
Original Article

Measurement and meaning of religiosity: A cross-cultural comparison of religiosity and charitable giving

Received (in revised form): 28th March 2012

Anil Mathur

is Brodlieb Distinguished Professor of Business at the Frank G. Zarb School of Business, Hofstra University, New York. He is co-author of *Baby Boomers and their Parents: Surprising findings about their Lifestyles and Well-Being* (Paramount Publishing) and *The Maturing Marketplace: Buying Habits of Baby Boomers and their Parents* (Quorum Books). He has also authored or co-authored over 75 articles and papers that have been published in scholarly journals and conference proceedings.

ABSTRACT The present study attempts to establish measurement invariance of a scale to measure religiosity across two diverse cultures with samples from India ($N=201$) and the United States ($N=144$). A series of confirmatory factor analyses were carried out to establish measurement invariance. Results indicate that the religiosity scale is a reliable scale and could be used in culturally diverse countries. Correlation analysis also shows that the meaning people attach to their religiosity and their behaviors might be influenced by their culture. Implications of the findings are also discussed.

Journal of Targeting, Measurement and Analysis for Marketing (2012) 20, 84–95. doi:10.1057/jt.2012.6; published online 30 April 2012

Keywords: religiosity; cross-cultural research; measurement invariance

INTRODUCTION

Religiosity and the practice of religion are not only integral parts of one's culture, but in many situations, they define the core of a cultural belief system of the members of the society. Religiosity has been of interest to social scientists for almost a century. Early studies on religiosity go back to the early twentieth century.¹ Religiosity is known to have an influence on the behavior of consumers and various aspects of life satisfaction and well-being.^{2–5} Although many studies have explored the impact of religiosity on consumer behavior across different countries, there is no

agreement about the conceptualization of religiosity across countries. Understanding similarities and differences in consumer behavior across countries is becoming increasingly important for global companies. Since religiosity represents a key component of a country's culture, understanding religiosity across cultures can provide valuable insights into similarities and differences across culture. In view of this, the present research attempted to establish measurement invariance of a scale to measure religiosity and test for its relationship with a few key variables to help establish its construct equivalence.

For establishing measurement invariance of religiosity, two culturally different countries were selected: India and the United States. The selection of these two countries was guided by

Correspondence: Anil Mathur
Marketing and International Business, 134 Hofstra University, Hempstead,
New York 11549, USA
E-mail: Anil.Mathur@hofstra.edu

many factors. A major consideration was also given to cultural differences and the unique characteristics of these countries with potential impact on religiosity of the residents of these countries. There are many similarities between these countries that are likely to be relevant to the measure of religiosity. Both are thriving democracies; the United States is the oldest democracy and India is the largest democracy in the world. Moreover, both guarantee many fundamental rights to their citizens. The most important is the freedom to believe and practice any religion citizens may want to practice. In both of these societies, one could expect people to express their religious beliefs freely and practice their religion without any barriers. The selection of these two countries to study religiosity was also driven by the fact that there is significant diversity in the religious beliefs among residents of these two countries. Also, countries that characterize themselves as based on one religion (for example, many countries in the Middle East) or those that are officially atheist (for example, China) were not considered because the expression of religiosity and its practice is likely to be influenced by external factors in those countries.

The differences between the cultures of these two countries are also likely to play an important role that warrants investigation. Over 80 per cent of Indians are Hindus,⁶ a religion that reportedly originated more than 5000 years ago. Principles of Hinduism are deeply embedded in the Indian culture and impact the day-to-day behavior of the people in many subtle ways. On the other hand, a majority of Americans are Christians (76.8 per cent).⁶ Mormons, Jews and Moslems represent less than 2 per cent each of the total American population. Although there is a clear separation of church and state in the United States, preconceptions of God as the main driving force in the nation date back to the founding of the country. On the basis of these differences in religious practices of the people living in the United States and India, it was felt that these two countries would present ideal conditions to examine the properties of religiosity scale and study its correlates. Finally, the ease with which

the principal investigator could collect data in these two countries played a role.

The main objective of this study was to establish measurement invariance of the religiosity construct across the United States and India. In an attempt to establish construct invariance, several correlates of religiosity are also examined across these two countries.

BACKGROUND

Religiosity

Religion has played an important role in the life of human beings from ancient times. Unable to understand or explain the complexities of nature, early humanity sought answers through their religious beliefs.⁷ Over the years, many different religions have emerged with their core beliefs, values, practices and rituals. However, among social scientists, there has been a considerable debate about the conceptualization and measurement of religiosity. While some scholars have conceptualized religiosity as a multi-dimensional construct,^{8,9} others have argued that religiosity represents a single construct. Wulff presents a review of the debate.¹⁰ Arguments have also been presented whether the treatment of religiosity as a single dimensional construct or a multidimensional construct should be based on the objective of the research.¹¹ Despite this debate, there is some degree of agreement that religiosity comprises three integral components: affiliation, activity (attendance or participation in religious activities) and corresponding beliefs. Also, this agreement does not imply that there is consensus about the measurement of religiosity. Hill and Hood have compiled a long list of scales to measure religiosity and related constructs.¹² Moreover, studies attempting to establish measurement invariance of a scale of religiosity could not be located. For the purpose of the present research, we conceptualize religiosity to be a single dimensional construct. Similar to the argument presented by Schwartz and Huisman,¹³ it is desirable to consider religiosity as a single dimensional construct because this research is focusing on evaluating

measurement invariance of a scale to measure religiosity and the samples are drawn from heterogeneous populations.

Covariates of religiosity

In this study several covariates of religiosity are also examined to help establish its construct equivalence across the two countries. If the construct of religiosity exists across cultures and is equivalent in these two cultures, it is also expected to show a similar pattern of relationships with other variables across the two cultures. Several studies have used religiosity as an antecedent variable that can be used to explain a multitude of behaviors.¹⁴ Of particular interest to religious organizations and non-profit organizations is its association with charitable giving. A vast number of studies have found a positive relationship between church membership and church attendance with charitable giving.^{15–20} However, such a relationship is not universal in nature. Some studies in Australia have found no or a negative relationship between religious behavior and charitable giving.^{20,21} Other studies have also focused on religious denomination and the differences in charitable giving across members of different religious denominations.^{22,23} However, there is a general scarcity of studies that examine the relationship between religious feelings and the practice of individuals belonging to different religions and their philanthropic behavior.

On the basis of an extensive review, Bekkers and Weipking²⁴ concluded that there is a need to do additional research to understand cross-national differences in philanthropy. In addition to understanding the relationship of religiosity with charitable giving, it is important to understand underlying motivations for charitable giving. The review by Bekkers and Weipking²⁴ also suggests that motivations for charitable giving include helping others (altruism), religious beliefs, giving back to society, being asked and need to control. Therefore, the present research also attempts to see if there are any differences in the relationship between religiosity and different motivations for charitable giving.

Procedure for testing measurement invariance in cross-cultural research

In any cross-cultural research, it is important to establish that the scales used to measure constructs are the same across cultures before they can be used to understand cross-cultural differences and similarities or to test substantive theory. Although several different approaches can be taken to establish invariance of a measure across cultures, a simple and systematic process was developed by Steenkamp and Baumgartner (S&B).²⁵ The process involves doing a series of confirmatory factor analyses while progressively increasing restrictive conditions with each step. The results of the analysis at each step guide the analysis to be carried out in subsequent steps. These steps in the process are described in the following paragraphs.

The first step involves testing for the equality of covariance matrices (Σ s) across study groups. Although in most cross-cultural research it is expected that the covariance matrices would not be the same across cultures, this test is important because if the covariance matrices are equivalent, the data from different groups can be combined and used in substantive theory testing without any additional consideration. However, if the test for the equivalence of covariance matrices suggests that they are not equivalent, subsequent testing has to be done to establish measure invariance.

The second step in the S&B process involves testing for full configural invariance. This is to test if the data from different groups have the same pattern of factor structure. That is, the pattern of non-zero and zero factor loadings of the instrument under investigation is the same across groups. The S&B procedure also suggests that if full configural invariance cannot be established, some of the loadings could be allowed to vary and a partial configural invariance model be tested. However, care should be exercised while relaxing any condition in this step or any subsequent step. Only those parameters that could be justified based on theoretical or practical considerations should be allowed to vary.

The third step in the S&B process involves testing for full metric invariance. This is done

by forcing all factor loadings to be identical across groups. However, if the full metric invariance model does not fit, a partial metric invariance model should be tested by freeing up factor loadings to vary. Modification indices can be examined to identify specific factor loadings that should be set free to improve the fit of the model.

The fourth step involves testing for scalar invariance. This is done by forcing measurement intercepts to be the same across all groups. However, if the model for full scalar invariance is not supported, the model for partial scalar invariance can be tested by freeing appropriate intercepts. Modification indices should be examined to identify the intercept that should be set free. Generally, the intercept with the highest modification index should be set free at each stage.

The fifth step in the S&B process involves testing for full factor covariance invariance. This is done by restricting all factor covariances to be identical across groups. If this cannot be supported, a partial factor covariance model can be tested by freeing up appropriate factor covariance to improve the overall fit of the model.

The sixth step involves testing for factor variance invariances across groups. If this cannot be fully established, some of the variances could be set free and a partial factor invariance model be tested.

The final step involves testing for error variance invariance. This is first done by setting all error term variances and covariances to be identical across groups. However, if this cannot be established, some error term variance and/or covariances can be set free to test for a partial error variance invariance model.

It is important that care be exercised while freeing up parameters to test for partial invariance models at any stage. Modification indices provided by most structural equation modeling programs can be examined to identify the parameters that would most improve the fit if set free. In almost all cases, the parameter that would yield the most improvement in the overall fit of the model is selected. However, only those

parameters that can be justified based on theoretical or practical grounds should be set free. When the primary focus of the cross-cultural research is to establish relationships among variables, it is essential to establish full or partial metric invariance (S&B). S&B also suggest that when the research objective is to compare scale scores across groups, scalar invariance should also be established. Finally, when the objective of the research is to compare correlations of constructs across groups, factor invariance and metric invariance are desirable. Although differences in error variances show differences across groups, they can be incorporated in the model to avoid any problems in the analysis.

METHOD

Data collection

The data were collected from one Asian country, India, and one Western country, the United States, using convenience samples. As the primary objective of this research was to assess measure invariance of the religiosity construct and to identify some of its correlates and not to estimate population parameters, the use of convenience samples was acceptable and did not cause any negative impact on findings.

Data collection in India was carried out in Chandigarh, a large city in the northern part of the country. The city had an estimated population of 1.368 million in 2010 and had a high literacy level (above 80 per cent).²⁶ This city is very unique because it is the capital of two states, but the city itself is governed by the Central Government of India as a Union Territory. Young individuals with a college education were recruited to serve as field workers. These field workers recruited potential participants from various parts of the city and approached them at their place of work or residence. Potential participants were requested to complete the survey. Participants completed the survey while field workers waited. Each participant was given a box of candy (worth approximately US\$2.00) for his/her participation. Field workers were also compensated for their work. A total of 201 completed surveys were

received in this manner. Although English is not a native language of India, it is widely used in government, business and higher education. Also, urban residents generally have a higher level of education and are more proficient in English. As most of the participants from India had a college degree or higher, the use of an English language survey did not pose any difficulty.

Data collection in the United States was carried out with the help of students enrolled in marketing classes in a private suburban university in the metropolitan New York area. As a part of class assignment, several aspects of research methods were discussed (for example, questionnaire design, measurement scales, sampling, data collection). The survey questionnaire was used as an example to illustrate different aspects of research. Later, students were given an opportunity to participate in the study as field workers for data collection. Students were requested to take the questionnaires and ask their family members, neighbors or co-workers to complete the survey. They were also instructed to seek only one participant from a family. Completed questionnaires were collected by the students and returned to the researcher. The students received class credit for their work as field data collectors. A total of 144 completed surveys were received in this manner and were used for the analysis.

The demographic profile of the samples from the two countries is presented in Table 1. As shown in the table, there were relatively more young individuals (under 35 years of age) in the American sample (24.6 per cent) compared with the Indian sample (13.4 per cent). However, the mean age of the respondents from the two countries was almost the same (India = 45.99 years, United States = 45.38 years). Although both samples had a majority of female participants, the percentage of females in the Indian sample was lower (53 per cent) compared to that in the American sample (59.3 per cent). A vast majority of respondents in the Indian sample were married for the first time (87.8 per cent); on the other hand, only 54.5 per cent of American participants were married for the first time. Only a small percentage of the Indian participants were

Table 1: Demographic profile of the samples

	India (N=201) (%)	United States (N=144) (%)
<i>Age</i>		
Under 35	13.4	24.6
35–44	36.4	10.9
45–54	26.8	36.2
55 and above	23.4	28.3
<i>Gender</i>		
Male	47.0	40.7
Female	53.0	59.3
<i>Marital status</i>		
Married first time	87.8	54.5
Remarried	4.1	4.2
Widowed/Separated or divorced	2.5	11.9
Never married	5.6	29.4
<i>Employment status</i>		
Employed full-time	65.7	66.0
Employed part-time	4.5	17.0
Retired/Not employed	29.8	17.0
<i>Education</i>		
High school or less	13.7	16.1
Some college	9.6	28.0
College completed	7.1	26.6
Some graduate study or graduate degree	69.7	29.4

Note: Percentages may not add up to 100 per cent because of rounding.

unmarried (5.6 per cent) whereas 29.4 per cent of American participants were unmarried. Although the proportion of the participants that were employed full-time was very similar across the two samples (India = 65.7 per cent, United States = 66.0 per cent), the difference was more pronounced for those who were employed part-time (India = 4.5 per cent, United States = 17.0 per cent) and those who were retired/not employed (India = 29.8 per cent, United States = 17.0 per cent). Finally, a significant majority of Indian participants reported attending graduate school or attaining a graduate degree compared with American participants (India = 69.7 per cent, United States = 29.4 per cent).

Measures

Religiosity, the key construct being investigated, was measured by using a modified version of the scale developed by Wilkes *et al.*⁹ The original

scale has four items measuring mosque/church/temple attendance, importance of religious values, self-reported religiousness and importance of religious beliefs. Two additional items were included that asked the respondents to indicate if they believed in God, and their feeling that their country could be a better place if people were more religious. Collectively, these six items covered the three components of religiosity: affiliation, activity and beliefs. Moreover, the wording of two items was slightly modified to make them suitable with local norms in each country. For example, the list of religious places was modified to include 'synagogue' for American respondents because it was expected that many potential respondents would be of Jewish faith. Similarly, the list was modified to include 'gurudwara' for the Indian sample, because it was expected that many potential respondents would be of Sikhism faith. For followers of Sikhism, gurudwara represents a holy religious place of worship. Respondents were asked to indicate on a five-point LIKERT scale, the extent to which they agreed with each of the six statements (1 = strongly agree, 5 = strongly disagree). All items in the scale were reverse-coded so as to ensure a higher score on the religiosity scale represented a high degree of religiosity. All six items in the scale are presented in the Appendix. The mean and standard deviations of the raw religiosity scale were as follows: India = 22.23, SD = 3.41; United States = 19.10, SD = 6.34. Descriptive statistics and reliabilities of all scales used in the study are presented in Table 2.

Besides establishing measurement invariance of the religiosity scale, another objective of this study was to examine a few correlates of religiosity. Also, it was desired to see how these relationships differ across the two countries. Altruistic behavior was measured by using the scale developed by Rushton *et al.*²⁷ The original scale has 20 items. Six of the original items were removed, because they were not currently relevant in the countries being studied. Respondents were asked to indicate the extent to which they agreed with each of the 14 statements on a five-point LIKERT scale (1 = strongly agree,

Table 2: Descriptive statistics of scales used

	India	United States	Significance
Religiosity	22.23 (3.41)	19.10 (6.34)	0.000
α	0.720	0.916	
Altruistic behavior	32.24 (8.15)	40.74 (10.01)	0.000
α	0.810	0.870	
Charitable contributions to religious organizations	0.35 (0.66)	0.84 (1.20)	0.000
Control and recognition motivations	4.47 (3.51)	3.22 (5.31)	0.044
α	0.835	0.879	
Helping others and feeling good motivations	3.41 (2.00)	6.56 (5.59)	0.000
α	0.689	0.811	

Note: Table entries are mean values for each sample. Standard deviations are in parentheses. Significance values correspond to the main effects of country in ANOVA tests. In all ANOVA tests, age, sex, marital status, education and employment status were also included as covariates.

5 = strongly disagree). All responses were appropriately reverse-coded to ensure a high score on the scale represented a high degree of altruistic behavior. The reliability (alpha) of the scale was acceptable (India = 0.810, United States = 0.870). Items in the altruistic behavior scale are presented in the Appendix.

Motivations for charitable giving were measured by asking the respondents to indicate their reasons for contributing money, material possessions and their time to four types of charities: health charities, charity for the needy, religious organizations and environmental/animal charities. Respondents could check off as many different recipients as applicable for each of the 16 different reasons. Each check-off was coded as 1 (yes) or 0 (no). Responses for each reason were summed to create its measure on a 0–4 point scale. All 16 reasons were then factor analyzed to group them into appropriate underlying motivations. Two factors emerged out of this analysis: need for recognition and control (10 items) and need to help others and feel happy

(6 items). Responses to the 10-item recognition and control motivations scale were summed to represent its measure on a 0–40 point measure of recognition and control motivations for charitable giving. The scale had acceptable reliabilities (alpha) in both samples (India = 0.835, United States = 0.879). Similarly, responses to the six items in the helping others and feeling good motivations scale were summed to obtain a 0–24 point measure of helping others and feeling good motivations for charitable giving. The scale had an acceptable reliability (α) in both samples (India = 0.689, United States = 0.811). Items used for the two motivation scales are presented in the Appendix.

Charitable giving to religious organizations was measured by asking the respondents to indicate if they had given a portion of their income, time, material possessions or had purchased gifts for any religious organizations. Their responses were coded as 1 (yes) or 0 (no). Responses to all four categories were summed to obtain a 0–4 point measure of charitable giving to religious organizations behavior. As different people may contribute different things to charitable organizations, internal consistency was not expected among these items. Therefore, internal consistency reliability was not assessed for charitable giving to religious organizations.

All but one relationship among expected correlates of religiosity showed a consistent pattern across the two countries. While the correlation between altruistic behavior and

charitable contribution to religious organization was positive for the American sample, the relationship was not significant for the Indian sample. Relationships between correlates of religiosity are given in Table 3.

Analysis and results

Measurement invariance of religiosity

Invariance of the measure for religiosity across the two countries was assessed by the procedure outlined by S&B. As originally developed, the religiosity construct was modeled as a single-factor construct with six indicators. In line with the S&B procedure, a series of structural equation models were tested with progressively more restrictive conditions by using the program LISREL 8 and its associated program PRELIS 2.²⁸ Multiple indicators were used to assess the overall fit of the model.²⁹ These indicators of the overall fit included: χ^2 and associated significance level, root mean square of approximation (RMSEA), consistent Akaike information criterion (CAIC), comparative fit index (CFI), normed fit index (NFI) and non-normed fit index (NNFI). Generally, a low value for χ^2 and a *P*-value of 0.05 or above would indicate the model fit the data. For other indicators, a value of 0.9 or above for indicators like CFI, NFI and NNFI and a value of 0.05 or less for RMSEA would also indicate a good fit of the model. When models are compared to see which model fits better, a significance level of the change in χ^2 could be

Table 3: Selected correlates of religiosity

	1	2	3	4
1 Altruistic behavior	1.000 (1.000)	–	–	–
2 Charitable contribution to religious organizations	0.006 (0.335*)	1.000 (1.000)	–	–
3 Control and recognition motivations	0.367* (0.242**)	0.357* (0.407*)	1.000 (1.000)	–
4 Helping others and feeling good motivations	0.172*** (0.483*)	0.227* (0.582*)	0.664* (0.506*)	1.000 (1.000)

****P* < 0.05, ***P* < 0.01, **P* < 0.001.

Note: Table entries are Pearson correlations for the Indian sample. Corresponding correlations for the American sample are given in the parentheses.

Table 4: Model comparison

	χ^2	<i>df</i>	<i>RMSEA</i>	<i>CAIC</i>	<i>CFI</i>	<i>NFI</i>	<i>NNFI</i>
Equality of Σ^9	197.73	21	0.19	370.45	0.89	0.88	0.84
Configural invariance	102.16	18	0.15	333.13	0.95	0.94	0.91
Full metric invariance	110.66	23	0.14	309.46	0.94	0.93	0.93
Partial metric invariance	Not needed						
Full factor variance invariance	119.20	24	0.14	311.06	0.94	0.93	0.93
Partial factor variance invariance	As there are only two groups this model is the same as full metric invariance model						
Full error variance invariance	268.59	29	0.20	402.26	0.85	0.83	0.84
Final partial error variance invariance	22.68	17	0.043	274.64	1.00	0.99	0.99

examined. Also, the model with the lower value for CAIC is considered better in terms of the fit of the model.

As shown in Table 4, the test of the equality of covariance (Σ s) yielded a χ^2 of 197.73 with 21 degrees of freedom ($P < 0.001$), a RMSEA of 0.19, CAIC of 370.45, CFI of 0.89, NFI of 0.88 and NNFI of 0.84. All indicators suggest that the model did not fit and that the covariances are not identical across the two countries. Therefore, additional analysis is desirable to establish measurement invariance of the religiosity scale.

The test for configural invariance is based on the contention that a similar factor structure would exist in all groups. This test produced χ^2 of 102.16 ($df = 18$). Although the χ^2 test was significant ($P < 0.001$), other indicators suggest an improved and acceptable fit of the model (RMSEA = 0.15, CAIC = 333.13, CFI = 0.95, NFI = 0.94, NNFI = 0.91). Moreover, all factor loadings were significant in both countries.

In the next step, another constraint was introduced by forcing the factor structure to be identical across the two countries (full metric invariance). This model produced a χ^2 of 110.66 ($df = 23$), RMSEA = 0.14, CAIC = 309.46, CFI = 0.94, NFI = 0.93, NNFI = 0.93. Although there was an increase in χ^2 from the previous model (configural invariance model), it was insignificant ($\Delta\chi^2(5) = 8.50$, n.s.). Some other indicators also suggest a slight improvement in the fit of the model (reduction in RMSEA and

CAIC). Modification indices for factor loadings for the two groups were also examined to see if the overall fit of the model could be improved by freeing some factor loading. As all modification indices for factor loadings were below the generally acceptable threshold (5.0) that would warrant freeing of a parameter to improve the fit, a test of partial metric invariance was not performed. In view of this, the full metric invariance model was deemed to be acceptable.

According to the S&B procedure, the next step is to test for scalar invariance, which tests if the intercepts are identical across the groups under investigation. However, this test was not performed in the present case because the samples from the two countries were not matched on demographic and other characteristics that might have an impact on religiosity. Therefore, in the present study, it was assumed that the samples could differ in terms of their construct latent means.

The following step in the S&B procedure involved testing for invariance of factor variances. Factor variances were restricted to be identical across the two groups to test the full factor variance invariance model. This model produced a χ^2 of 119.20 ($df = 24$). Although the χ^2 was significant ($P < 0.001$), other indicators suggested an acceptable fit (RMSEA = 0.14, CAIC = 311.06, CFI = 0.94, NFI = 0.93, NNFI = 0.93). A review of the modification index for the variance for India suggested that the overall fit would be

better if it were allowed to be free. Therefore, the variance of the latent construct was allowed to vary across the two groups and the full factor variance invariance model was not considered. As this study involved only two groups, the partial factor variance model was equivalent to the full metric invariance model.

The test for error variance invariance is the last step according to the S&B procedure. To achieve this, error variances and covariances were constrained to be identical across the two countries. The full error variance invariance model produced a significant increase in χ^2 as compared with the full metric invariance model ($\Delta\chi^2(6) = 157.93, P < 0.01$). This implies that the religiosity scale does not exhibit full error variance invariance across the two countries. A review of modification indices suggested that the overall fit of the model could be improved by freeing some of the error variances and covariances among error terms. Therefore, variances in some error terms and their covariances were set free (one at a time as suggested by their corresponding modification indices). The model was tested repeatedly by freeing up an additional variance/covariance and the overall fit of the model was examined. The final model, after freeing up 12 variances/covariances, produced a χ^2 of 22.68 (df=17). The decrease in χ^2 for partial error variance invariance model as compared with the full error variance invariance model was significant ($\Delta\chi^2(12) = 245.91, P < 0.01$), suggesting that the partial error variance invariance model was a better fit. All other indicators suggest that the partial error variance invariance model had the best fit of all models (RMSEA = 0.043, CAIC = 274.64, CFI = 1.00, NFI = 0.99, NNFI = 0.99). Reliability estimates of the religiosity constructs and the final model parameters for the two countries are presented in Table 5. As shown in the table, reliabilities (ρ_{η}) of the religiosity scale was high in both countries (India = 0.896, United States = 0.946). The average variance extracted ($\rho_{vc(\eta)}$) for the religiosity scale was also acceptable for both countries (India = 0.594, United States = 0.748). These findings suggest that the religiosity scale

Table 5: Final parameter estimates for religiosity

	India	United States
<i>Factor loadings</i>		
λ_{x1}	0.82	0.82
λ_{x2}	0.72	0.72
λ_{x3}	0.88	0.88
λ_{x4}	0.78	0.78
λ_{x5}	0.65	0.65
λ_{x6}	0.58	0.58
<i>Error variances</i>		
δ_1	0.44	0.17
δ_2	0.58	0.36
δ_3	0.34	0.05
δ_4	0.53	0.18
δ_5	0.71	0.39
δ_6	0.80	0.48
Latent construct variance	0.81	1.27
Reliability (ρ_{η})	0.896	0.946
Average variance extracted ($\rho_{vc(\eta)}$)	0.594	0.748

Note: Table entries are common metric completely standardized parameter values. All parameters are significant at $P < 0.05$ level.

was reliable in both the countries and could be used for substantive theory testing.

Correlates of religiosity

Construct equivalence of religiosity was assessed by examining its relationships with several correlates that were identified based on previous research.¹⁵⁻²⁰ Correlation and partial correlation analyses were done to see the relationships between religiosity and these variables. As some demographic variables could confound the relationships between religiosity and its correlates,³⁰⁻³² their confounding effects were removed by examining partial correlations after removing the effects of demographic variables (age, sex, marital status, education and employment status). These correlations and partial correlations are presented in Table 6. Relationship of religiosity with motivations for charitable giving presented a unique pattern. For respondents from India, there was a negative correlation between religiosity and control and recognition motives ($r = -0.235, P < 0.001$; partial $r = -0.178, P < 0.05$). For American respondents, control and recognition motives

Table 6: Selected correlates of religiosity

	India	United States
Altruistic behavior	-0.163*** (-0.087)	0.302* (0.291*)
Charitable contribution to religious organizations	0.086 (0.215**)	0.503* (0.488*)
Control and recognition motivations	-0.235* (-0.178***)	0.100 (0.091)
Helping others and feeling good motivations	-0.149*** (-0.108)	0.340* (0.282*)

*** $P < 0.05$, ** $P < 0.01$, * $P < 0.001$.

Note: Table entries are Pearson correlations. Partial correlations, after removing the effect of age, sex, marital status, education and employment status, are given in the parentheses.

were not related to religiosity ($r = 0.100$, n.s.; partial $r = 0.091$, n.s.).

The relationship between motivations for helping others and feeling good and religiosity followed an opposite pattern. The relationship between the two variables was positive for American respondents ($r = 0.340$, $P < 0.001$; partial $r = 0.282$, $P < 0.001$). The relationship for Indian respondents was negative ($r = -0.149$, $P < 0.05$), but when the effects of demographic variables were partialled out, the relationship was not significant (partial $r = -0.108$, n.s.).

Religiosity was positively related to charitable giving to religious organizations, both in India ($r = 0.086$, n.s.; partial $r = 0.215$, $P < 0.01$) and in the United States ($r = 0.503$, $P < 0.001$; partial $r = 0.488$, $P < 0.001$).

Finally, religiosity was positively related with altruistic behavior in the American sample ($r = 0.302$, $P < 0.001$; partial $r = 0.291$, $P < 0.001$). Although the two variables were negatively related in India, the effect was not significant when the effects of demographic variables were partialled out ($r = -0.163$, $P < 0.05$; partial $r = -0.087$, n.s.).

Patterns of relationships between religiosity and its correlates in the two countries suggest that the construct of religiosity is viewed differently in these two countries. Also, the influence of religiosity on other aspects of consumer behavior could be different in the United States and India.

DISCUSSION

The main objective of the research was to establish measurement invariance of the religiosity scale. It was found that the religiosity scale is reliable and usable in India, a country whose culture is vastly different from that of the United States. However, the findings also confirm that the practice of religion and religiosity of members of a society is an integral part of the culture. As such, the meaning one attaches to religiosity and the practices that are associated with it could be vastly different. That is, the meaning of religiosity construct could be very different for Indians compared with the same for Americans.

It was found that respondents from India are very different in terms of their motivations for charitable giving and the relationships of those motives with religiosity compared with respondents from the United States. The differences between American and Indian respondents could be rooted in the fundamental cultural differences in these two countries. American society is considered to be an individualistic society. As such, one would expect Americans to desire a greater level of control and recognition for their charitable giving. However, the relationship between control and recognition motives and religiosity was insignificant for American respondents. On the other hand, Indian society is considered to be a collectivistic society. In line with this, control and recognition motives were found to be negatively related with religiosity. Motives for helping others and feeling good had a positive effect on religiosity for the American sample, but was not related in the Indian sample.

Research carried out in many Western countries has suggested that altruistic behavior would be positively related to religiosity. Although findings from the American sample supported this notion, the findings from the Indian sample suggest that the meaning one attaches to religiosity and how it is practiced could be culture dependent.

Although this research was able to establish measurement invariance of the religiosity scale and found interesting relationships, it was based

on data collected from convenience samples using different methods. Thus, one of the limitations of this research was that the two samples were not representative samples of their respective countries and they were not equivalent samples. Also, there is a possibility that other demographic variables (for example, occupation) could have influenced religiosity or its relationship with other variables. Future researchers may attempt to examine these relationships using representative samples. Future researchers may also focus on unearthing the specific meaning people attach to religiosity and how it influences their behavior in various dimensions.

ACKNOWLEDGEMENTS

This research was supported in part by a Summer Research Grant from the Frank G. Zarb School of Business, Hofstra University.

REFERENCES

- 1 Durkheim, E. (1912) *The Elementary Forms of Religious Life*. London: Allen and Unwin.
- 2 Burroughs, J.E. and Rindfleisch, A. (2002) Materialism and well-being: A conflicting values perspective. *Journal of Consumer Research* 29(3): 348–370.
- 3 Eubaugh, H.R. (2002) Presidential address 2001, return of the sacred: Reintegrating religion in the social sciences. *Journal of the Scientific Study of Religion* 41(3): 385–395.
- 4 Hirschman, E.C. (1981) American Jewish ethnicity: Its relationship to some selected aspects of consumer behavior. *Journal of Marketing* 45(3): 102–110.
- 5 Poloma, M.M. and Pendelton, B.F. (1990) Religious domains and general well-being. *Social Indicators Research* 22(3): 255–276.
- 6 Central Intelligence Agency. (2011) *The World Fact Book*, <https://www.cia.gov/library/publications/the-world-factbook/>, accessed 11 December 2011.
- 7 Barnes, T. (1999) *The Kingfisher Book of Religions*. London: Kingfisher Publications.
- 8 Allport, J.A. (1988) Differences between students' values at two schools. *Psychological Reports* 63: 335–338.
- 9 Wilkes, R.E., Burnett, J.J. and Howell, R.D. (1986) On the meaning and measurement of religiosity in consumer research. *Journal of the Academy of Marketing Science* 14: 47–56.
- 10 Wulff, D.M. (1991) *Psychology of Religion: Classic and Contemporary Views*. Princeton, NJ: Princeton University Press.
- 11 Roof, W.C. (1979) Concepts and indicators of religious commitment: A critical review. In: R. Wuthnow (ed.) *The Religious Dimension: New Directions in Quantitative Research*. New York: Academic Press, pp. 17–45.
- 12 Hill, P.C. and Hood, R.W. (1999) *Measures of Religiosity*. Birmingham, AL: Religious Education Press.
- 13 Schwartz, S.H. and Huismans, S. (1995) Value priorities and religiosity in four western religions. *Social Psychology Quarterly* 58(2): 88–107.
- 14 Moschis, G.P. and Ong, F.S. (2011) Religiosity and consumer behavior of older adults: A study of subcultural influences in Malaysia. *Journal of Consumer Behaviour* 10(1): 8–17.
- 15 Bielefeld, W., Rooney, P. and Steinberg, K. (2005) How do need, capacity, geography, and politics influence giving? In: A. Brooks (ed.) *Gifts of Money in America's Communities*. Lanham, MD: Rowman and Littlefield Pub, pp. 127–158.
- 16 Brooks, A.C. (2003) Religious faith and charitable giving. *Policy Review* 121: 39–48.
- 17 Brown, E. and Ferris, J.M. (2007) Social capital and philanthropy: An analysis of the impact of social capital on individual giving and volunteering. *Nonprofit and Voluntary Sector Quarterly* 36(1): 85–99.
- 18 Feldman, N.E. (2007) *Time Is Money: Choosing between Charitable Activities*. Ben-Gurion University, Israel. Working Paper.
- 19 Lee, B.A. and Farrell, C.R. (2003) Buddy, can you spare a dime? Homelessness, panhandling, and the public. *Urban Affairs Review* 38(3): 299–324.
- 20 Lyons, M. and Nivison-Smith, I. (2006) Religion and giving in Australia. *Australian Journal of Social Issues* 41(4): 419–436.
- 21 Lyons, M. and Passey, A. (2005) *Giving Australia: Research on Philanthropy in Australia*. Sydney: University of Technology.
- 22 Bekkers, R. and Schuyt, T.N.M. (2005) And Who Is Your Neighbor? Explaining the Effect of Religion on Charitable Giving and Volunteering. Department of Philanthropic Studies, Vrije Universiteit Amsterdam. Working paper.
- 23 Chaves, M. (2002) Financing American religion. *New Directions for Philanthropic Fundraising* 35(Summer): 41–54.
- 24 Bekkers, R. and Wiepking, P. (2007) Generosity and philanthropy: A literature review (28 October 2007). Available at SSRN: <http://ssrn.com/abstract=1015507>.
- 25 Steenkamp, J.E.M. and Baumgartner, H. (1998) Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research* 25(June): 78–90.
- 26 Chandigarh Administration. (2011) Chandigarh the city beautiful: Official website of the Chandigarh Administration, http://chandigarh.gov.in/knowchd_stat_ab09.asp, accessed 11 November 2011.
- 27 Rushton, J.P., Chrisjohn, R.D. and Fekken, G.C. (1981) The altruistic personality and the self-report altruism scale. *Personality and Individual Differences* 2(4): 293–302.
- 28 Joreskog, K.G. and Sorbom, D. (1993) *LISREL 8 User's Reference Guide*. Chicago, IL: Scientific Software International.
- 29 Bagozzi, R.P. and Yi, Y. (1988) On the evaluation of structural equation models. *Journal of the Academy of Marketing Science* 16(1): 74–94.
- 30 Taylor, R.J. (1988) Structural determinants of religious participation among black Americans. *Review of Religious Research* 30(2): 114–125.
- 31 Argue, A., Johnson, D.R. and White, L.K. (1999) Age and religiosity: Evidence from a three-wave panel analysis. *Journal for the Scientific Study of Religion* 38(3): 423–435.
- 32 Albrecht, S.L. and Heaton, T.B. (1984) Secularization, higher education, and religiosity. *Review of Religious Research* 26(1): 43–58.

APPENDIX

Religiosity

1. I am very religious.
2. I believe in God.
3. My religion is very important to me.
4. I go to temple/church/mosque/gurudwara (synagogue) regularly.
5. Spiritual values are more important than material things.
6. If people in India/United States were more religious, this would be a better country.

Altruistic behavior

1. I have given directions to a stranger.
2. I have made change for a stranger.
3. I have given money to a stranger who needed it (or asked me for it).
4. I have donated goods or clothes to a charity.
5. I have done volunteer work for a charity.
6. I have helped carry a stranger's belongings (for example, books, parcels and so on).
7. I have delayed an elevator and held the door open for a stranger.
8. I have allowed someone to go ahead of me in a line (for example, supermarket, post office and so on).
9. I have given a stranger a lift in my car/two wheeler.
10. I have let a neighbor whom I didn't know too well borrow an item of some value (for example, tools, a dish and so on).
11. I have bought 'charity' Christmas/New year

cards deliberately because I knew it was a good cause.

12. I have offered my seat on a bus or train to a stranger who was standing.
13. I have, before being asked, voluntarily looked after a neighbor's pets or children without being paid for it.
14. I have offered to help a handicapped or elderly stranger across a street.

Recognition and control motives

1. Get more attention from others.
2. Receive recognition from my peers or family.
3. Increase the number of social contacts I have.
4. Increase my social status.
5. Get more respect from others.
6. Insure that others are there when I need them.
7. Get the opportunity to meet new people.
8. Obtain some control over the actions of others.
9. Spend more time with others.
10. Reduce my taxes.

Helping others and feeling happy motives

1. Feel better about myself.
2. Participate in decisions that are important to me.
3. In memory of a loved one who has died.
4. Help others achieve their goals.
5. It makes me feel happy.
6. They asked for my help.