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# Validation of the Centrality of Religiosity Scale for the Portuguese Population

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## Abstract

The main aim of this study was to validate and adapt the Centrality of Religiosity Scale to the Portuguese population. A total of 1018 subjects participated in this study. The metric qualities demonstrated in the analyses suggested that the factor structure was based on five dimensions identical to those proposed by its authors. After analysing its psychometric qualities, we concluded that this instrument can be applied to the Portuguese population and is a valuable tool in studies related to the psychology of religion and spirituality.

**Keywords** Psychology · Spirituality · Centrality · Religiosity · Quantitative study

## Introduction

Religion is an important aspect of many people's lives. Through religion, people establish a close connection with the transcendent via an organized system of beliefs, practices, and symbols shared with a community of faith (Hood et al., 2009; Koenig et al., 2012; Koenig, 2015; Zimmer et al., 2016), which guides individuals' perceptions of various life experiences and directs their behaviour.

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Religiosity allows individuals to signify the world through religious resources with what Huber (2004) metaphorically called "religious glasses", through which all reality is read based on personal convictions about the sacred. The more frequently these "glasses" are used and the resources of faith are activated, the more influence they have on various areas of people's lives (…).

## Literature Review

### Religiosity

The "centrality of religiosity" is a term used by Huber (2003, 2004) to indicate the importance and intensity of religiosity in personality. This construct is based on the theoretical assumptions of Kelly's (1955) psychology of personal constructs, which posits that personality is structured hierarchically. At the top level are the nuclear constructs, which are resistant to change and become rigid in the face of threats to the system's stability. At the bottom are the peripheral constructs, which are unstable and permeable to change. The lower-level constructs function subordinately to the higher-level constructs and determine their functioning. Thus, the internal representation of the environment, based on religious content, depends on the position of these constructs in the hierarchy. Religiosity is expected to be more central in individuals whose religious construct systems are frequently activated (Huber, 2003, 2004).

Some studies have shown that the centrality of religion is positively related to indicators of health, well-being, and quality of life (Friedrich-Killinger, 2020; Rybarski, 2019; Zarzycka et al., 2020). This has been examined with organizational variables such as job satisfaction and work involvement (Rożnowski and Zarzycka, 2020). Furthermore, the centrality of religion is negatively related to indicators of mental illness, such as anxiety and insomnia (Krok, 2004). Because the centrality of religion is an important variable for psychological science, it is important to develop instruments to measure it.

### The Portuguese Reality

Despite being a secular state, culturally, religious values remain very important in Portugal. According to the 2021 census, only 14% of respondents classified themselves as nonreligious. The Catholic religion was the most common affiliation, with 80.2% of respondents (INE, 2022). This information is in line with data from a recent study (European Values Study, 2022) in which 85% of Portuguese respondents said they believed in God and 71% classified themselves as religious, with practices such as prayer included in the daily routines of 24% of respondents. Another study conducted by the Pew Research Center (2018) ranked Portugal as the most religious country in Western Europe. This ranking considered indicators such as the frequency of attendance at religious services, the frequency of prayer,

the importance of religion in people's lives, and belief in God. More than one-third of the Portuguese population reported high levels of religious commitment (37%).

These values demonstrate the relevance of the construct of religiosity in the Portuguese context, which justifies the validation of assessment instruments to understand how it manifests. This knowledge can be used in both research and psychotherapeutic practice.

### Centrality of Religion Scale

The Centrality of Religiosity Scale (CRS-15) (Huber & Huber, 2012) aims to measure the salience of religious constructs in personality. In other words, it seeks to gauge the position of the religious construct system within the overall set of construct systems in an individual's personality (Huber et al., 2011). Glock's multidimensional model of religion identified representative dimensions of religiosity, and Allport and Ross' work on intrinsic or extrinsic motivation for religiosity contributed to the construction of the CRS (Huber, 2003, 2004; Huber & Huber, 2012).

The CRS allows for the measurement of 5 central dimensions of religiosity, understood as channels or ways in which religious constructs are activated (Huber & Huber, 2012):

- The ideological dimension refers to the social expectation that religious individuals have beliefs about the existence and nature of a spiritual reality.
- The intellectual dimension refers to the social expectation that religious individuals have knowledge about religion and can explain their beliefs about transcendence, religion and religiosity through continuous reflection/updating on religious content.
- The public practice dimension refers to the social expectation that religious individuals are connected to religious communities and participate in them publicly through rituals and shared activities.
- The private practice dimension refers to the social expectation that religious individuals devote some of their time to individualized and private activities and rituals of connection with the transcendent.
- The religious experience dimension refers to the social expectation that religious individuals experience some kind of direct contact with the divine with an emotional impact. This occurs particularly through experiences of being in unity with God or at times when God's intervention in human life is perceived.

Based on the results obtained from the CRS, it is also possible to categorize individuals according to the degree of their centrality of religion (Huber, 2003; Huber & Huber, 2012):

- Central position—"highly religious individuals": The religious construct system occupies a central position in the personalities of these people and exerts a strong influence on nonreligious contexts of life. People in this group experience a deeply religious life. Highly religious individuals have several characteristics

in common with Allport's intrinsic religious motivation (Friedrich-Killinger, 2020).
- Subordinate position—"religious individuals": Religion and faith are present in the lives of these individuals but play a secondary role. Faith is experienced sporadically and has little influence on other psychological systems. Typical aspects of Allport's extrinsic religious motivation are present here (Friedrich-Killinger, 2020).
- Marginal position –"nonreligious individuals": Religion has no importance in the lives of these people. Religious content and practices are rarely activated and therefore have little influence on their life experiences.

### Versions of the Centrality of Religiosity Scale

The CRS was initially constructed in 15-item (CRS-15), 10-item (CRS-10) and 5-item (CRS-5) versions and was aimed at respondents from Abrahamic religious traditions (Judaism, Christianity, Islam), which profess belief in a monotheistic God (Huber & Huber, 2012). All versions assess the five dimensions of religiosity. The CRS-15, with three items per dimension, is the largest of the three scales and allows for greater differentiation between the various dimensions and higher levels of reliability.

To extend this measurement to both Eastern religions and new Western forms of spirituality, interfaith versions of the CRS were created (CRSi-7, CRSi-14 and CRSi-20) with changes to the wording of the items ("God" was replaced with "God or something divine") and with the inclusion of additional items that were more representative of the private practices and religious experiences within these faith contexts (Huber & Huber, 2012).

### Validation of the Centrality of Religiosity Scale

The CRS in its various versions has been rigorously validated in different cultural and religious contexts. It therefore serves as a robust instrument to assess the importance of religiosity in different languages. In Europe, in addition to the original version (Huber & Huber, 2012), scales have been validated for Germany (Demmrich, 2020), Poland (Zarzycka et al., 2020), Romania (Gheorghe, 2019), Greece (Fradelos et al., 2018), Georgia (Ackert et al., 2020), and Russia (Ackert et al., 2020). On other continents, the CRS has been validated for Brazil (Esperandio et al., 2019), the Philippines (del Castillo et al., 2020, 2023), Pakistan (Abbasi et al., 2019), India (Dua et al., 2020), China (Lee & Kuang, 2020), Japan (Kambara et al., 2020), Vietnam (Nguyen et al., 2021), Indonesia (Nugraha et al., 2021), and Ghana (Asamani & Mensah, 2016). Almost all the validations consistently reveal a pentadimensional structure and demonstrate robust reliability and validity values, reinforcing the trustworthiness of the CRS.

In Portugal, a preliminary validation of the CRS-5 was conducted (Araújo et al., 2021) with a sample of 326 participants, which revealed a structure in which the 5

dimensions were grouped into a single dimension that explained 70.73% of the total variance.

### Rating of the Centrality of Religiosity Scale (CR-15)

To measure the centrality of religion, two types of classification were used, importance and frequency. Both are organized on a 5-point Likert scale.

Thus, individuals assess their religiosity by choosing one of the following options:

- importance: "not at all" (1), "a little" (2), "moderately" (3), "a lot" (4) and "totally" (5);
- frequency: "never" (1), "rarely" (2), "occasionally" (3), "often" (4), and "very often" (5).

There are also 2 items that measure the frequency of prayer and participation in religious services, which are presented using 7-point and 6-point Likert scales, respectively. These items require recoding when the total CRS score is calculated, as shown in Table 1.

The score for each dimension and the total value of the scale are calculated using the mean (the sum of the scores for each item is divided by the number of items). The total scores are between 1.0 and 5.0 and are used to classify individuals' degree of religiosity according to the following parameters: 1.0 to 2.0 corresponds to "non-religious" individuals; 2.1 to 3.9 identifies those who are "religious"; and values of 4.0 to 5.0 indicate individuals who are "highly religious".

## Method

### Data Collection Procedure

The first step was translating and culturally adapting the instrument (in English) into European Portuguese after authorization from the authors. The translation was performed by two psychology professionals who were highly proficient in the subject and the English language. The two versions were then standardized. Finally, the questionnaire was back-translated by two professionals who were highly proficient in English. The authors of this study carried out the convergence of the back-translated versions with the originals in English. The questionnaire, which was composed of sociodemographic questions (age, gender, marital status, educational qualifications, professional status, religion professed), and the CRS were uploaded to Google Forms. The link to the questionnaire was publicized on social networks and sent via email to the researchers' contacts. Data were collected between August 2022 and April 2024. Before participants answered the questionnaire, they read the informed consent form, which explained the purpose of the study and guaranteed the confidentiality of their answers.

**Table 1** Recoding of objective frequencies of the items concerning prayer and religious services into five score levels. Adapted from Huber and Huber (2012, p. 720)

| Objective frequencies of prayer | Recoding into five levels | Objective frequencies of participation in religious services | Recoding into five levels |
|---|---|---|---|
| (a) Several times a day (várias vezes por dia)<br>(b) Once a day (uma vez por dia) | 5 | (a) More than once a week (mais do que uma vez por semana)<br>(b) Once a week (uma vez por semana) | 5 |
| (c) More than once a week (mais de uma vez por semana) | 4 | (c) One to three times a month (1 a 3 vezes por mês) | 4 |
| (d) Once a week (uma vez por semana)<br>(e) One to three times a month (1 a 3 vezes por mês) | 3 | (d) A few times a year (algumas vezes por ano) | 3 |
| (f) A few times a year (algumas vezes por ano)<br>(g) Less often (menos que algumas vezes por ano) | 2 | (e) Less often (menos que algumas vezes por ano) | 2 |
| (h) Never (nunca) | 1 | (f) Never (nunca) | 1 |

### Participants

This study's sample consisted of 1,018 participants between the ages of 18 and 75 (M = 42.04; SD = 13.72), 687 (67.5%) of whom were female. With regard to marital status, 381 (37.4%) were single, 522 (51.3%) were married or in a civil partnership, 93 (9.1%) were divorced or separated, and 22 (2.02%) were widowed. In terms of educational qualifications, 15 (1.5%) had primary education, 199 (19.5%) had secondary education, 493 (48.4%) had a bachelor's degree, 267 (26.2%) had a master's degree and 44 (4.3%) had a doctorate. Among the participants, 128 (12.6%) were students, 794 (78%) were working, 46 (4.5%) were unemployed, and 50 (4.9%) were retired. Regarding their religion, 699 (68.7%) were Catholic, 30 (2.9%) were Protestant, 42 (4.1%) were Evangelical, 1 (0.1%) was Muslim, 2 (0.2%) were Jewish, 5 (0.5%) were Hindu, 41 (4%) had another religion, and 198 (19.4%) were not religious.

### Material

The instrument to be adapted for the Portuguese population was the Centrality of Religiosity Scale developed by Huber and Huber (2012) in the CRS-15 version tailored for Abrahamic religions. This instrument consists of 15 items with a range of response options.

The 15 items are divided into five dimensions: intellect (items 2, 10 and 13); ideology (items 1, 3 and 6); public practice (items 4, 7 and 9); private practice (items 5, 8 and 14); and religious experience (items 11, 12 and 15).

The Portuguese-adapted version of the CRS resulted from a translation of the English version by two psychologists with expertise in the subject and in-depth knowledge of the English language. The authors of this study standardized the translations. This was followed by back-translation by two Portuguese professionals who also had extensive knowledge of the English language. Finally, the authors of this study combined the back-translated version with the original English version.

### Data Analysis Procedure

After the data were collected, they were imported into SPSS Statistics 29 software (IBM Corp., Armonk, NY, USA). We followed the procedures of Koenig and Al Zaben (2021) to adapt this instrument to the Portuguese population. To validate the instrument, the sample was randomly divided into two parts: one consisting of 403 participants with which an exploratory factor analysis was conducted and the other consisting of 615 participants with which a confirmatory factor analysis was conducted. The exploratory factor analysis calculated the KMO value, which should be greater than 0.70 (Sharma, 1996). We also calculated the average variance extracted, which should be greater than 50%. All items with factor weights greater than 0.50 were considered. To test the internal consistency of each of the

dimensions, Cronbach's alpha was calculated, which should be greater than 0.70 (Bryman & Cramer, 2003).

Two confirmatory factor analyses were conducted with the other 615 participants, using one and five factors in AMOS Graphics for Windows software (IBM Corp., Armonk, NY, USA). The procedure followed a "model generation" logic (Jöreskog & Sörbom, 1993). The six fit indices were combined as recommended by Hu and Bentler (1999). The following fit indices were calculated: chi-square ratio/degrees of freedom ($\chi^2$/gl); Tucker−Lewis index (TLI); goodness-of-fit index (GFI); comparative fit index (CFI); root mean square error of approximation (RMSEA); and root mean square residual (RMSR). The chi-square/degrees of freedom ratio ($\chi^2$/gl) must be less than 5. The CFI, GFI, and TLI values must equal or exceed 0.90. For the RMSEA to be considered a good fit, its value must be less than 0.08 (McCallum et al., 1996). The lower the RMSR is, the better the fit (Hu & Bentler, 1999). With the data obtained from the confirmatory factor analysis, the construct reliability was calculated for each dimension, and the convergent validity was calculated using the AVE value. The construct reliability values must be greater than 0.70, and the AVE value must be equal to or greater than 0.50 (Fornell & Larcker, 1981). The divergent validity was also calculated. To calculate divergent validity, we calculated the square root of the Ave value for each dimension, which should be greater than the correlation value between the respective dimensions.

The sensitivity of the items was calculated with the 1018 participants to determine whether the items could discriminate between subjects. For this purpose, each item's minimum, maximum, median, kurtosis and asymmetry were calculated. The items had to have responses at all points, the median could not be close to one of the extremes, and the absolute values of asymmetry and kurtosis had to be below 2 and 7, respectively (Finney & DiStefano, 2013). The normality of each of the dimensions was also tested.

Descriptive statistics were then analysed for the dimensions that constituted the scale. Finally, the effect of sociodemographic variables on the five dimensions of the scale was tested using parametric Student's t tests (when the independent variable consisted of two groups) and one-way ANOVA (when the independent variable consisted of more than two groups).

## Results

### Exploratory Factor Analysis

As mentioned above, an exploratory factor analysis was conducted with 403 participants who were randomly selected from the 1018 participants in this study. A KMO of 0.96 was obtained, which can be considered very good (Sharma, 1996). Bartlett's test of sphericity was significant at $p < 0.001$, indicating that the sample in this study came from a multivariate population (Pestana & Gageiro, 2003). The results showed that the factor structure of this instrument was based on five factors, similar to the results obtained by the authors. All the items had factor weights greater than 0.50

**Table 2** Factors and factor weights of the items obtained in the exploratory factor analysis

| | Factor | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 1. To what extent do you believe that God or something divine exists?<br>(Até que ponto acredita que existe Deus, Divindades ou algo Divino?) | 0.42 | **0.70** | 0.28 | 0.24 | 0.31 |
| 2. How interested are you in learning more about religious topics?<br>(Quão interessado está em aprender mais sobre assuntos religiosos?) | 0.16 | 0.48 | 0.28 | **0.71** | 0.15 |
| 3. To what extent do you believe in an afterlife—e.g. immortality of the soul, resurrection of the dead or reincarnation?<br>(Até que ponto acredita na vida após a morte (i.e. imortalidade da alma, ressurreição, reincarnação…)? | 0.40 | **0.69** | 0.30 | 0.20 | 0.17 |
| 4. How important is for you to take part in religious services?<br>(Quão importante é para si participar nos serviços religiosos?) | 0.28 | 0.36 | **0.73** | 0.37 | 0.23 |
| 5. How important is personal prayer for you?<br>(Quão importante é para si a oração pessoal?) | 0.37 | 0.49 | 0.33 | 0.29 | **0.57** |
| 6. In your opinion, how probable is it that a higher power really exists<br>(Na sua opinião, qual é a probabilidade de existir realmente um Ser Superior?) | 0.39 | **0.73** | 0.27 | 0.24 | 0.28 |
| 7. How important is it for you to be connected to a religious community?<br>(Quão importante para si é estar ligado a uma comunidade religiosa?) | 0.26 | 0.34 | **0.73** | 0.37 | 0.23 |
| 8. How often do you pray?<br>Com que frequência reza? | 0.29 | 0.31 | 0.39 | 0.23 | **0.73** |
| 9. How often do you take part in religious services?<br>Com que frequência participa em serviços religiosos? | 0.22 | 0.21 | **0.81** | 0.28 | 0.28 |
| 10. How often do you think about religious issues?<br>(Com que frequência pensa sobre assuntos religiosos?) | 0.31 | 0.31 | 0.30 | **0.70** | 0.27 |
| 11. How often do you experience situations in which you have the feeling that God or something divine intervenes in your life?<br>(Com que frequência experiencia situações nas quais sente que Deus ou algo Divino intervém na sua vida?) | **0.74** | 0.41 | 0.26 | 0.26 | 0.27 |

**Table 2** (continued)

| | Factor | | | | |
|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 |
| 12. How often do you experience situations in which you have the feeling that God or something divine wants to communicate or to reveal something to you? (Com que frequência experiencia situações nas quais sente que Deus ou algo Divino quer mostrar-lhe ou revelar-lhe algo?) | **0.80** | 0.36 | 0.24 | 0.25 | 0.19 |
| 13. How often do you keep yourself informed about religious questions through radio, television, internet, newspapers, or books? (Com que frequência se mantém informado sobre questões religiosas através da rádio, TV, internet, jornais ou livros?) | 0.33 | 0.03 | 0.39 | **0.73** | 0.20 |
| 14. How often do you pray spontaneously when inspired by daily situations? (Com que frequência reza espontaneamente, inspirado por situações diárias?) | 0.41 | 0.24 | 0.32 | 0.35 | **0.68** |
| 15. How often do you experience situations in which you have the feeling that God or something divine is present? (Com que frequência experimenta situações em que sente que Deus ou algo Divino está presente?) | **0.73** | 0.35 | 0.24 | 0.31 | 0.30 |

Bold values indicate the highest factor weights for each item, which indicate the factor to which they belong

Factor 1—religious experience; factor 2—ideology; factor 3—public practice; factor 4—intellect; factor 5—private practice

**Table 3** Adjustment indices of confirmatory factor analyses

| Number of factors | $\chi^2$/df | CFI | GFI | TLI | RMSEA | RMSR |
|---|---|---|---|---|---|---|
| One | 23.54 | 0.82 | 0.62 | 0.79 | 0.19 | 0.12 |
| Five | 4.16 | 0.98 | 0.94 | 0.97 | 0.07 | 0.04 |

**Table 4** Construct reliability and convergent validity of the dimensions

| Dimension | Number of items | CR | AVE |
|---|---|---|---|
| Ideology | 3 | 0.93 | 0.82 |
| Intellect | 3 | 0.88 | 0.72 |
| Religious experience | 3 | 0.95 | 0.88 |
| Public practice | 3 | 0.97 | 0.93 |
| Private practice | 3 | 0.94 | 0.83 |

(Table 2). For the total variance explained, the five factors explained 88.64% of the variability in this instrument.

### Internal Consistency

To test the internal consistency of this instrument, we calculated the Cronbach's alpha value for each of its dimensions. All the dimensions had Cronbach's alpha values higher than 0.80, which indicated that these dimensions had good internal consistency.

### Confirmatory Factor Analysis

Two confirmatory factor analyses with one and five factors were conducted with the remaining 615 participants. Table 3 shows that the adjustment indices obtained in the one-factor CFA were inadequate, while those obtained in the five-factor CFA were all adequate.

All items had factor weights greater than 0.70, which is considered good according to Hair et al. (2017).

### Construct Reliability and Convergent Validity

Using the data obtained from the CFA, we calculated the construct reliability (CR) and convergent validity (by calculating the AVE). All dimensions had values above 0.80, indicating good construct reliability (Table 4).

Regarding convergent validity, all the AVE values were above 0.70, which is considered good (Table 4), according to Fornell and Larcker (1981).

### Discriminant Validity

To test the discriminant validity, the square root of the AVE value of each of the dimensions was calculated. As shown, it was greater than the value of the correlations between the respective dimensions (Table 5).

### Sensitivity of the Items and Dimensions

All items had responses at all points, and only items 1 and 6 had a median towards the upper end. However, because all the items had absolute asymmetry and kurtosis values below 2 and 7, respectively, they did not grossly violate normality, indicating that they discriminated between subjects (Finney & DiStefano, 2013).

The normality of the scale and its dimensions were tested. Neither the scale nor the dimensions followed a normal distribution. ($p < 0.05$). However, as their absolute values of asymmetry and kurtosis were below 2 and 7, respectively, it could be concluded that they did not grossly violate normality (Finney & DiStefano, 2013).

### Descriptive Statistics of the Variables Under Study

Descriptive statistics were carried out on the variables under study to understand the position of the answers given by the participants.

The results show that the participants' answers were significantly above the centre point of scale (3) in terms of both the scale as a whole and all its dimensions. The dimension with the highest average was public practice, and the dimension with the lowest average was experience.

### Associations Between Sociodemographic Variables and the Variables Under Study

Finally, the associations between the sociodemographic variables and the variables under study were tested. Regarding sex, various Student's t tests for independent samples were conducted after checking the respective assumptions. When the assumption of homogeneity of variance was not met, Student's t test with Welch's

**Table 5** Discriminant validity of the dimensions

| | 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|---|
| 1. Ideology | **0.91** | | | | |
| 2. Intellect | 0.71** | **0.85** | | | |
| 3. Religious experience | 0.84** | 0.73** | **0.94** | | |
| 4. Public practice | 0.73** | 0.79** | 0.70** | **0.96** | |
| 5. Private practice | 0.82** | 0.78** | 0.83** | 0.81** | **0.91** |

The square root values of the AVE are shown in bold

**$p < 0.001$

correction was used. Statistically significant differences were found only in the ideology and private practice dimensions. The average for female participants was significantly higher than for male participants.

Marital status had a significant effect on the CRS ($F(3, 1014) = 16.03$; $p < 0.001$), in the ideology dimension ($F(3, 1014) = 15.87$; $p < 0.001$), the intellectual dimension ($F(3, 1014) = 11.15$; $p < 0.001$), the experience dimension ($F(3, 1014) = 14.54$; $p < 0.001$), the public practice dimension ($F(3, 1014) = 10.38$; $p < 0.001$) and the private practice dimension ($F(3, 1014) = 18.31$; $p < 0.001$). Widowed participants had the highest average in all dimensions, and single participants had the lowest average.

The religion practised by the participants also significantly affected the CRS in all dimensions. For this analysis, only religions practised by 5 or more participants were considered. The religion practiced had a significant effect on the overall CRS ($F(3, 1014) = 111.01$; $p < 0.001$), the ideology dimension ($F(3, 1014) = 76.72$; $p < 0.001$), the intellectual dimension ($F(3, 1014) = 54.28$; $p < 0.001$), the experience dimension ($F(3, 1014) = 101.38$; $p < 0.001$), the public practice dimension ($F(3, 1014) = 81.76$; $p < 0.001$) and the private practice dimension ($F(3, 1014) = 123.55$; $p < 0.001$). Participants who professed an evangelical religion had the highest average on the CRS and in the ideology, intellectual and public practice dimensions. Protestant participants had the highest average in the experience and private practice dimensions. In all dimensions, participants who were not religious had the lowest average.

Age was positively and significantly associated with all dimensions, so older participants had higher averages.

## Discussion

The primary objective of this study was to adapt and validate the CRS, originally developed by Huber and Huber (2012), for the Portuguese population. This instrument, which consists of 15 items across 5 dimensions, was empirically tested with a sample of 1,018 participants representing a diverse range of religions. The sample was randomly divided into two parts, one with 403 participants and the other with 615 participants, to ensure the robustness of the findings.

With the sample of 403 participants, exploratory factor analysis was conducted to test the instrument's factor structure. The exploratory factor analysis suggested the existence of five factors identical to those in a study conducted by the authors of this instrument. A KMO of 0.96 was obtained, which is considered good (Sharma, 1996) and indicates that this instrument measures what is intended. Bartlett's test of sphericity was significant, indicating that the data from this sample came from a multivariate population (Pestana & Gageiro, 2003). All items had factor weights greater than 0.50, and a total variance of 88.64% was obtained. The internal consistency of the dimensions was also tested by calculating Cronbach's alpha. Values above 0.80 were obtained for all dimensions, which is considered good.

Two confirmatory factor analyses were conducted with the other 615 participants with one factor and five factors to confirm the factor structure of the instrument. The

results confirmed that the factor structure of the instrument was based on five factors, as indicated by adequate fit indices. All items had factor weights above 0.70, which is considered good according to Hair et al. (2017). When construct reliability was calculated, values above 0.80 were obtained for all dimensions. The AVE values were all higher than 0.70, which was much higher than the minimum acceptable value of 0.50 (Fornell & Larcker, 1981), indicating that these dimensions had good convergent validity. Discriminant validity was also proven between the factors that constitute this instrument since all the AVE square root values were greater than the correlation values between the respective factors. It can therefore be concluded that all dimensions had good construct reliability and good convergent validity and that the dimensions were not highly correlated with each other (i.e., they were not multicollinear).

Finally, the sensitivity of the items and dimensions was tested with all the participants in this study. It was found that their absolute values of asymmetry and kurtosis were below 2 and 7, respectively, suggesting that they did not grossly violate normality. We can therefore conclude that the items that constitute this instrument can discriminate between subjects (Finney & DiStefano, 2013).

The descriptive statistics of the variables under study showed that the average of the answers given by the participants on the CRS and in each dimension were significantly above the centre point of the scale. The public practice dimension had the highest average, and the religious experience dimension had the lowest average. These results are in line with the findings of several surveys cited above on religiosity in Europe. Portugal ranks as one of the countries with the highest levels of faith and the greatest share of worship in its religious communities. Lay people are more easily exposed to the messages of the clergy, and the strengthening of group identity is promoted through regular social interaction (Biocalti and Molteni, 2022).

In terms of the differences between participants according to gender, female participants had the highest average on the CRS and in all dimensions. This was expected since the finding that women are more religious than men is one of the most consistent conclusions in the sociology of religion (Coutinho, 2015).

Regarding marital status, widowed participants had a higher average score on the CRS and all of its dimensions. Of the 22 widowed participants, 19 were female; as we have seen, the average for female participants was greater than that for male participants. Married or cohabiting participants came next, with the exception of the private practice dimension. The lowest average in all the dimensions belonged to single participants. Numerous factors can help individuals adapt to the death of a partner, including religiosity. Establishing a secure relationship with God can provide an emotional compensation effect that promotes psychological health. In addition, the faith community can be a place of emotional and functional support, and these benefits may explain the increase in religiosity among widowers (Brown et al., 2004; Michael et al., 2003). In Portugal, the Christian religion predominates. Christianity promotes and emphasizes the importance of forming traditional family ties, such as marriage, so it was expected that many of the respondents would be in a stable marital relationship (Silverstein et al., 2023; Sorowski & Sorowska, 2019).

We also found a positive and significant association between the age of the participants and the CRS and in all dimensions, indicating that the older the participants

were, the higher their level of ideology, intellectuality, religious experience, public practice, and private practice. These results are in line with the results obtained according to the participants' marital status: those with the lowest average age were single, and those with the highest average age were widowed. Studies in Portugal show that religiosity in general and related variables such as belonging to a faith and religious practice increase with age (Coutinho, 2023a, 2023b).

Regarding the respondents' religion, the Evangelical participants had the highest average scores for the CRS, ideology, intellectuality, and public practice. For religious experience and private practices, the average number of Protestant participants was the highest. Catholic participants ranked third in all dimensions, and Hindu participants ranked fourth. Nonreligious participants had the lowest average, which is expected since the highest percentage of nonpractising participants were single. The degree of religiosity depends on how religious behaviour and beliefs are shaped by different religious cultures (Hollinger & Makula, 2021). In modern societies, the individuality of experiences has become very relevant as a motivator of personal faith. In this context, Evangelical Christianity stands out with a strong focus on subjective experience (Walter & Altorfer, 2022), in contrast to Catholicism, which is characterized by a more conservative and ritualistic mindset (Plante, 2021).

One notable finding is that public practices consistently scored higher than private practices across all situations. This suggests that in the Portuguese context, religiosity is expressed in public more than it is privately held. These insights can inform our understanding of religious practices and their societal implications.

## Study Limitations

One limitation of this study was the inability to conduct procedures to assess the convergent and divergent validity of the CRS-15 due to the scarcity of validated instruments for assessing religious/spiritual aspects in the Portuguese population.

Given that religiosity is a deeply personalized process, the inclusion of qualitative methods in addition to quantitative data collection is crucial. This approach not only would provide a general analysis of how these variable manifests but also would enrich the understanding of other factors that are necessarily present and active in this complex area.

## Conclusions

The Centrality of Religion Scale (CRS-15) was validated for the Portuguese population. The results showed a 5-dimensional factorial structure and good internal consistency values, consistent with the original scale. This study thus provides another instrument for measuring religiosity in the European Portuguese population that could be useful for research in the field of psychology of religion and spirituality.

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## Declarations

**Competing interests** The authors have no relevant financial or non-financial interests to disclose.

**Consent to Participate** Informed consent was obtained from all individual participants included in the study.

**Ethical Approval** This study was performed in line with the principles of the Declaration of Helsinki. Ethical review and approval were waived for this study since all participants before answering the questionnaire had to read the informed consent and agree to it. This was the only way they could answer the questionnaire. Participants were informed about the purpose of the study, as well as that the results were confidential, as individual results would never be known, but would only be analysed in the set of all participants.

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