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Research Article

CHRISTIAN SPIRITUALITY SCALE (CSS): DEVELOPMENT AND VALIDATION OF AN INSTRUMENT TO MEASURE CHRISTIAN BELIEFS AND ACTIONS

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A B S T R A C T

Christians pursuing spirituality have used different instruments to measure it. However, different results may be obtained depending on the instrument used. Hence, the purpose of this paper is to combine the strengths of existing instruments to develop and initially validate a Christian Spirituality Scale, following the psychological understanding of conduct. Tested among 211 participants, the final scale contains 34 items that are initially valid and reliable, with a Cronbach's α of .925 for the whole scale, .924 for the Walking with God dimension (behavioral), and. 875 for the Belief in God's Truths dimension (cognitive). The process consisted in content and face validity, construct validity through factor analysis, and reliability through Cronbach's α coefficient. The scale is valid, reliable, and useful for Christian individuals, churches, and organizations seeking to monitor a biblically-based understanding of spirituality that includes both beliefs and actions.

INTRODUCTION

The spirituality construct has been confused and often overlaps with the construct religiosity. Those researchers that see proximity between the concepts posit that religious beliefs are core to spirituality (e.g. Lynn, Naughton, and VanderVeen, 2011), and argue that religiosity is strongly related with spirituality (e.g. Emmons, 1999; Vitell, Keith, and Mathur, 2011). Furthermore, some researchers argue that in some cases spirituality and religion are synonymous, because people look to religious denominations in their quest to have communion with God (Conger, 1994). However, even though "formal religion can encourage spiritual experiences… spirituality and religion are not necessarily one and the same" (Conger, 1994, 12). Additionally, other researchers assert that there seems to be no connection between spirituality and religion, or attempt to differentiate the constructs (e. g. Ashforth and Pratt, 2003; Giacalone and Jurkiewicz, 2003; Mitroff and Denton, 1999). Therefore, for the purpose of choosing the dimensions of spirituality this study will review both spirituality and religiosity dimensions.

Cornwall *et al*. (1986) developed a conceptual model of religiosity, which they empirically tested. The base for that model is "familiar to social psychologists who generally recognize the importance of making a distinction between knowing (cognition), feeling (affect), and doing (behaviour)" (Cornwall *et al*., 1986, 227).

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Their empirical test of the model, done on 1,874 Mormons (Church of Jesus Christ of Latter-Day Saints) in the United States, revealed five dimensions: one cognitive, two affective, and two behavioural. Using Cornwall *et al*.'s (1986) model Parboteeah, Hoegl, and Cullen (2008) empirically tested the relationship between religion and ethics. Using data from the World Values Survey (2000), a large sample of 63,087 respondents from 44 countries, they found support for three dimensions of religiosity and their negative relationship to ethics: cognitive, affective, and behavioural. They argue that a multidimensional model better explains the relationship between religion and ethics than a unidimensional construct of religiosity, such as religion affiliation or church attendance.

Other researchers argue that religiosity can be measured by cognitive and behavioural dimensions, leaving out the affective dimension (McDaniel and Burnett, 1990; Rashid and Ibrahim, 2008). McDaniel and Burnett (1990) posit that religiosity is formed by a belief in God and a commitment to live by God given principles. However, early studies of religiosity have distinguished between religious beliefs, religious feelings, and religious practices (Hall, 1891; Leuba, 1912; Starbuck, 1899).

Recently, following Cornwall *et al*. (1986) and Parboteeah, Hoegl, and Cullen (2008), Biaggi (2013) offered a conceptual model of Christian spirituality formed by three dimensions: cognitive, affective, and behavioral. First, the affective dimension of spirituality is named communion with God, describing a personal relationship between the individual and God. Second, the cognitive dimension of spirituality is labeled believe in God's truths, representing the acceptance by faith of the core beliefs of Christianity. And third, walking with God is

the behavioral dimension of spirituality characterizing the external acts that a follower of Christ exhibits.

Christians pursuing spirituality have used different instruments to measure it. However, different results may be obtained depending on the instrument used. Hence, the purpose of this paper is to combine the strengths of existing instruments to develop and initially validate a Christian Spirituality Scale. Items were chosen based on biblical support, following the psychological understanding of conduct proposed by Biaggi's (2013) conceptual model.

METHODOLOGY

The methods applied to validate the CSS were: 1) generation of an item pool, 2) translational validity: content and face validity, 3) construct validity: factor analysis, and 4) reliability: internal consistency through Cronbach's α.

Generation of an Item Pool

Following Biaggi's (2013) conceptual model of spirituality three indicators were selected for each of the three dimensions:

1. Communion with God (affective dimension): is measured by Bible study, prayer, and meditation (Biaggi, 2013).
2. Belief in God's truths (cognitive dimension): is measured by two indicators proposed by Biaggi (2013) - Bible as supreme authority, and plan of salvation- and a third one that was added -the power of God.
3. Walking with God (behavioral dimension): is measured by witnessing, service for God, and right living (Biaggi, 2013).

To measure these indicators an initial pool of 156 items were selected from existing questionnaires, adapted from existing questionnaires, or were created. The existing questionnaires used for the initial item pool were:

- The Christian Spiritual Participation Profile: Cronbach's α between .84 and .92 (Thayer, 2004).
- The Spirituality Inventory: reliability between .619 and. 713 (Vyhmeister, 2006).
- The Religious Commitment Inventory: Cronbach's α. 95 (Worthington *et al*., 2003).
- Christian Conservatism: reliability of .91 (Stellway, 1973).
- The Spirituality Questionnaire: Cronbach's α between. 78 and .97 (Hardt *et al*., 2012).
- The Dimensions of Religiosity: reliability between. 75 and .88 (Cornwall *et al*., 1986).
- The Intrinsic Religious Motivation Scale: Cronbach's α. 901 (Hoge, 1972).

With the initial item pool a Questionnaire Validation Table was created. The validation table consisted of a conceptual definition for each dimension, and a set of data for each item: indicator, operational definition, questionnaire item, original item (if change is made), reliability score, taken/adapted from, pilot study test, and scale. While the conceptual definitions of each dimension guided in the selection of indicators, the operational definitions of indicators indicated what items were relevant for each indicator. To strengthen the questionnaire 8 items were reversed coded (Weijters and Baumgartner, 2012).

Translational Validity

Content validity

The aim of content validity is to assess that the content of each item is fitting and relevant to the purpose of the study. Content validity reveals whether the content covers a comprehensive array of the attributes under analysis, and is usually done by at least seven experts (DeVon *et al*., 2007; Pilot and Hunger, 1999). Hence, seven experts were chosen in the fields of theology, spirituality, and questionnaire design, and were given the task of reviewing the initial item pool and assessing its conceptual validity. Each expert individually evaluated the applicability of each item using the following scale: applicable, needs revision, not applicable.

Face validity

Face validity is the easiest and weakest form of validity (Parsian and Dunning, 2009) because it involves assessing the questionnaire's appearance in relation of its feasibility, understanding, readability, style, format, and clarity (DeVon *et al*., 2007; Haladyna, 1999; Trochim, 2001). To assess the face validity of the CSS five students and faculty from the target population were purposively selected and were asked to evaluate each item in terms of the clarity of the questions and response options, the form (appears nice and appealing), and the grammar.

Construct Validity

Construct validity indicates the extent to which the statements in a questionnaire are appropriate to measure the significant theoretical construct (DeVon *et al*., 2007; Kane, 2001). Whether translational validity assesses a qualitative differentiation between valid and invalid, construct validity is a rather quantitative assessment (Parsian and Dunning, 2009) that relates the intended variable (construct) to the proxy variable (indicator) (Hunter and Schmidt, 1990). For instance, witnessing and right living were selected as proxy indicators for the behavioral dimension of spirituality. Factor analysis is the tool used to assess construct validity when several items measure one indicator.

To conduct factor analysis the questionnaire was sent to all 585 students and faculty of a Christian institution of higher education in Silang, Philippines. 213 individuals completed the survey, for a response rate of 36.4%. Since 2 observations were deleted because of excessive missing data (more than 10%) (Walker *et al*., 2012), 211 valid responses were used for the validity and reliability tests.

Factor analysis

The statistical method usually used to group items into common clusters is factor analysis. The items' loadings on each factor help to interpret the factors, as well as reduce the number of factors (Bryman and Cramer, 1999). Since the loadings are a measure of relationship between the items and the factors (Bryman and Cramer, 1999), the factors are a group of items that relate to each other. Items that do not relate to each other are exogenous to the construct and ought to be deleted (Munro, 2005).

One of the factor analysis methods is Exploratory Factor Analysis (EFA), which evaluates the relationships among items without defining a specific hypothetical model (Bryman and Cramer, 2005). EFA has the advantage of finding the

highest variance with the minimum number of factors (Delaney, 2005; Munro, 2005). While researchers do not agree on the sample size to use factor analysis, researchers usually recommend at least five respondents per variable (Munro, 2005). Besides abiding by that recommendation, this study used the following criteria:

1. Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy,
2. Bartlett´s Test of Sphericity,
3. Anti-Image Correlation, and
4. Factor loadings and the correlations between items and factors (Hayes, 2002).

Principal Component Analysis (PCA) is the extraction method selected for factor analysis. While Principal Axis Factoring (PAF) (another frequent method of extraction) only examines common variance, PCA has the advantage of analyzing the total variance of a variable (Bryman and Cramer, 2005). Total variance is formed by the specific variance plus the common variance (shared with other variables) (Bryman and Cramer, 2005).

Even though the Kaiser criterion of retaining factors with eigenvalues > 1 is usually used, it has the drawback of misleading from the most accurate number of factors (Gorsuch ,1983; Heppner *et al*., 2006). Hence, the number of factors to extract was fixed to three according to the theoretical framework.

Finally, since the factor correlation matrix, using an oblique rotation method (Promax) with the desired number of factors (3), yielded correlations among factors above .32 (.474, .356, and .352), it was deemed appropriate to choose an oblique rotation method (Tabachnick and Fiddell, 2007). Oblique rotation methods assume factors are correlated (Gorsuch, 1983), which corroborates the interdependence of the dimensions of spirituality. Hence, factors were rotated using Promax, one of the most common oblique rotation methods (Gorsuch, 1983).

Reliability

Reliability indicates the ability of an instrument to measure a construct consistently, and indicates the extent to which items conceptually fit together (DeVon *et al*., 2007; Haladyna, 1999). Since while a questionnaire may be reliable it may not be valid, then both reliability and validity tests are necessary (Beanland *et al*., 1999; DeVon *et al*., 2007). Reliability involves the instrument's standard error, the content's heterogeneity, and the sampling's independence (Cronbach and Shavelson, 2004). The most common reliability measure is internal consistency reliability.

Internal consistency reliability

Internal consistency reliability evaluates the inter-item correlations and the whole instrument consistency. The inter-item correlation indicates the extent to which items conceptually fit together (DeVon *et al*., 2007; Nunnally and Bernstein, 1994). There are two ways of measuring internal consistency. While split-half compares the correlation between two sets of items that measure one construct, Cronbach's α averages all possible split-halfs (DeVon *et al*., 2007; Trochim, 2001). When an instrument is formed by more than one subscale, Cronbach's α should be computed for each subscale and for the full scale (Nunnally and Bernstein, 1994). Hence, Cronbach's α was calculated for each dimension and for the entire questionnaire.

RESULTS

Content and Face Validity

Seven experts assessed the content validity helping to decide whether items were to be accepted, modified, or removed. Some items were removed based on similarity to other items, others where modified for more precision, and others were removed to reduce the number of items, seeking parsimony. As a result, the questionnaire was reduced to 47 items.

Finally, five individuals from the target population evaluated the instrument's face validity, looking at the grammar, aesthetics (online appearance), and clarity. Several items were improved, and the general appearance of the survey was modified according to the recommendations received.

Factor Analysis

To run the factor analysis the missing values (13 out of 9,917) were replaced by the mean (Downey and King, 1998), and small coefficients (below .33) were suppressed. Kaiser-Meyer-Olkin measure of sampling adequacy is .874, above the .5 recommended (Kaiser, 1974). Bartlett´s Test of Sphericity is significant for being less than α (Chi-Square = 5118.478; *df* = 1081; Sig. = .000). Also Measures of Sampling Adequacy (MSA) were calculated to check that all items have an Anti-image Correlation greater than 0.5 (MacCallum *et al*., 1999).
Three factors were extracted (according to the theoretical framework) through Principal Component Analysis (PCA), and rotated using Promax with Kaiser normalization. The first factor was named behavioral (23 items), because 12 behavioral items, and 11 affective items form it. Since the behavioral items had higher loadings, it seems appropriate to name this factor behavioral. A closer look at the affective items reveals that the affective dimension (communion with God) appears to have been measured with behavioral indicators (Bible study, prayer, and meditation) instead of affective ones. Hence, the intended affective items load in the behavioral factor. Moreover, all the 23 items still load on the same factor when EFA is performed only among them forcing the number of factors to 2. The second factor is formed by 11 of the cognitive items.

The third factor includes 7 reversed items. There is much controversy regarding the utility of negatively worded items (Barnette, 2000). In some cases the reverse-worded items reduce "the reliability and validity of a scale, and frequently form a separate method factor that does not appear to be substantively meaningful" (Woods, 2006, 186). Woods (2006) found that if more than 10% of respondents answered reverse-worded items carelessly, researchers tend to "reject a one-factor model for a unidimensional scale" (186). Whatever reason it may be, these items do not correlate with the theoretical factors (behavioral and cognitive) but only among them. Hence, these items were removed from the scale. In addition, 5 items were deleted because they did not significantly (loadings lower than .33) relate to any factor, and one item was deleted for being ambiguous (loaded on both the reversed and behavioral factors). Table 1 presents the 47 items that were factor analyzed.

Table 1 Factor analysis

	Component		
	Behavioral	**Cognitive**	**Reversed**
• I invite unchurched people to attend church or small-group meetings with me.	.889		
• I work with other Christian believers for the purpose of introducing unchurched people to Jesus Christ.	.834		
• When a friend, believer, or neighbor suffers pain, hardship, or loss, I visit them and empathize with them.	.808		
• I have a prayer list of people who need to accept Jesus.	.757		
• I serve in a church ministry or community agency to help people in need.	.739		
• I use my money for missionary work.	.728		
• I try to offer physical or material assistance when I see that somebody is in need, even if I don't know him or her.	.694		
• I encourage others to believe in Jesus.	.679		
• I read or study the Bible to learn the will of God.	.663		
• I reflect thoughtfully on passages I read in the Bible.	.658		
• I meditate upon the adorable character of Jesus Christ.	.603		
• I meditate on spiritual things:	.566		
• I record in a journal my thoughts on my spiritual journey.	.547		
• When I meditate upon heavenly things I feel the peace and comfort of the Holy Spirit.	.517		
• I live a healthy lifestyle.	.505		
Spirituality - Communion with God-I read or study the Bible:	.496		
• I depend on God to help me accomplish the work he calls me to do.	.452		
• I am kind, helpful, and polite with everyone.	.443		
• When I read or study the Bible, I change my beliefs and/or behavior to accommodate new information or understanding.	.440		
Spirituality - Communion with God-I pray:	.432		
• I talk to God in my thoughts throughout the day and feel His company in my activities.	.420		
• In my life I experience the presence of the Divine, and respond to it through prayer.	.394		
• God would be proud of what I do on the computer.	.393		
• The first thing I do in the morning is to talk to God through prayer.			
• I believe Jesus will come back and take me to live with Him.		.885	
• I believe Jesus intercedes for me before the Father.		.804	
• I believe God is my Redeemer.		.801	
• I believe God is the Creator of everything.		.752	
• I believe God is calling me to repentance and to change my sinful behavior.		.750	
• I believe I will live happily forever with God in the new earth that He will make.		.743	
• I believe God sanctifies me by the work of the Holy Spirit in my heart.		.738	
• The Bible is God's message to man and all that it says is true.		.716	
• Even when facing hard times, I believe God has a plan for me.		.593	
• I believe the only means of salvation is accepting Jesus' death in my place.		.563	
• God is the ruling power of history and He guides it providentially.		.509	
• I consecrate my life to God through prayer every day.			
• God's law must be fully obeyed.			
• I believe the Bible is unalterable.			
• I am a professional who should be paid for the "extra mile".			.592
• It feels awkward to tell God my innermost needs and thoughts.			.591
• I tend to be more unkind with my family members than with others.			.533
• I rely more in what the Spirit tells me than in what the Bible says in matters of faith.			.511
• Some people are so bad that God can't love them.			.492
• My lifestyle reveals that I am a follower of Jesus.	.386		.429
• When I study the Bible I get distracted by other matters and forget that I am in God's presence.			.425
• There are commandments that can be substituted.	-.338		.412
• In my Christian journey I find more communion with God in other Christian books than in the Bible.			

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

Internal Consistency Reliability

Reliability of the CSS was calculated based on Cronbach's α coefficient. The coefficient obtained was .925. In addition, Cronbach's α coefficient for the subscales are .924 for the behavioral dimension, and .875 for the cognitive dimension.

DISCUSSION

The Christian Spirituality Scale (CSS) shows appropriate psychometric properties, in terms of 1) translational validity (content and face validity), 2) construct validity (factor analysis), and 3) reliability (internal consistency).

First, content validity, the extent to which the content covers a comprehensive array of the attributes under analysis, was assessed by seven experts (DeVon *et al*., 2007; Pilot and Hunger, 1999). In addition, face validity, the scale's appearance in relation of its feasibility, understanding, readability, style, format, and clarity (DeVon *et al*., 2007; Haladyna, 1999; Trochim, 2001) was evaluated by five respondents from the target population. Second, factorial validity was assessed through Principal Component Analysis (PCA) with an oblique rotation (Promax), after assessing the inter-correlation between the factors (Tabachnick and Fiddell, 2007). The two factors that were retained (behavioral and cognitive) are strong and clearly discriminated (Meezenbroek

et al., 2012). The items that loaded in two factors were deleted, as well as the items that did not sufficiently load on any factor (Munro, 2005). And third, the full scale (α = .925) and the two subscales (α = .924 and .875) enjoy good levels of reliability as measured by Cronbach's α, indicating that the items conceptually fit together (DeVon *et al*., 2007; Trochim, 2001).

In addition, the CSS presents some other qualities. First, it intends to be compatible with a broad range of Christian denomination. Second, the item formulation appears to be short and easy to understand, avoiding abstract and undefined words (Meezenbroek *et al*., 2012). Third, it seems that the items do not confuse spirituality with well-being and distress (Meezenbroek *et al*., 2012). And fourth, it has a reasonably number of items (34 items).

The CSS is a two-dimensional scale that measures the behavioral and cognitive aspects of Christian spirituality, and is formed by 34 items: 23 items in the behavioral dimension, and 11 items in the cognitive dimension (see Table 2). The behavioral dimension, Walking with God, is measured by 23 items that gauge 6 indicators: witnessing (5 items), meditation (5 items), service for God (4 items), right living (3 items), Bible study (3 items), and prayer (3 items). On the other hand, Belief in God's Truths (cognitive dimension) is measured by 11 items that focus on 3 indicators: the plan of salvation (6 items), the power of God (4 items), and the Bible as supreme authority (1 item).

Table 2 The Christian Spirituality Scale (CSS)

(1) Bring With God (behavioral)

(2)	**N**	**VR**	**R**	**O**	**F**	**VF**
1. I encourage others to believe in Jesus.						
2. I work with other Christian believers for the purpose of introducing unchurched people to Jesus Christ.						
3. I invite unchurched people to attend church or small-group meetings with me.						
4. I use my money for missionary work.						
5. I have a prayer list of people who need to accept Jesus.						
6. I serve in a church ministry or community agency to help people in need.						
7. When a friend, believer, or neighbor suffers pain, hardship, or loss, I visit them and empathize with them.						
8. I depend on God to help me accomplish the work he calls me to do.						
9. I try to offer physical or material assistance when I see that somebody is in need, even if I don't know him or her.						
10. I am kind, helpful, and polite with everyone.						
11. God would be proud of what I do on the computer.						
12. I live a healthy lifestyle.						

	Never	**A few times a year**	**A few times a month**	**A few times a week**	**Less than 15 minutes a day**	**About 15 to 30 minutes a day**	**More than 30 minutes a day**
13. I read or study the Bible:							
14. I pray:							
15. I meditate on spiritual things:							

	N	**VR**	**R**	**O**	**F**	**VF**
16. I read or study the Bible to learn the will of God.						
17. When I read or study the Bible, I change my beliefs and/or behavior to accommodate new information or understanding.						
18. In my life I experience the presence of the Divine, and respond to it through prayer.						
19. I talk to God in my thoughts throughout the day and feel His company in my activities.						
20. I reflect thoughtfully on passages I read in the Bible.						
21. I meditate upon the adorable character of Jesus Christ.						
22. When I meditate upon heavenly things I feel the peace and comfort of the Holy Spirit.						
23. I record in a journal my thoughts on my spiritual journey.						

(2) Belief in God's Truths (cognitive)

	SD	**D**	**NS**	**A**	**SA**
24. I believe God is the Creator of everything.					
25. I believe God is my Redeemer.					
26. Even when facing hard times, I believe God has a plan for me.					
27. God is the ruling power of history and He guides it providentially.					
28. The Bible is God's message to man and all that it says is true.					
29. I believe God is calling me to repentance and to change my sinful behavior.					
30. I believe God sanctifies me by the work of the Holy Spirit in my heart.					
31. I believe the only means of salvation is accepting Jesus' death in my place.					
32. I believe Jesus intercedes for me before the Father.					
33. I believe Jesus will come back and take me to live with Him.					
34. I believe I will live happily forever with God in the new earth that He will make.					

N, VR, R, O, F, VF = Never, Very Rarely, Rarely, Occasionally, Frequently, Very Frequently.
SD, D, NS, A, SA = Strongly Disagree, Disagree, Not Sure, Agree, Strongly Agree.

Limitations

The study presents some limitations. 1) Despite the effort to measure the three psychological dimensions of conduct (affective, cognitive, and behavioral), only two dimensions emerged from factor analysis (behavioral and cognitive). A closer look at the intended affective items reveals that the affective dimension (Communion with God) appears to have been measured with behavioral indicators (Bible study, prayer, and meditation) instead of affective ones. Hence, the proposed affective items loaded in the behavioral factor, and this dimension is not present in this scale. 2) The data was collected from mainly one Christian denomination; hence, it is not representative of Christianity. 3) Since the scale was not compared with other measures of spirituality, convergent validity cannot be demonstrated (Meezenbroek *et al*., 2012). 4) Since data was collected at one time only (no test-retest) and one source only, the results may suffer from common method bias (Podsakoff *et al*., 2003). And 5) there was no confirmation of the factors through structured equation modeling (SEM) or Confirmatory Factor Analysis (CFA) (Meezenbroek *et al*., 2012; Parsian and Dunning, 2009).

Recommendations

The following recommendations are warrantedto strengthen the validity of the scale in further research. First, it is recommended to create well-formulated items that measure the missing affective dimension. Second, the tool may be tested in a wider range of Christian denominations, to assess its inter-faith validity. Third, future research may use it along other widely accepted spirituality questionnaires, to demonstrate its convergent validity. Fourth, the stability of the responses over time and common method bias may be assessed through a test-retest method. And fifth, future research may corroborate the dimensions of the scale through SEM and CFA

CONCLUSION

The final scale contains 34 items that are initially valid and reliable, useful for Christian churches and organizations seeking to measure spirituality at the individual and collective level. In line with the psychological understanding of conduct, this questionnaire partially corroborates Biaggi's (2013) conceptual model of spirituality with two interrelated dimensions: walking with God (behavioral), and belief in God's truths (cognitive). Thus, the Christian Spirituality Scale (CSS) is a reliable instrument that can be used to assess the level of spirituality among Christians whose aim is to monitor a biblically-based understanding of spirituality that includes both beliefs and actions.

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