

Adaptation and Validation of the New Indices of Religious Orientation Revised Scale

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Abstract

Objective. The purpose of this study was to adapt and validate the New Indices of Religious Orientation Revised (NIROR) scale, which has been developed in different cultural settings, for a study of Pakistani university students. The NIROR was developed by Francis, Fawcett, Robbins, and Stairs (2016), consisting of 27 items for Canadian-Christian respondents. It measures intrinsic religious orientation, extrinsic religious orientation, and quest religious orientation.

Method. In this study, we have culturally adapted the scale for Pakistani sample. The validity indices were ascertained on a sample of 300 participants, these included; undergraduate, graduate, and post-graduate students taken from different departments of four universities of Islamabad.

Results. The *EFA*, using the common factor analysis method, resulted in the final structure of the scale into 18 items with four factors, the first factor's reliability was $\alpha = .87$, the second factor's $\alpha = .82$, the third factor's $\alpha = .79$ and the fourth factor's $\alpha = .75$. *EFA* was followed by the *CFA* on a new sample ($n=498$) to confirm the factors' structure. The *CFA* revealed a good model fit for the four factors solution of this scale that is $\chi^2(125) = 291.34$; $\chi^2/df = 2.33$; root mean square error of approximation (RMSEA) = .05; goodness-of-fit index (*GFI*) = .94; Tucker-Lewis index (*TLI*) = .93; confirmatory fit index (*CFI*) = .94; normed fit index (*NFI*) = .90.

Conclusion. It is concluded that the adapted version with four factors is a reliable and valid measure to be used for Muslim adults in the Pakistani context.

Keywords. *New indices of religious orientation revised scale, intrinsic, extrinsic, quest, muslims, pakistan, psychometrics.*



Introduction

With regards to research on religiosity and religious orientation (Allport & Kramer, 1946; Kirkpatrick, 1949; Rosenblith, 1949; Stouffer, 1955; Rokeach, 1960; Struening, 1963), a significant shift occurred with the research of Allport and Ross (1967), in which they introduced the terms extrinsic and intrinsic religious orientations. According to this distinction, the extrinsically orientated religious individuals are self-centric and use their religion for utilitarian interests. On the other hand, intrinsically oriented individuals consider their faith as an end in itself, not a means to achieve some personal benefits (Allport & Ross, 1967; Kirkpatrick, 1989; Batson, Schoenrade, & Ventis, 1993; Whitley, & Kite, 2016; Younas, Muqtadir, & Khan, 2018). In other words, extrinsic orientation indicates immature religiosity that enables individuals to achieve their selfish goals. In comparison, the intrinsic religious orientation points to a sincere and genuine religious belief and individuals' way of life (Tiliopoulos, Bikker, Coxon, & Hawkin, 2007). Kirkpatrick (1989) introduced the two sub-dimensions of extrinsic orientation: the personal extrinsic and the social extrinsic. Social extrinsic orientation deals with attainment of social benefits, while personal extrinsic orientation deals with overcoming and controlling personal psychological troubles and distress (Flere & Lavric, 2008).

Furthermore, Batson and Ventis (1982) proposed a third orientation called quest religious orientation. According to them, this orientation is related to an individual's religious search. The quest-oriented individuals consider the religious questions vital for themselves and try to find the answers. This orientation is determined by "the degree to which an individual's religion involves an open-ended, responsive dialogue with existential questions raised by the contradictions and tragedies of life" (Batson, Schoenrade, & Ventis, 1993). Such individuals are always ready to face criticism and are open to change. A 12 items scale was developed to measure religion as quest orientation (Batson & Schoenrade, 1991a, Batson & Schoenrade, 1991b). With the popularization of the theory of religious orientation, various measures were developed to assess these dimensions of religious orientations (Allport & Ross, 1967; Gorsuch & McPherson, 1989; Batson & Schoenrade, 1991a; Batson & Schoenrade, 1991b; Worthington et al., 2003; Francis, 2007; Koenig & Bussing, 2010; Francis, Fawcett, Robbins, & Stairs, 2016).

Allport and Ross (1967) developed a 20 items religious orientation scale (ROS) that incorporated the intrinsic and extrinsic religious dimensions. Gorsuch and Venable (1983) adapted this scale to make it usable for both adults and children and named it Age Universal I-E Scale. Gorsuch and McPherson (1989) later reviewed the ROS items and incorporated the sub-dimensions of extrinsic orientation: personal extrinsic and social extrinsic. This scale was translated and adapted by Khan, Ghous, and Malik (2016) for Pakistani population which was used by Younas, Muqtadir, and Khan (2018) in their study of Pakistani Muslim and Christian adults.

Worthington et al. (2003) used a different approach to ROS. They introduced religious commitment as the key variable of their scale, which distinguishes between intrapersonal and interpersonal religiosity. They called this scale the "Religious Commitment Inventory (RCI)." Koenig and Bussing (2010) developed a short scale consisting five items. Three items measure the intrinsic orientation, one of the organizational religious activities, and one that focuses on non-organizational activity. This scale was named the "Duke University Religion Index" (DUREL) scale.

Francis (2007) developed the "New Indices of Religious Orientation scale (NIRO)" that incorporated the three constructs of intrinsic, extrinsic, and quest orientations, which were earlier measured separately. This scale is used in several studies, including those by Francis (2010), Jewell, and Robbins (2010), Williams (2010), and Walker (2015). However, the NIRO was limited to adult and articulate populations. Francis et al. (2016) reformulated the items of NIRO, and the revised scale appeared New Indices of Religious Orientation Revised scale (NIROR), which was validated on adolescents between the ages of 12 and 19 years. The overall Cronbach alpha is 0.74 with three sub-scales; extrinsic, intrinsic, and quest was 0.65, 0.82, and 0.75, respectively. This scale gives equal weight to each dimension: intrinsic religious orientation, extrinsic religious orientation, and quest religious orientation.

NIROR was used in a study on adult prisoners of corruption in relation to dark triad personality in Kedungpane Semarang Prison (Kaumbur, Wismanto, and Hardjanta, 2017). The reliability coefficient of 19 items scale came out as 0.85.

In another study, NIROR was adapted (Elias, Yaacob, and Othman, 2018) on a sample of Malaysian respondents. Fabry (2018) also adapted the two sub-scales of the NIROR scale, excluding the quest scale on the Ethiopian population, in her master's dissertation. She found established reliability of 12 items of intrinsic and extrinsic religious orientation on her local sample.

This world is full of cultural, religious, linguistic, and ethnic diversities. If an instrument developed in a specific religious or cultural context is to be used in different cultural settings, it must be adapted, keeping in view the nuances of beliefs, language, and ethnicity of the target culture. There is always a need for cross-culturally reliable and validated scales (Widenfelt et al., 2005; Rojjanasrirat, 2011), which is a good solution for the lack of scale in the target population. Brislin, Lonner, and Thorndike (1973) have suggested avoiding idioms, vague language, double barreled sentences, adverbs indicating time, when adapting a scale.

Khan, Ghous, and Malik (2016) adapted the Age Universal I-E Scale, revised by Gorsuch and McPherson (1989), for Pakistani adults. However, this scale misses the quest dimension of religious orientation. Therefore, we intended to use the NIROR (Francis et al., 2016) in the Pakistani context. This scale gives equal weightage to the intrinsic, extrinsic, and quest religious orientation. It is the most recent scale to measure religious orientation according to our knowledge. It uses simple language as it was developed for adolescents. Yet, before use, it is required to establish the cross-cultural utility of measure and confirming its validity on a local sample.

Validation of scale is a continuous process that adds to its meaningfulness and usefulness in a given context. Without validating a scale on a specific sample of study, the results drawn are considered meaningless in social sciences (Zumbo, Gelin, & Hubley, 2002). The existing scale without modification may not produce suitable results (Garcia & Martinez, 2008). Thus, the emphasis is given to a standardized instrument to measure the responses (Gjersing, Caplehorn, & Clausen, 2010). The purpose of the current study is to adapt and validate the NIROR scale into a Pakistani and Muslim context and for a different age group, between 18 to 40 years.

Method

Adaptation of Items

The NIROR scale was developed for Christian respondents in Canada for adolescents between the ages of 12 and 19 years. The aim of this study was to adapt and validate this scale from the Canadian-Christian context to the Pakistani-Muslim context. We thoroughly reviewed and adapted all the 27 items of the NIROR scale to fit them for the Muslim respondents for adults between the ages of 18 and 40 years. The items of the original scale were translated following Brislin, Lonner, and Thorndike (1973) suggestion of using simple language. We replaced the Christian-religious terminologies with the somehow equivalent Muslim-religious terminologies following Werner and Campbell (1970) and Brislin (1976).

Thus, the term "Christian faith" was replaced by "Islamic faith," such as the item in original scale "While I believe in the Christian faith, there are more important things in my life" was replaced with "While I believe in the Islamic faith, there are more important things in my life." We changed the word 'church' was changed with 'masjid' such as "One reason for me going to church is to connect with others my own age" was replaced by "One reason for me going to masjid is to connect with others of my age." Christ's family was replaced with Muslim *Ummah*, such as the item "The church is most important to me as a place to be part of Christ's family" to "The masjid is most important to me as a place to be part of the Muslim *Ummah*."

Afterward, the adapted items were discussed with a panel of experts to address the face validity as done and suggested by Urbina (2004). The panel included two professors and three lecturers of the Psychology Department of the International Islamic University Islamabad. We incorporated their opinions following Parasuraman, Zeithaml, and Malhotra (2005). These items were then piloted on a small sample of 30 university students to improve understanding of the scale's items.

Administration of the Adapted Version

We administered the adapted version of the NIROR scale to 315 undergraduate, graduate, and post-graduate students of four different universities of Islamabad following the recommendation of Clark and Watson (1995). The data collected was then entered into SPSS (Version 25) sheet.

Fifteen forms were found incomplete and thus excluded from the analysis. Before running the analysis, the data were cleaned and screened for missing values.

Results

Sample Characteristics

Out of 315 responded, 300 participated in the study, including 152 males and 148 females (Mean age = 1.41 and $SD=0.629$). The sample was further subdivided in sample of students enrolled in BS ($n=208$), MS ($n=71$), PhD ($n=12$) programs. We used a diverse sample of participants drawn on the basis of convenience random sampling procedures. Informed written consent was obtained before the assessment. Majority of the students were from the province of Punjab (57%) followed by students from Khyber Pakhtunkhwa (31.6%), Baluchistan (5.2%), and Sindh (4.5%) and the federal area (1.7%). The sample was also denominationally diverse; they represent 5 *maslaks* (different Muslim school of thoughts). A total of 118 (40.3%) students represented Deobandī *maslak* 91 (31%) to Barelvī, 50 (17%) to Ahl-e-Ḥadīth, 20 (7%) to Shī'a and 14 (5%) students to 'Others'.

Exploratory Factor Analysis

We performed a common factor analysis for 27 adapted items of NIROR to determine its validity and factor structure of the adapted version. Validity is one of the primary criteria for the evaluation of an instrument. It tells us whether the scale accurately measures the concept under investigation or not (Kramer, Douglas, & Vicky, 2009; Brains & Manheim, 2011; Zikmund, Babin, Carr, & Griffin, 2013; Hair, Black, Babin, & Anderson, 2014). The two methods of sample suitability were utilized: (i) The Kaiser-Meyer-Olkin called KMO and (ii) Bartlett's Test of Sphericity. A score for KMO below 0.5 is considered unacceptable (Kaiser, 1974). The value of KMO for this test was 0.80, which is far better than 0.5. Similarly, Bartlett's Test of Sphericity was statistically significant ($p < 0.001$). The analysis yielded four factors solution. The factors were retained following the rule of Eigenvalue, according to which the factors less than 1.0 should be dropped (DeVellis, 2017). The cumulative variance for the four factors achieved was 51.9% (Table 1). The factor first Eigenvalue explained 21.6% of the variance. The second, third, and fourth explained 15%, 9.71%, and 5.63%, respectively.

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Table 1*Total Variance Explained (N=300)*

| Factor | Initial Eigenvalues | | | Extraction Sums of Squared Loadings | | |
|--------|---------------------|---------------|--------------|-------------------------------------|---------------|--------------|
| | Total | % of Variance | Cumulative % | Total | % of Variance | Cumulative % |
| 1 | 4.33 | 24.06 | 24.06 | 3.89 | 21.61 | 21.61 |
| 2 | 3.23 | 17.96 | 42.02 | 2.70 | 15 | 36.61 |
| 3 | 2.19 | 12.16 | 54.18 | 1.75 | 9.71 | 46.32 |
| 4 | 1.47 | 8.16 | 62.34 | 1.01 | 5.63 | 51.94 |

The rotation technique adapted for this analysis was oblique (DeVellis, 2017). Thus, we used a Promax rotation. The Pattern matrix showed four factors with strong factor loadings (Table 2). The communality ranged from .40 to .70, and the items with communality below 0.3 were removed following the suggestion of Hadi, Abdullah, and Sentosa (2016). We repeated the process a couple of times and removed all those items which were cross-loaded until we reach a simple structure (Fabrigar, & Wegener, 2012). Both convergent validity and discriminant validity (Mohajan, 2017) were achieved for the NIROR scale. Table 3 reveals that the six items of the quest, six items of intrinsic, three items of extrinsic social, and three items of extrinsic compartmentalization relate to their same constructs. Hence, all the items converged on relevant factors.

Table 2*Pattern Matrix Showing Factor Loadings (N= 300)*

| Variable | Items | Factor Loadings |
|-----------------------------------|--|-----------------|
| Quest Religious orientation | Q23: For me, doubting is an important part of what it means to be Muslim. | .78 |
| | Q26: I am constantly questioning my religious beliefs. | .78 |
| | Q22: I value my religious doubts and questions. | .71 |
| | Q27: There are many religious issues on which my views are still changing. | .70 |
| | Q24: Questions are more important to my Muslim faith than are the answers. | .69 |
| | Q25: As I grow and change, I expect my faith to grow and change as well. | .66 |
| Intrinsic Religious orientation | INT10: My Islamic faith shapes how I live my daily life. | .71 |
| | INT12: My Islamic faith really shapes the way I treat people. | .68 |
| | INT14: I go to masjid because it helps me feel close to Allah. | .67 |
| | INT15: The masjid is most important to me as a place to be part of the Muslim <i>Ummah</i> | .66 |
| | INT11: I try hard to carry my Islamic faith over into all other areas of my life. | .64 |
| | INT18: I pray mainly because it deepens my relationships with Allah. | .59 |
| Extrinsic Social orientation | ES5: A key reason for my interest in masjid/mosque is that it is socially enjoyable. | .84 |
| | ES6: I go to masjid because it helps me to feel part of a community. | .74 |
| | ES4: One reason for me going to the mosque is to connect with others of my age | .66 |
| Extrinsic Compartment orientation | EC1: While I believe in the Islamic faith, there are more important things in my life. | .81 |
| | EC3: Occasionally, I have comprised my Islamic beliefs to fit in better with my friends. | .67 |
| | EC2: While I am a Muslim, I do not let my faith influence my daily life. | .63 |

Reliability Analysis

Reliability indices of an instrument is another criterion for establishing an instrument’s validity on a particular sample. For this purpose, we used estimates of internal consistency reliability (Zikmund et al., 2013; Hair, Black, Babin, & Anderson, 2014), which is commonly tested by using the Cronbach Alpha coefficient method. This method verifies an instrument’s or scale’s reliability by analyzing the degree to which the scales’ items intend to measure (Cronbach, 1951). Cronbach Alpha coefficient ranges from 0 to 1, and the value below 0.60 is a sign of poor reliability (Hair, Black, Babin, & Anderson, 2014). However, the value between 0.70 and 0.80 is a sign of good reliability (Zikmund et al., 2013).

As a next step, we calculated the Cronbach’s alpha for all the 18 items together and the four factors separately. Two items were deleted utilizing the “Cronbach’s alpha if item deleted” option to improve the coefficient alpha of the overall scale. Table 3 shows that Cronbach’s alpha of all the four factors was greater than 0.70. Similarly, the alpha for the overall scale was 0.81.

Table 3
Reliability Statistics of NIROR Scale (N= 300)

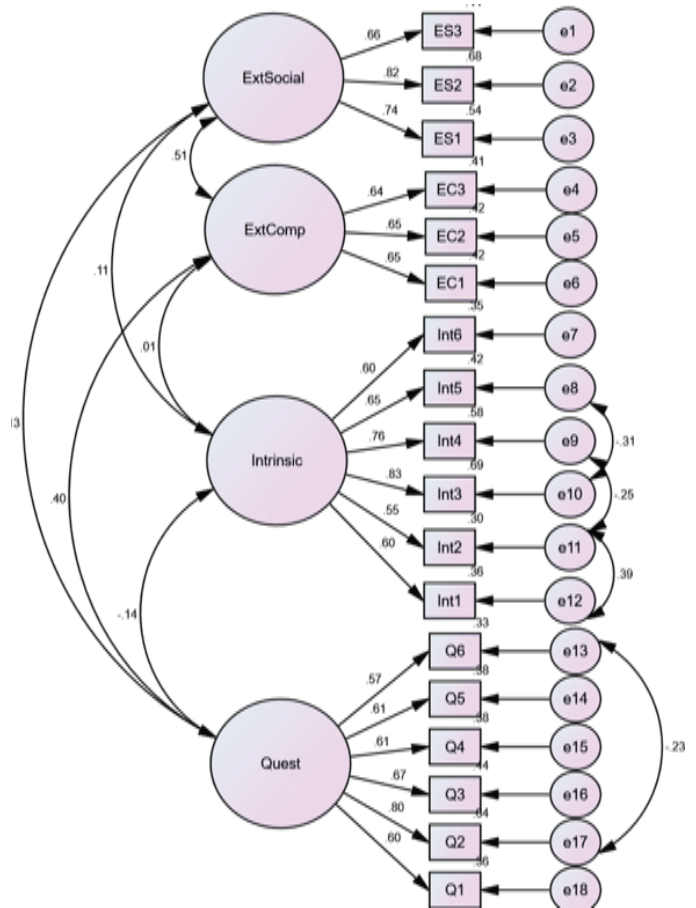
| Factors | Cronbach’s Alpha Value | N of Items |
|--------------------------------|------------------------|------------|
| Quest | 0.87 | 06 |
| Intrinsic | 0.82 | 06 |
| Extrinsic Social | 0.79 | 03 |
| Extrinsic Compartmentalization | 0.75 | 03 |
| Total | 0.81 | 18 |

Confirmatory Factor Analysis

EFA was followed by the Confirmatory factor analysis (CFA) to confirm the factors’ structure (Hu & Li, 2015). For this purpose, AMOS-22 was used. A new sample ($n=498$) was used following the recommendation of the new data set for CFA (Henson & Roberts, 2006; Hu & Li, 2015). Participants consisted of 321 (64.5%) male and 177 (35.5%) female students. Three hundred fifty-four students were enrolled in BS, 121 in MS, and 23 in PhD programs. Majority students were Punjabi (52.6%) followed by Pashtun (32.9%), other (13.1%), Sindhi (1.2%) and Baloch (.2%).

The regression weights were above 0.50, showing the suitability of the items. The error variables were co-varied as they were representing the same factors that are intrinsic and quest factors (Figure 1). Model fit indices revealed a good fit with $\chi^2(125) = 291.34$; $\chi^2/df = 2.33$; root mean square error of approximation (RMSEA) = .05; goodness-of-fit index (GFI) = .94; Tucker-Lewis index (TLI) = .93; confirmatory fit index (CFI) = .94; normed fit index (NFI) = .90, $p < 0.001$.

Figure 1. CFA Model of NIROR Scale (N=498)



Discussion

We carried out this study to adapt and validate the New Indices of Religious Orientation Revised Scale (NIROR) on the Pakistani Muslim population. The original scale was developed by Francis et al. (2016), consisting of 27 items. They reformulated the NIRO (Francis, 2007) scale and produced the NIROR for adolescents between 12 and 19. This scale was developed for Canadian-Christian respondents. The overall Cronbach alpha of the original scale is .74 with three sub-scales; extrinsic (.65), intrinsic (.82), and quest (.75) that is used to measures intrinsic religious orientation, extrinsic religious orientation, and quest religious orientation.

The purpose of the current study was to adapt and validate the NIROR scale into a Pakistani-Muslim context and for a different age group between the ages of 18 and 40. We adapted all the 27 items after discussions with a panel of experts to address the face validity. After obtaining the adapted items, the scale was administered to a small sample of 30 university students of Islamabad to improve the understanding of the scale's items. Then, we administered the adapted version of the NIROR scale to 315 undergraduate, graduate, and post-graduate students of four different universities of Islamabad, following the recommendation of Clark and Watson (1995). The data collected was then entered into SPSS (Version 25) sheet. A common factor analysis discovered four factors with factor loading more than or equal to 0.59, which are as follows:

Factor 1. 6 items loaded on this factor were related to “quest religious orientation.” These items were related to respondents’ quest orientation. Quest religious-oriented individuals are religiously open-minded (Batson, Schoenrade, & Ventis, 1993) and always ready to accept change (Batson & Schoenrade, 1991a). Items retained in this factor were items no Q23, Q26, Q22, Q27, Q24, and Q25.

Factor 2. Six items loaded on its related factor “intrinsic religious orientation.” Intrinsic religious-oriented individuals are said to live their religion as an end (Allport & Ross, 1967). Items loaded on this factor were related to intrinsic orientation. This factor included item number INT10, INT12, INT14, INT15, INT11, and INT18.

Factor 3. In the NIROR scale, the “extrinsic religious orientation” was composed of three dimensions measuring compartmentalization, social support, and personal support. Common factor analysis revealed only two factors of the “extrinsic religious orientation.” Thus, three items of Extrinsic religious orientation loaded on a separate factor, named “extrinsic social religious orientation,” which was social support in the original scale. Extrinsic social individuals are defined by Kirkpatrick (1989) as those individuals who do not follow their religion in a real sense but for their social acceptability. This factor included item number ES5, ES6, and ES4. Factor Four: Three items of “extrinsic religious orientation” loaded on factor 4. This factor was named “extrinsic compartmentalization.”

According to Francis et al. (2016), individuals who score high on this factor keep their religion at a distance and do not let it influence their daily life. Items loaded on this factor were EC1, EC3, and EC2.

The Cronbach’s alpha for all the 18 items together found was 0.81 better than the original scale, which is 0.74 (2016). The quest religious orientation, intrinsic religious orientation, extrinsic social, and extrinsic compartmentalization was $\alpha = .87$, $\alpha = .82$, $\alpha = .79$, and $\alpha = .75$ respectively. Thus, alpha indicated a good internal consistency of the scale. The EFA was followed by the CFA in order to confirm the resulted factors’ structure. The CFA revealed a good model fit for the four factors solution of this scale that was $\chi^2(125) = 291.34$; $\chi^2/df = 2.33$; root mean square error of approximation (RMSEA) = .05; goodness-of-fit index (GFI) = .94; Tucker-Lewis index (TLI) = .93; confirmatory fit index (CFI) = .94; normed fit index (NFI) = .90.

Conclusion

This study pertained to the adaptation and validation of the New Indices of Religious Orientation Revised Scale (NIROR), which was originally developed for Canadian Christian adolescents. We adapted it for Muslim adults in the Pakistani context. The methods, procedures, and tests applied in the process show that the adapted version with four factors is reliable and valid to measure the intrinsic, personal extrinsic, social extrinsic, and quest religious orientation of the intended population. Thus, the adapted NIROR scale is suitable for measuring the religious orientations of Pakistani Muslims.

Ethics Approval and Consent to Participate

This paper is a part of a study approved by the Board of Advance Studies and Research (BASR) of International Islamic University, Islamabad thus has subsequently got Ethical approval. We took written consent of the participants before they participated in the study.

Availability of Data and Materials

Data sets used in this study are available from the corresponding author on reasonable request.

Competing Interests

The authors are well informed and declare no conflict of interest.

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Authors' Contribution

K. R. conceptualized the idea, contributed to study design, completed the entire article, including introduction, literature, data collection, discussion, and conclusion. M. T. K. supervised the study, contributed to study design, including introduction, literature, discussion, and conclusion. M. A. supervised the study, contributed to the introduction, literature, adaptation of the items, data collection procedures, and edited the whole draft.

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