions of a construct when applied to cultures outside the USA, such as South Africa. This is consistent with previous research findings (e.g. De Klerk et al., 2009). Special caution should thus be taken not to assume factors measured by instruments will be transferred when applied to other cultures without confirming their existence statistically.

The rich cultural diversity of the South African society provides great opportunities to do research on the measurement of variables commonly used in psychological research and to assess the transferability of psychometric instruments to other cultures. An immense task lies ahead for behavioural scientists working in an increasingly global environment. It is hoped that the findings presented in this article will lead to more research work, and consequently better understanding in this area.

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