

Article

Belief into Action Scale: A Comprehensive and Sensitive Measure of Religious Involvement

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Abstract: We describe here a new measure of religious commitment, the Belief into Action (BIAC) scale. This measure was designed to be a comprehensive and sensitive measure of religious involvement that could discriminate individuals across the religious spectrum, and avoid the problem of ceiling effects that have haunted the study of highly-religious populations. Many scales assess religious beliefs, where assent to belief is often widespread, subjective, and a superficial assessment of religious commitment. While people may say they believe, what does that mean in terms of action? This 10-item scale seeks to convert simple belief into *action*, where action is assessed in terms of what individuals say is most important in their lives, how they spend their time, and where they put their financial resources. We summarize here the psychometric characteristics of the BIAC in two very different populations: stressed female caregivers in Southern California and North Carolina, and college students attending three universities in Mainland China. We conclude that the BIAC is a sensitive, reliable, and valid measure of religious commitment in these two samples, and encourage research in other population groups using this scale to determine its psychometric properties more generally.

Keywords: religion; measurement; psychometric properties; DUREL; RCI-10; China

1. Introduction

The Belief into Action Scale (BIAC) [1] is a new scale developed in response to concerns that many religious measures only superficially assess the level of religiosity and often have ceiling effects in populations known to be highly religious (Blacks, other ethnic minorities, Middle Eastern groups, *etc.*) [2–4]. The BIAC was designed to increase the sensitivity in detecting differences in religious commitment by expanding response options so that both extremes of religiosity could be measured (from no involvement to a life centered on religious faith). The basis for the content of the BIAC is the importance of religion in a person's life. What individuals spend their time, talents, and financial resources on matters more than what they say matters to them.

The psychometric properties of the BIAC were originally tested in a sample of 251 middle-aged and older female caregivers (ages 40 to 75) of family members with severe disability due to stroke, dementia, or other neurological or medical problems [1]. Participants lived in either Los Angeles County, California, or in the Research Triangle of North Carolina (Durham-Raleigh-Chapel Hill), areas representing two opposite sides of the United States (U.S.). Subsequently, the BIAC has been administered in a number of populations in different areas of the United States (San Diego, California; Terre Haute, Indiana) and in other countries (China, Spain, Iran, Ghana, Brazil, Puerto Rico). The scale has now been translated into Spanish, Farsi, Arabic, Portuguese, and Chinese. In addition to the original validation study, the only other study that has so far reported the psychometric properties of the BIAC administered the scale to a sample of university students in Mainland China [5]. The present paper is a review of the findings in those studies and presents minimal new information not contained in those reports.

2. Scale Description and Content

The BIAC consists of 10 questions, each rated on a 1–10 scale (except the first question, which receives a value of 1 or 10 depending on the response). The total scale score, then, ranges from 10 to 100. The time of completion is less than two minutes. Each question was carefully chosen based on similar questions on other scales commonly used to assess religiosity [6].

The Question #1 directly asks the person to choose their highest priority in life, with common priorities among the response options. Relationship with, or connection to, God is one of the options. Other priorities include family, health, job, education, acquiring wealth, independence, and so forth. Depending on the dominant religion of the population being assessed, the word “God” may be replaced by Allah or HaShem or Buddha or Vishnu or whatever word is used to describe the Deity in that tradition. The Questions #2 and #3 assess degree of involvement in religious community activities (sometimes called organizational religiosity, as distinct from non-organizational or private religious activities). Question #4 is similar to Question #10 and examines the extent to which the respondent has consciously decided to place his/her life under the direction of God (or conform life to the teachings of their religious faith). The important word here is “decided”. To what extent has the person made a

conscious decision to surrender to God (a key theological teaching in Christian and Muslim faith traditions) or conform their will to God's will (based on religious teachings).

Questions #5 and #9 seek to determine whether use of personal financial resources (or time) is consistent with claims about the priority of God or religion in life. There is an old proverb that says, "if you want to know what is really important to someone, look at their checkbook." People usually spend their money on things they really value—such as family, friends, sports, cars or houses, other material possessions, vacations, business, other valued activities, or religion. Contributing money to or spending time volunteering for religious causes or supporting a religious community, then, indicates where the person directs their most precious resources (and may be a bit more objective in reflecting a person's priorities).

Questions #6, #7, and #8 assess level of involvement in private or non-organizational religious activities (as distinct from organizational ones). Time spent in private religious activities—such as watching religious TV or listening to religious radio or religious music, reading religious scriptures or other religious literature, and praying or meditating, are examples of non-organizational religious practices that are usually done alone. This is another good indication of how important religion is to a person and to what extent it is integrated into all of life (with regard to use of personal time). Involvement in organizational religious activities may be driven by a desire to socialize with others rather than devotion to religion or worship of God. Non-organizational religious activities, however, are not usually influenced by a desire for socialization.

In conclusion, then, the BIAC questions assess organizational and non-organizational religious activities, as well as degree of personal (intrinsic) devotion or commitment to one's religious faith (these are the three major dimensions of religiosity [7]). The expansion of possible response options (1 to 10) is intended to increase the sensitivity of each question and, as noted earlier, minimize ceiling effects (see Appendix for the full questionnaire).

3. Scale Scores

In the original study conducted in 2013–2014, the BIAC was administered to a convenience sample of 246 stressed female caregivers (87% Christian) who were recruited by flyers and posters describing the study [1]. Of those, 238 (97%) complete the entire scale and of the eight remaining respondents, six completed eight or nine of 10 items. This suggests that the scale is acceptable to most participants who were drawn from both the West and East coasts of the U.S. While seven of the eight participants who did not complete all 10 items were from the West coast, the average score on the BIAC in North Carolina was 47.2 (SD = 21.5, 95% CI = 43.7–50.7), and was not significantly different from the average score of 45.1 (SD = 19.7, 95% CI = 41.2–49.0) obtained in Southern California (t value = 0.78, p = 0.44). Minority status, however, did make a difference. White Caucasians scored an average of 38.9 (SD = 20.2, 95% CI = 35.0–42.8), Hispanics 49.8 (SD = 17.3, 95% CI = 41.9–57.6), and Blacks 55.2 (SD = 18.7, 95% CI = 51.3–59.1) (F value = 17.7, p < 0.0001). Among participants with no religious affiliation, the average score was 13.3 (SD = 4.4, 95% CI = 9.2–17.3, range 10–22), compared to 47.4 for those with an affiliation (SD = 20.1, 95% CI = 44.9–50.1). There was no evidence for a ceiling effect, even among older (60+) Black women in the sample (median 55, range 15 to 81).

In a second study [5] conducted in 2014, the BIAC was administered to 1861 students identified using a cluster sampling method (those registered in the same class, usually 35–45 students, were defined as a cluster and were approached to participate in the study). Average age of respondents was 21.5 years and response rate was 97.8% (1861 out of 1902 students approached). Students attended Ningxia Medical University (NXMU) located in Ningxia province, an underdeveloped area in Western China ($n = 1078$); Southern Medical University located in Guangdong province, a well-developed area of Eastern China ($n = 415$); and Shaanxi University of Chinese Medicine located in Shaanxi province, a moderately developed area in Midwestern China ($n = 408$). Of those, 1812 (97%) completed 100% of questions on the BIAC and 18 (1%) completed at least 70% of questions, again indicating that the scale was well-tolerated. The average score for the total sample was 15.9 (SD = 8.8), with significantly higher scores in men compared to women (17.2, SD = 10.7, vs. 14.9, SD = 7.7, respectively, $p < 0.001$). Among students with no religious affiliation (66%), the average BIAC score was 12.4 (SD = 3.9); among those who were Muslim (18% of the sample), average score was 26.9 (SD = 11.1); and among those who were Christian (1.6%), average score was 29.6 (SD = 16.1). Among students who were affiliated with Buddhist, Tao, or Chinese religions (13% of the sample), average BIAC score was 16.8 (SD = 7.0). However, among those affiliated with these religions who indicated they had decided to conform their life to the teachings of their religious faith at least to a moderate degree, the average score was 34.7 (SD = 10.7), not greatly different from the average score in our sample of middle-age to older White Caucasian caregivers in the U.S. (average 38.9).

4. Psychometric Properties

The psychometric properties of the BIAC (reliability and validity) were determined in the two populations above, which we now describe.

4.1. Reliability

Reliability of a scale is the extent to which items on the scale are measuring the same thing (internal consistency or Cronbach's alpha) and whether responses to the items are similar when the scale is re-administered at different times in the same individuals (test-retest). In the original study of stressed female caregivers from North Carolina and California, internal reliability was high, as demonstrated by a Cronbach's alpha coefficient of 0.89 (95% CI = 0.86–0.91). Re-computing the alpha after removing individual items on the scale resulted in alphas ranging from 0.87 to 0.89. The test-retest reliability (assessed by the intra-class correlation coefficient or ICC) of individual items and total scale score after one week ranged from 0.66 to 0.97 for individual items and was 0.92 for the total score ($n = 60$). In the Chinese college student sample, the Cronbach's alpha was 0.83. When individual items were removed from the scale and alpha re-calculated, the values ranged from 0.80 to 0.84. The test-retest reliability (ICC) of individual items and the total score after two weeks ranged from 0.36 to 0.90 for individual items and was 0.86 for the total score ($n = 133$). Cronbach's alpha coefficients and ICCs that exceed 0.70 are considered satisfactory [8,9], suggesting that the BIAC is a reliable scale in diverse populations and religious groups.

4.2. Validity

Validity is the extent to which a scale really measures the theoretical concept or characteristic that it intends to measure. There are three basic types of validity: content validity, construct validity, and criterion validity. There is also a fourth type of validity when comparing a new measure to an existing measure called incremental validity.

4.2.1. Content Validity

The first type of validity, content or face validity, was discussed in the section above on the scale's description and content. The content of the items chosen for the BIAC make logical sense given the purpose of the scale.

4.2.2. Construct Validity

Construct validity is the extent to which a measure of a construct is related to things we expect the measure to be related to and is independent of constructs we expect the measure to be independent of. Construct validity is measured by convergent, discriminant, and factor analytic validity.

Convergent Validity

The correlation between a new scale and existing scales that have demonstrated validity is an indicator of convergent validity. In the caregiver study, religious affiliation was assessed, along with intrinsic religiosity (IR) that was measured by Hoge's 10-item Intrinsic Religiosity Scale [10], organizational (ORA) and non-organizational religiosity (NORA) by the five-item Duke University Religion Index (DUREL) [11,12] (that includes 3 items from the Hoge IR scale), religious support by Krause's 12-item Religious Support Scale (RSS) [13], and negative religious coping (NRC) by the seven-item subscale of the Brief RCOPE [14]. Correlations with the BIAC (and effect sizes, *i.e.*, Cohen's *d*, where $d \geq 0.80$ is considered large and $d \leq 0.20$ small) were $r = 0.77$ ($d = 2.41$) for IR, $r = 0.76$ ($d = 2.34$) for ORA, $r = 0.60$ ($d = 1.50$) for NORA, $r = 0.67$ ($d = 1.81$) for RSS, and, as predicted, $r = -0.20$ ($d = 0.41$) for NRC. These correlations indicate strong convergent validity for the BIAC in this largely Christian U.S. sample. Furthermore, as noted earlier, the average score among those acknowledging a religious affiliation (47.5, 95% CI = 44.9–50.1) was nearly four times higher than that of those indicating no religious affiliation (13.3, 95% CI = 9.2–17.3).

In the study of university students in Mainland China, other religious measures were the 10-item Religious Commitment Inventory [15] (RCI, with intrapersonal and interpersonal subscales) and religious affiliation. The correlations between the BIAC and the RCI subscales were high: $r = 0.67$ ($d = 1.81$) for intrapersonal religiosity and $r = 0.60$ ($d = 1.50$) for interpersonal religiosity. The total BIAC score also distinguished those with a religious affiliation from those without one (23.1, SD = 11.2, vs. 12.4, SD = 3.9, respectively, $p < 0.0001$).

Discriminant Validity

Discriminant validity is whether constructs or measures that are supposed to be unrelated are, in fact, unrelated. There has been a great deal of concern that measures of spirituality often include items that are actually measuring positive mental health or social connections, rather than anything distinctively spiritual, resulting in serious and concerning concept overlap [16]. In our U.S. caregiver study [1], the BIAC was only weakly related to depressive symptoms measured using the 20-item CES-D ($r = -0.12$, $d = 0.24$), caregiver burden using the 22-item Zarit scale ($r = -0.19$, $d = 0.34$), social support network size ($r = 0.13$, $d = 0.26$), and physical health ($r = 0.01$, $d = 0.02$). Likewise, in the Mainland China study [5], the BIAC was only weakly correlated with purpose in life ($r = 0.01$, $d = 0.02$), quality of life ($r = -0.02$, $d = 0.04$), life satisfaction ($r = 0.02$, $d = 0.04$), and social interaction ($r = 0.10$, $d = 0.20$). These correlations suggest that the BIAC is measuring something quite different and distinct from mental, social, or physical health.

Factor Analytic Validity

Factor analysis determines if a measure of a construct behaves like theory says it should behave. In the caregiver study [1], principle components analysis (PCA, not rotated) revealed a single factor with an eigenvalue of 4.73 that explained 94.4% of the total variance (with factor loadings for individual items ranging from 0.545 to 0.797). This is consistent with the theory that the scale is measuring a single underlying construct that we call *religious commitment*. When PCA was repeated using an oblique rotation, two factors emerged but were highly correlated with each other ($r = 0.69$) and many items loaded equally on both factors. In the Chinese student study [5], PCA (oblique rotation) revealed three factors: a “God factor” representing a single item (Question #1), a “social factor” (Questions #2, #3, #4, #5), and a “personal factor” (Questions #6, #7, #8, #9, #10). The three-factor model explaining 66.3% of the total scale variance was identified in the first half of the sample (randomly split into two halves) and was verified in the second half of the sample. The three-factor model in the Chinese sample is consistent with the three major dimensions of religiosity that experts have identified (organizational, *i.e.*, social; non-organizational, *i.e.*, personal; and subjective, *i.e.*, God-centered commitment). The difference in the factor structure between the U.S. caregiver and Chinese samples may be due to the large difference in religiosity between the two populations, particularly the low religiosity in sample from China (a country where religious involvement has been discouraged for decades). The difference may also be due to the concept of God in eastern religions.

4.2.3. Criterion Validity

Criterion validity is the extent to which a measure is related to another measure of the construct that represents a “gold standard” or a more objective measure of the construct (clinical exam). Since there is no gold standard or as yet objective measure of religious commitment, criterion validity is difficult to establish for the BIAC. Criterion validity is established by concurrent validity and predictive validity.

Concurrent Validity

In the case where a new measure is being compared to an existing measure at one point in time (concurrent) and there is no gold standard or objective measure of the construct available, convergent validity may be used as a proxy for concurrent validity. Convergent validity (in Section 4.2.2) has already been discussed under construct validity above.

Predictive Validity

Predictive validity is the ability of a scale to predict over time important outcomes it should theoretically be able to predict. We would expect greater religious commitment (BIAC scores) to predict better mental and social health over time. Since we do not yet have longitudinal data on the BIAC, we do not yet have a measure of predictive validity for the scale.

4.2.4. Incremental Validity

As emphasized by Piedmont [17], a fourth type of validity called incremental validity measures the extent to which a new measure predicts important outcomes better than an existing measure. We now compare the BIAC with a well-established measure, the Duke University Religion Index [11]. The DUREL is one of the most commonly-used measures of religiosity today with more than 1,130 citations on Google Scholar as of early August 2015; more than two-thirds of those studies were published since 2011. In the U.S. caregiver study [1], the BIAC and DUREL were correlated at $r = 0.80$ ($d = 2.67$). Table 1 examines the incremental validity of the BIAC in relationship to the DUREL in terms of correlations with several psychological and social outcomes (incremental validity meaning the amount of variance that the BIAC contributes to predicting the outcome above and beyond that accounted for by the DUREL). While only a small amount of variance (R-squared) is predicted by either measure in keeping with the discriminant validity of the DUREL and BIAC (1% to 3% and 1 to 10%, respectively), the findings suggest that the BIAC is considerably superior to the DUREL (75% to 300%) in terms of predicting psychosocial outcomes based on this cross-sectional work.

Table 1. Comparison of BIAC and DUREL with psychosocial outcomes in 245 female U.S. caregivers.

	DUREL		BIAC		
	R-Squared ¹	Partial F ²	R-Squared ³	Partial F ²	R-Squared increase ⁴
Psychosocial outcomes					
Mood (CES-D)	0.008	0.01	0.014	1.38	75%
Perceived stress (Cohen)	0.024 *	0.76	0.060 ***	9.06 **	150%
Caregiver burden (Zarit)	0.015 *	0.87	0.040 **	6.67 **	167%
Social support (SSQ-N)	0.006	0.37	0.018	2.86	200%
Social support (SSQ-S)	0.025 **	3.28	0.100 ****	19.22 ****	300%

Notes: BIAC = Belief into Action Scale; DUREL = Duke University Religion Index; CES-D = Center for Epidemiologic Studies—Depression; Zarit = Zarit Burden Interview; Cohen = Perceived Stress Scale; SSQ-N = Social Support Questionnaire-network size; SSQ-S = Social Support Questionnaire-satisfaction with support; ¹ R-squared from model with only DUREL in model; ² Type III SS from general linear model with both DUREL and BIAC included; ³ R-squared from model with both DUREL and BIAC included; ⁴ R-squared increase=percentage increase in R-squared with addition of BIAC to model with DUREL; * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$; **** $p < 0.0001$.

5. Discussion and Conclusions

Based on a study of stressed female caregivers from the U.S. and university students from Mainland China, the BIAC is a sensitive and comprehensive measure of religious commitment with solid psychometric characteristics that allow for assessment across a wide range of religious belief and activity. The relatively weak associations between the BIAC and mental and social health outcomes in stressed female caregivers appear to be stronger (by 75 to 300 percent) compared to a standard, widely-used measure of religiosity (DUREL), which may reflect the BIAC's greater sensitivity and, perhaps, greater accuracy. There is no evidence that the measure has a ceiling effect, even in Black older women who have long been known as the most religious age-gender-race group in America [18].

Although primarily designed for members of monotheistic religious traditions, the BIAC also performed fairly well in university students in Mainland China, a population at the other end of the religiosity spectrum affiliated with a variety of non-monotheistic religions or no religion. Given the limited populations that it has been studied in so far, more research is needed on the psychometric characteristics of the BIAC in other age, race, and gender groups located in secular and religious regions of the U.S. and other countries of the world, especially the Middle East. Several such studies are now ongoing (with a Muslim version of the BIAC in Arabic available). In particular, the factor structure of the BIAC needs evaluation in different religious and non-religious groups that include both men and women in order to determine if the one-factor, two-factor, or three-factor model best describes the structure of the scale. Most of the sample in the U.S. caregiver sample was Christian, which undoubtedly played a major role in the un-rotated single factor structure of the BIAC. The exact nature of the factor structure was called into question with the more diverse Chinese sample, underscoring the need for future research.

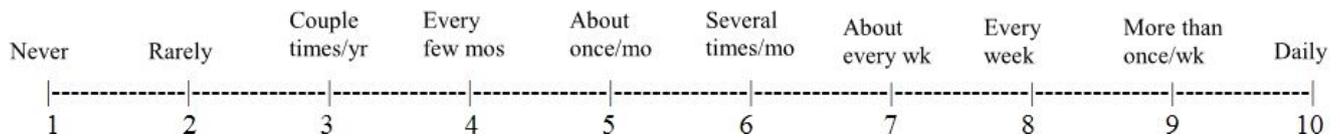
Appendix

Belief into Action Scale

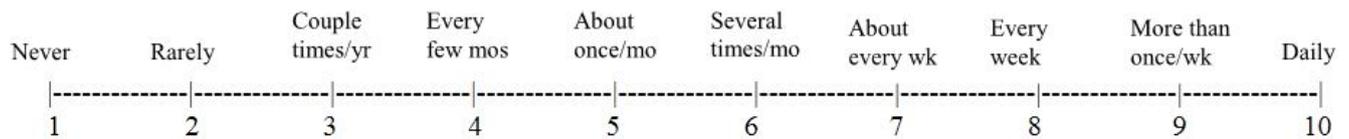
1. Please circle the highest priority in your life now? (most valued, prized) [circle only one]

1. My health and independence
2. My family
3. My friendships
4. Job, career or business
5. My education
6. Financial security
7. Relationship with God
8. Ability to travel & see the world
9. Listening to music and partying
10. Freedom to live as I choose

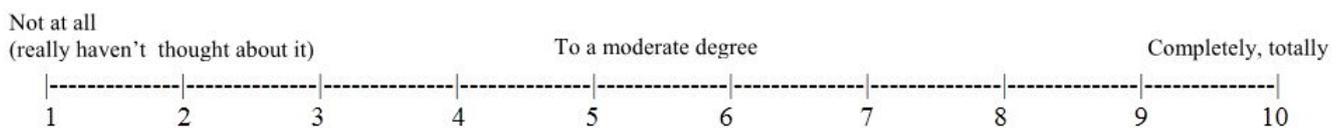
2. How often do you attend religious services? (circle a number below)



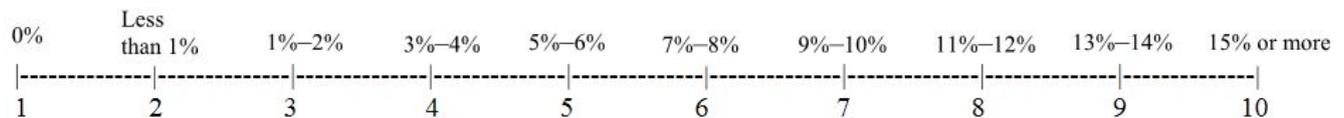
3. Other than religious services, how often do you get together with others for religious reasons (prayer, religious discussions, volunteer work, etc.)?



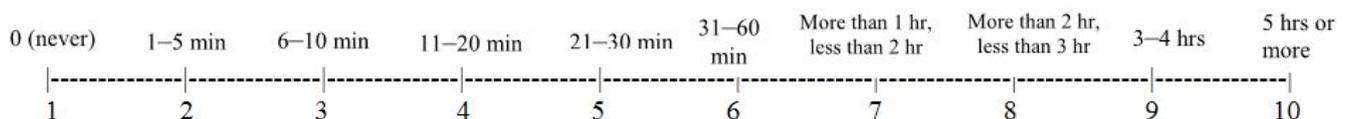
4. To what extent (on a 1 to 10 scale) have you decided to place your life under God’s direction?



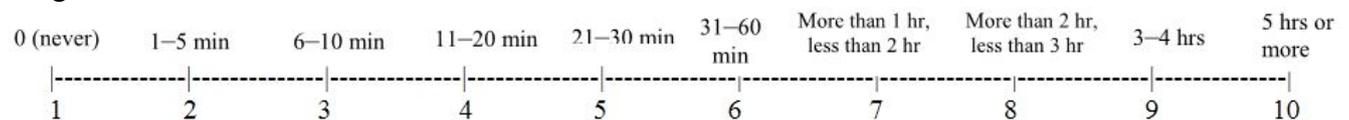
5. What percentage of your gross annual income do you give to your religious institution or to other religious causes each year?



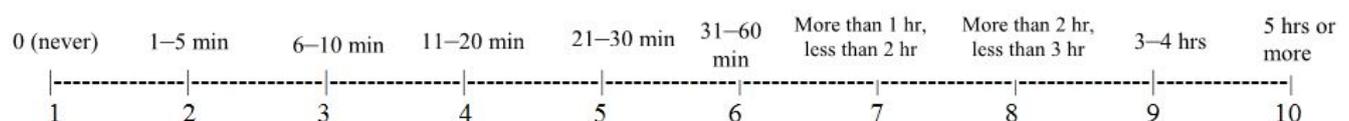
6. On average, how much time each *day* (in 24 hours) do you spend listening to religious music or radio, or watching religious TV?



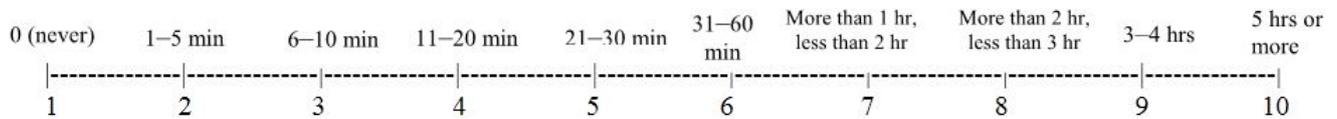
7. On average, how much time each *day* do you spend reading religious scriptures, books, or other religious literature?



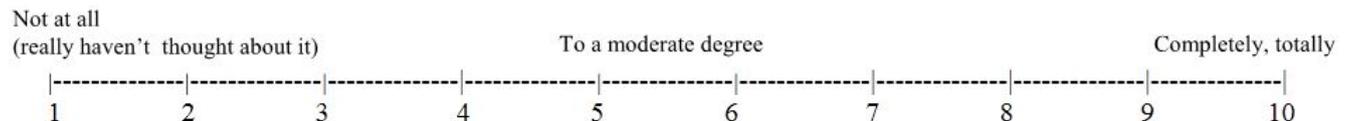
8. On average, how much time each *day* do you spend in private prayer or meditation?



9. On average, how much time each *day* do you spend as a volunteer in your religious community or to help others for religious reasons?



10. To what extent (on a 1 to 10 scale) have you decided to conform your life to the teachings of your religious faith?



Scoring instructions:

- (1) Recode Q1 as follows: 7 = 10, all other answers = 1
- (2) Sum recoded Q1 + Q2 thru Q10 to arrive at total score (range 10–100)

BIAC is also available in Arabic, Chinese, and Spanish

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