ORIGINAL RESEARCH PAPER

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VALIDATION OF SPIRITUAL COPING STRATEGIES SCALE FOR CLINICAL RESEARCH IN NIGERIA

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ABSTRACT

Background: This cross-sectional exploratory factor analytic study reports on the revalidation of the 20-item Spiritual Coping Strategies (SCS) Scale. The initial test-retest reliability of the original English, Maltese, back-translation and bilingual versions of SCS by Baldacchino was examined using cross-tabulations of each item (pre values with post values). Each of the four versions gave highly significant values of chi-squared (X^2) (p<0.0001) for most of the items. The Cronbach alpha yielded English = 0.81, Maltese = 0.73, Back-translation = 0.79, Bilingual = 0.82 and four versions together = 0.79 (Baldacchino and Buhagiar 2003). The construct validity identifies two factors reflecting positive and negative religious coping strategies. These results indicated that the different versions of the SCS scale have good psychometric properties in the cultural context in which they were validated. However, the transfer of instruments from one cultural setting to another often requires careful analysis as well as cross-cultural revalidation so as to determine their appropriateness. Hence, the need for this study which re-investigated the psychometric properties of the English version of the 20-item Spiritual Coping Strategies (SCS) Scale using factor analytic procedures.

Methodology: Confirmatory factor analytic methods suggested that a hierarchical solution best fit the data, with one overall factor and two lower order factors. The lower order subscales created from this factor solution were examined in a sample of individuals diagnosed with schizophrenia that had received treatment for at least six months, had shown remarkable improvement, were without co- morbid conditions and gave their consent to participate in the study.

Result: Principal component analysis with varimax rotation retaining the factors with eugene values > 1 yielded 4 factors. Two of these factors had no impressive psychometric properties. A two – factor model was then specified using the maximum likelihood extraction method. Overall, the results offered good support for a two factor structure of the scale.

Conclusion: It is concluded that the factor analytic approach adopted here was found adequate and that the findings support the suitability of the instrument for use in the Nigerian environment. Finally, possible interpretational advantages of the two-construct and implications for the use of this measure are discussed.

Introduction

Stress is a normal part of living, but if left unmanaged may become chronic which may be excessive and unhealthy. Ample evidence suggests that stress may predispose one to or precipitate mental disorders and physical illnesses which can significantly interfere with occupational, social, or other functioning (Harold, 2009). Coping is the process of using emotional, cognitive, and/or behavioral strategies to manage one's stress in order to reduce its potential harmful impact on psychological adjustment (Folkman S, Lazarus, 1991; Lazarus, 1993). In the global scene, as well as the African sub-region, religion and spirituality often play important roles in many people's lives, particularly those who are dealing with chronic diseases. This has, therefore, motivated a substantial increase in psychological research about which coping strategies lead to more adaptive responses over the past decades (Paloutzian, & Park, 2005).

Pargament (1997), noting that general coping theorists and researchers have neglected the spiritual and religious dimensions of coping, developed a theory of religious coping which views "religious coping as efforts to understand and deal with life stressors in ways related to the sacred". This theoretical perspective has important implications for the measurement of religious coping which has resulted in several approaches. Each of these approaches is limited in some important respects. One approach assesses religious coping using a few items that ask how often the individual turns to prayer or to a religious congregation in times of stress. These items tap into the "religious channels" people use in stressful situations, but they do not provide information about actual methods of religious coping (*i.e.*, the programs playing on the channels). For example, the knowledge that an individual prays frequently in the midst of a crisis does not specify *why* the individual prays, *when* the individual prays, *where* the individual prays, *how* the individual prays, or *what* the individual prays for—questions all potentially vital to an understanding of the coping function of prayer. It is important to add that researchers have begun to examine more specific aspects of prayer in critical life situations (Ai, Tice, Huang, Rodgers &

Bolling, 2008 and Bade & Cook, 2008).

Another approach embedded a few religious coping items within more general measures of coping, such as the Ways of Coping Scale by Lazarus and Folkman (1984) and the COPE scale by Carver and colleagues (1989). However, this method, at best, covers only a few types of religious coping. This approach can obscure the distinctive contribution that religion makes to the coping process. For example, the item that assesses religious transformational coping in the Ways of Coping Scale ("I found new faith") is subsumed under the larger category of "Positive Reappraisal" (Folkman & Lazarus, 1986).

A third approach focused on studying few types of religious coping methods in greater depth (Boudreaux, Catz, Ryan, Amaral-Melendez, & Brantley, 1995). For example, Pargament and his colleagues (Pargament, Kennell, Hathaway, Grevengoed, Newman & Jones, 1988) conceptualized and measured three ways people can involve religious coping in the search for control: control through oneself (Self-Directing); control through God (Deferring); and control through a relationship with God (Collaborative). Empirical research points to the distinctiveness of these three religious coping styles and supports their discriminant validity in relationship to measures of health and well-being. Again, however, this approach to measurement does not provide a comprehensive picture of religious coping. Most of these methods of measurement have overlooked potentially harmful forms of religious coping and have also considers spiritual coping as consisting mainly of religious coping strategies. These limit spiritual coping solely to believers. The argument that spiritual coping should address both believers and non-believers (Baldacchino & Buhagiar, 2003) has, therefore, resulted in the development of the new Spiritual Coping Strategies (SCS) scale so as to fill the identified research gap.

The Spiritual Coping Strategies (SCS) scale developed by Baldacchino consists of both religious and non-religious coping strategies. It is a 20 items Likert-scale instrument (0 = never used to

4 = often used), each represented by the frequency and helpfulness of both religious and non-religious coping strategies. The scale has a Judeo-Christian orientation and was based on the nursing, psychological, sociological, philosophical and theological literature. The original English, Maltese, back-translation and bilingual versions of SCS were administered on the same cohort group of nursing students (n=55) (mean age of 24.5 years) undertaking the Certificate in Nursing course, during the first semester between October 1999 and mid-January 2000 in class. The test-retest reliability of these four versions was examined using cross-tabulations of each item (pre values with post values). Each of these four versions gave highly significant values of chi-squared (χ^2) (p<0.0001) for most of the items. These cross-tabulations also yielded reasonably high values for Spearman's coefficient of correlation between test and retest. A correlation lying in the range of 0.5 and 1.0 signifies good concordance between test and retest for a given item. The Cronbach alpha of the first test-retest for the different versions of the test yielded English = 0.81, Maltese = 0.73, Back-translation = 0.79, Bilingual = 0.82 and four versions together = 0.79 (Baldacchino and Buhagiar 2003). Therefore, the test–retest reliability and the internal consistency were both satisfactory for the different versions of the SCS scale. The construct validity which identifies the factor analysis with oblique rotation was first performed on the items of the scale, and the scree plot of the eigenvalues showed that two eigenvalues would be enough to describe the variation in the 20 items of the SCS scale and so only eigenvalues above 2.0 were retained. Therefore, the SCS scale consisted of two factors classified as religious and non-religious coping strategies.

However valid, reliable and responsive an instrument may be, its transfer to another cultural setting like Nigeria would require revalidation and careful analysis of its factors so as to determine its appropriateness; hence the need for this study which re-examined the psychometric properties of the English version of the 20-item Spiritual Coping Strategies (SCS) Scale using factor analytic procedures.

Rationale for the Study

Over - reliance on foreign instruments should be discouraged. Inter-cultural measurement of psychological constructs is a concern, as psychometric instruments in one culture are usually not necessarily transferable to different cultures. Cross-cultural adaptation of instruments to patients from a variety of culturally distinct ethnic groups, or geographic areas in sites outside the country in which it was developed requires principal variables such as population's demographics - age, gender, and educational level; the intervention; and the clinical trial design. The instruments being considered must be applicable across countries and cultures. Such measures must have been culturally adapted in the additional country or countries prior to their use (Hun, 1986 and Bullinger & Hasford 1991). Adaptation is the process of maximizing the cultural appropriateness of an instrument and thereby minimizing its bias (Hunt & McKenna, 1992). Items in a cross-cultural instrument are identical across languages when conceptual and semantic equivalence are both present. If the concept exists but not the expression, then the expression must be adapted to the target language. If the expression exists but not the concept, then the item is culture-specific.

It also demands a thorough examination of its psychometric properties. That is such measures should be reliable (or free of measurement error), valid (it should measure what it is supposed to measure), and responsive to change (it should detect true differences or changes in the construct that is being measured over time). A measure found to be unreliable, not valid and unresponsive will not be dependable. Consistency of results from studies testing the psychometric properties of an instrument will support its construct validity which can be measured scientifically across different cultures. However, the extent to which available measures meet these psychometric criteria is highly variable (Stewart & Ware, 1992). There is thus a need for a study of this nature.

Purpose of study

The main purposes of this study are to verify the underlying factor structure of the set of observed variables of the English version of the 20-item Spiritual Coping Strategies (SCS) Scales and to provide a means of explaining variation among the variables (items) using a few newly created variables. The whole idea was to determine the suitability of the instrument in the Nigerian environment.

Materials and Methods

The study is a simple cross-sectional exploratory factor analytic survey research aimed at revalidating the Spiritual Coping Strategies (SCS) scale developed by Baldacchino (2000, 2003). Factor analysis is a multivariate statistical approach commonly used in the development, refinement, and evaluation of tests, scales, and measures that can be used in education and clinical contexts.

Study setting and ethical considerations

The study was conducted in the Psychiatric Outpatient Clinic of the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife, Nigeria. The teaching hospital is located in Osun state in south – western part of the country. This study was approved by the Ethics and Research Committee of the teaching hospital. Written informed consent was obtained from all who took part in the study and it was a cross-sectional study.

Data Source and Sampling

The data were obtained from a total of 82 consecutive patients who were receiving treatment for schizophrenia who met other inclusion criteria and gave their consent for participating in the study. The patients who were included were those who had received treatment for at least six months, had shown remarkable improvement and were without co- morbid conditions.

Procedure

The English language version of the instrument was administered to the patients in the Psychiatric Outpatient Clinic of the Obafemi Awolowo University Teaching Hospitals Complex (OAUTHC), Ile-Ife, Nigeria. Items that were difficult to understand were explained by one of the authors in line with the method of the developer who maintained that to enhance individual responses; the subjects were supervised by a colleague and the researcher.

The socio- demographic characteristics of the patients were obtained; however the main instrument used in this study was the Spiritual Coping Strategies (SCS) scale developed by Baldacchino (2000, 2003). It is a 20 item Likert-scale instrument and each of the items is rated according to the frequency with which it is used (0 = never used, 1 = seldom used (at least once in six months), 2 = sometimes used (at least once a month) and 3 = often used (at least once a day/a week). Thus the total score ranges from 0 to 60 with higher score indicating higher frequency of usage.

Data Analysis

The data were analysed using the SPSS version 20. The data analysis was conducted in three steps. First, we calculated means, proportions, range and standard deviation to provide a description of the sample. Next, the data were subjected to exploratory factor analysis (EFA). The exploratory factor analysis was used to examine the structure of Spiritual Coping Strategies (SCS) Scale. Factor structure refers to the inter-correlations among the variables being tested in the EFA. Convergent and discriminant validity are evident by the high loadings within factors, and no cross-loadings between factors. Convergent validity means that the variables within a single factor are highly correlated. This is evident by the factor loadings. The sufficient/significant factor loading based on the sample size (74) of the dataset is 0.65. The factor analytic procedure allows that the sample in a single study is randomly split in half when the sample size is sufficiently large (Fabringer, Wegener, MacCallum & Strahan, 1999) . An exploratory factor analysis could be performed on one half of the data providing the basis for specifying a confirmatory factor analysis model that can be fit to the other half of the data. To obtain factor solutions in exploratory factor analyses, we used Principal Component Analysis (PCA) as in previous studies. The number of appropriate factors was determined by Kaiser's criteria (eigenvalue > 1 rule)

(Kaiser,1958), the scree test (Cattel,1966) and interpretability of the factors. The principal components analysis (PCA) was used to reduce the information in many variables into a set of weighted linear combinations of those variables. Varimax first developed by Thompson (2004) with Kaiser Normalization was chosen because it yields uncorrelated factors, thereby simplifying the interpretation of the results. It also minimizes number of variables with extreme loadings (high or low) on a factor and makes it possible to identify a variable with a factor. The substantial threshold of the factor loading in each item was determined as .40 or greater.

Results
Participants
Out of the eighty – two subjects who participated in the study, 8 (9.76%) returned incomplete data, while a total of 74 (90.2%) gave completed data and these were used in the analyses. This sample size according to Sapnas and Zeller (2002) is considered adequate for factor analysis. They indeed pointed out that even 50 cases may be adequate for factor analysis. The study's participants ranged widely in age (from 19 to 57 years) and the mean age was 39 years (SD = 10.8). The 39 females who participated in the study comprised 52.7% of the sample and the 35 males comprised 47.3% of the sample. The range of total score on the Spiritual Coping Strategies (SCS) scale was 28.0 – 56.0 with a mean total score of 44.4 (SD = 6.0).

Descriptive statistics of the subscales
The mean scores and respective standard deviations on each of the 20 items in the Spiritual Coping Strategies (SCS) scale are shown in Table 1.

Table 1: Item statistics showing means and standard deviations

| S/N	Item	Mean	Std. Deviation	N
1	Using personal/private prayer	2.7973	.40476	74
2	Maintaining relationship with God and/or higher power, as the source of strength and hope	2.7973	.40476	74
3	Building/maintaining relationship with friends and/or relatives	1.9865	.56114	74
4	Praying with someone else or with a group of people	2.8243	.38314	74
5	Discussing your difficulties, problems with someone else who is or had experienced the same illness	1.9054	.62305	74
6	Using spiritual/religious objects / icons	2.7838	.41447	74
7	Seeing the positive side of your situation	1.9189	.61392	74
8	Hearing radio or watching TV religious music and programmes	2.7838	.41447	74
9	Living day by day hoping that the future will be brighter for you	2.1622	.57403	74
10	Reading spiritual/religious inspirational texts	2.7703	.42353	74
11	Accepting the current situation of your life	1.9054	.55317	74
12	Finding meaning and purpose to live through your illness	1.9459	.63875	74
13	Appreciating the beauty of arts e.g. music, paintings, handcrafts….	1.9324	.58124	74
14	Relating to your relatives and friends by confiding in them	2.0270	.61873	74

15	Attending church for religious practices	2.7973	.40476	74
16	Using reflection as a means of identifying your potentials and strengths	1.7973	.61888	74
17	Helping others as a means of giving love and peace to others	1.8378	.54965	74
18	Trusting in God, hoping that things will get better	2.7703	.42353	74
19	Receiving Communion	2.5946	.52130	74
20	Appreciating nature e.g. sea, sun, plants, flowers……	1.8919	.53807	74

Factor Analysis of the Spiritual Coping Strategies Scale

Results of the Exploratory Factor Analysis (EFA) in SPSS (Table 2).
Principal Component Analysis with varimax rotation, retaining the factors with eugene values > 1 yielded 4 factors, and when we used the criterion of retaining the factors in the sharp descent part of the scree plot we also arrived at 4 factors. With this 4 factor model factors 3 & 4 have only 2 variables each. The rotation converged in 5 iterations.

Figure 1: Scree Plot
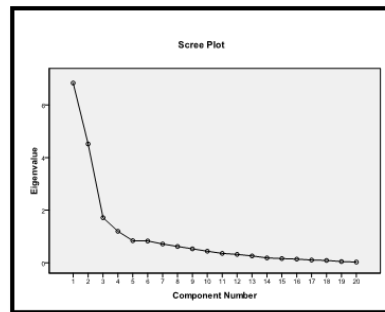
Using the scree plot and retaining all factors with the Kaiser "eigenvalue greater than 1" rule, four factors were generated (Table 2) and these accounted for 71.341% of the common variance.

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 5 iterations.

Table 2: Rotated Component Matrix for Four Factor Model

The significant item loadings are highlighted by Bold.

		Component			
		1	2	3	4
1	Using personal/private prayer	**.933**	-.071	.086	.073
2	Maintaining relationship with God and/or higher power, as the source of strength and hope	**.934**	-.031	-.070	-.034
3	Building/maintaining relationship with friends and/or relatives	-.013	**.899**	.184	.038
4	Praying with someone else or with a group of people	**.872**	-.080	.196	.059
5	Discussing your difficulties, problems with someone else who is or had experienced the same illness	.062	.284	**.871**	.026
6	Using spiritual/religious objects / icons	**.839**	.109	-.091	-.081
7	Seeing the positive side of your situation	.045	.057	**.916**	-.063
8	Hearing radio or watching TV religious music and programmes	**.821**	-.010	.026	.035
9	Living day by day hoping that the future will be brighter for you	.103	.149	-.199	**.714**

10	Reading spiritual/religious inspirational texts	**.870**	-.015	-.078	-.008
11	Accepting the current situation of your life	-.050	.095	.132	**.760**
12	Finding meaning and purpose to live through your illness	.117	**.856**	.095	.009
13	Appreciating the beauty of arts e.g. music, paintings, handcrafts….	-.035	**.828**	.036	.274
14	Relating to your relatives and friends by confiding in them	-.178	**.777**	.023	-.003
15	Attending church for religious practices	**.860**	-.114	.181	.067
16	Using reflection as a means of identifying your potentials and strengths	-.027	**.578**	.136	.104
17	Helping others as a means of giving love and peace to others	-.001	**.759**	.003	.214
18	Trusting in God, hoping that things will get better	**.921**	.018	-.066	.087
19	Receiving Communion	**.612**	-.320	.064	-.077
20	Appreciating nature e.g. sea, sun, plants, flowers……	-.177	**.651**	-.063	-.240

The varimax rotation results of the Spiritual Coping Strategies (SCS) scale show a simple structure that could identify the items to the scale easily. For instance, the factor loadings of the first four items have high coefficients that loaded on the first factor. The factor loadings also fall nicely for the second factor. With this four-factor model, factors 3 and 4 have only two variables each and very low internal consistency as shown by Cronbach's Alpha of 0.393 and 0.283 respectively (Table 3).

Table 3 Reliability Statistics based on the Four Factor Model

S/N	Factor/ whole instrument	No of Variables	Cronbach's Alpha
1	Whole instrument	20	.803
2	Factor 1	9	.726
3	Factor 2	7	.582
4	Factor 3	2	.393
5	Factor 4	2	.283

Maximum Likelihood Extraction Method

A two – factor model was then specified using the maximum likelihood extraction method. Results as presented in table 4 below indicated the rotation converged in 3 iterations. The 2 factors extracted accounted for 53.458% of the variance with factors 1 and 2 having 9 and 11 variables respectively as presented in Table 5 below.

Table 4 Rotated Component Matrix for the Two Factor Model

		Component	
		1	2
1	Using personal/private prayer	**.945**	.001
2	Maintaining relationship with God and/or higher power, as the source of strength and hope	**.910**	-.017
3	Building/maintaining relationship with friends and/or relatives	.040	**.921**
4	Praying with someone else or with a group of people	**.886**	.001
5	Discussing your difficulties, problems with someone else who is or had experienced the same illness	.080	**.379**
6	Using spiritual/religious objects / icons	**.797**	.092
7	Seeing the positive side of your situation	.073	**.176**
8	Hearing radio or watching TV religious music and programmes	**.794**	.011
9	Living day by day hoping that the future will be brighter for you	.112	**.186**
10	Reading spiritual/religious inspirational texts	**.837**	.009
11	Accepting the current situation of your life	-.021	**.172**
12	Finding meaning and purpose to live through your illness	.073	**.834**
13	Appreciating the beauty of arts e.g. music, paintings, handcrafts….	-.064	**.821**
14	Relating to your relatives and friends by confiding in them	-.220	**.726**
15	Attending church for religious practices	**.862**	-.027
16	Using reflection as a means of identifying your potentials and strengths	-.041	**.534**
17	Helping others as a means of giving love and peace to others	-.050	**.724**
18	Trusting in God, hoping that things will get better	**.905**	.052
19	Receiving Communion	**.589**	-.278
20	Appreciating nature e.g. sea, sun, plants, flowers……	-.218	**.541**

Extraction Method: Maximum Likelihood
Rotation Method: Varimax with Kaiser Normalization
Rotation converged in 3 iterations

model Table 5 Reliability Statistics based on the two factor

S/N	Factor/ whole instrument	No of Variables	Cronbach's Alpha
1	Whole instrument	20	.803
2	Factor 1	9	.726
3	Factor 2	11	.650

Table 6: Factor 1 – Religious coping strategies

Item No	Variable
1	Personal Prayer
2	Relationship with God
4	Pray with others / group
6	Spiritual / Religious objects
8	Religious music / program on radio / TV
10	Reading spiritual inspirational texts
15	Attending church for religious practices
18	Trusting in God, hoping that things will get better
19	Receiving communion

Table 7 Factor 2 –Non religious coping strategies

Item No	Variable
3	Build, maintain relationships with relatives and friends
5	Discuss difficulties with one with same illness
7	Seeing positive side of situation
9	Living day by day hoping things will get better
11	Accepting the current situation of your life
12	Finding meaning and purpose to live through your illness
13	Appreciating the beauty of arts e.g. music, paintings and handcrafts
14	Relating and confiding in relatives and friends
16	Self-reflection as a means of identifying your potentials and strengths
17	Helping others as a means of giving love / peace to others
20	Appreciating nature, e.g. sea, sun, plants and flowers

In summary, we would expect a satisfactory exploratory factor analysis if the followings are fulfilled.

(1) Each factor has at least 3 items with moderate high loadings (say greater than 0.4) to be loaded on the factor
(2) The rotated factor solution shows a simple structure that is easily interpretable without cross loadings. That is, only one variable loading high on one factor.
(3) The items that load on the factor are theoretically expected with high loadings.

Discussion

Factor analytic studies have identified that religious coping can be divided into two overarching categories involving positive and negative strategies (Pargament, Smith Koenig, & Perez, 1998). Positive religious coping includes benevolent religious appraisals (e.g., seeing one's situation as part of God's plan), active religious surrender (e.g., doing one's best and then turning the situation over to God), seeking spiritual support (e.g., trusting in God), and spiritual connection (e.g., trying to build a stronger spiritual connection with God or others). By contrast, negative religious coping approaches include reappraisals of God's powers (e.g., concluding that some things are beyond God's control), passive religious deferral (e.g., not doing anything and expecting God to solve all of one's problems), and interpersonal religious discontent (e.g., arguments with members of one's religious community). Positive religious coping is beneficial for individuals undergoing stressful life events, whereas negative religious coping can have harmful implications. Specifically, positive religious coping has been tied to lower levels of emotional distress and psychosomatic symptoms (Pargament, Koenig, & Perez, 2000) and even indices of better physical health (see Koenig, McCullough, & Larson, 2001 for a review).

Negative religious coping, on the other hand, has been tied to higher levels of anxiety and depression (McConnell, Pargament, Ellison, & Flannelly, 2006; Smith, McCullough, & Poll, 2003), decreased self-esteem (Pargament et al., 2003), and posttraumatic symptoms (Harris et al., 2008). These relationships are robust and have remained significant after controlling for demographic variables and general religiousness (Pargament, Ano, & Wachholtz, 2005).

Study limitations and Future Directions

One limitation of our study is sample size. Although data from our sample fit the hypothesized model quite well, future research could use larger sample sizes. However, we note an important value that our study adds is the longitudinal and naturalistic nature of the design: students estimated their achievement goals over time and tasks within one classroom setting.

Given that attrition is problematic with longitudinal designs, we recommend researchers begin with larger sample sizes to provide more power to detect slight variations in item interpretations.

We also recommend more psychometric work on other instruments designed to measure students' achievement goals like the Patterns of Adaptive Learning Scales (Midgley et al., 2000).

Studies are also needed to explore whether slight changes to items that are written for specific tasks, rather than for a specific course, influence item interpretation or construct validity. Psycho metrically sound instruments that can be modified slightly without altering theoretical frameworks are needed to further explore the nature of achievement goals and how those goals influence important educational outcomes.

It is concluded that the factor analytic approach adopted here was found adequate and that the findings support the suitability of the instrument for use in the Nigerian environment.

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