Religiosity among Muslims: A Scale Development and Validation Study

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Abstract

While religiosity as a field of inquiry has been gaining research interest in recent years, a central issue about its conceptualisation, measurement, and relationships with work outcomes remains unresolved. The aims of this paper are: (1) to introduce a new scale designed to measure religiosity among Muslims, based on an Islamic perspective that centres on the bodily action or human activity (Islam), the mind or understanding of God (iman), and the spirit or actualisation of virtue and goodness (ihsan); and (2) to demonstrate how religiosity relates to various work outcomes. We followed a rigorous multi-steps scale development procedure using four empirical studies involving 703 participants. The final scale yielded one factor with 10 underlying items. Our results showed that religiosity was positively correlated with job satisfaction, positive work behaviour, workplace integrity, and organisational commitment, but negatively correlated with antagonistic work behaviour. This new scale also showed incremental validity over an existing Muslim attitude scale in predicting organisational commitment and integrity. Overall, this new scale demonstrates good psychometric properties and is a promising tool for the measurement of religiosity among Muslims in organisational settings.

Keywords: muslim, psychometric, religiosity, scale development, work outcomes

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1. Introduction

Despite its marginalisation by modernity and secularisation, religion remains a central component of individual and society’s life (Anderson, 2015). According to a recent survey by the Pew Research Centre (2015), although 1.1 billion of the world’s population are now religiously unaffiliated, most of the world's major religions experience notable growth, with Islam showing the largest increase. Therefore, the impact of religion on human functioning should not be underplayed (Albright & Ashbrook, 2001). For many, the very word “religion”
itself connotes “a way of life” (Islam - al-din, the Chinese traditional religions - chiao, and Shintoism - the kane way; Kamaruzaman, 2008) that shapes their followers’
world views and value systems, which impact upon their
beliefs and practice. As such, studying how religion is
manifested in society is important because it can
describe, predict, and explain how people behave in
many situations. This is supported by the fact that many
studies have demonstrated relationships between
religion and physical and mental health (Cox &
Verhagen, 2011; Khalaf, Hebborn, Dal, & Naja, 2015);
work outcomes (Achour, Grine, Mohd Nor, Mohd
Yakub, & Mohd Yusoff, 2015; Roundy, 2009), healthy
lifestyle (Hill, Ellison, Burdette, & Musick, 2007;
Salmoirago-Blotcher et al., 2011), as well as life
satisfaction (Lim & Putnam, 2010; Noor, 2008). These
studies have also shown religion to act directly on these
outcome variables or that religion may moderate the
impact of stress on adverse outcomes by allowing
people to change the nature of the stressful experience
in certain ways or to use it as a coping strategy.

A large body of research (e.g., Abu-Raiya & Hill, 2014;
El-Menouar, 2014; Saroglou, 2010) has been dedicated
to exploring how best to measure and quantify an
individual’s religion. On the one hand, researchers
claimed that this measurement could be gauged simply
by asking people which religion they affiliated with
(i.e., religious affiliation); while on the other hand,
others argued that a more accurate measurement of the
construct could be made by examining one’s religiosity
(Ahrold & Meston, 2010; Anderson, 2015). Religiosity
is a comprehensive sociological term that is used to
to refer to the numerous aspects of religious activity,
dedication, and belief (Freebase, 2016). Recent research
on religiosity suggests that the construct can be further
described in two ways: (1) the extent to which people
are involved in their religion (Whitely, 2009); and (2)
the degree to how people integrate religion or refer to the
transcendence in their daily lives (Saroglou, 2010). The
breath of these definitions allow for the development
of scales to measure religiosity in a more meaningful
way; and indeed, various scales have been constructed
along this line.

Among the notable measures include the Religious
Orientation Scale (Allport & Ross, 1967), the Quest Scale
(Batson & Schoenrade, 1991), the Glock-Stark Dimensions
of Religiosity Scale (Glock & Stark, 1965), the Religious
Fundamentalism Scale (Allmeyner & Hunsberger, 1992),
and the Attitudes toward Christianity Scale (Francis &
Stubbs, 1987). Comparing the underlying framework of
these scales, however, revealed that their items were
developed based on psychological perspectives of
motivation, attitudes toward one’s beliefs, and existential
experience rather than on biblical or theological
grounds. Furthermore, while we acknowledged these
scales had greatly advanced our understanding of the
complex nature of religion, they were founded on the
notion of the Western worldview. With the advent of
modern science, the Enlightenment period relegated
religion from the public domain to the realm of the
private and sought to account for everything in the
world using scientific rationalism. This worldview of
modern science views people as terrestrial beings, and
consequently, happiness is conceived less in cosmic
terms and more with respect to satisfying one’s physical
needs, desires, and comforts. In other words, the world
has become more impermeable to the divine and religion
as a communion with God is lost. This argument, thus,
provides the main justification for developing a religiosity
scale using a framework from Islam that recognises this
experience of communion with God.

Nevertheless, the literature on religiosity from Islamic
perspective has also produced several versions of what
the construct actually entails and how it can possibly be
measured. This variation occurs due to the differing
conceptualisations that the researchers have used to
develop the scales, which may or may not be sufficiently
grounded in the Islamic faith. For example, three scales,
i.e., the Muslim Attitudes toward Religion Scale (Wilde &
Joseph, 1997), the Attitudes toward Islam Scale (Sahin &
Francis, 2002), and the Five Dimensions of Muslim
Religiosity Scale (El-Menouar, 2014) merely adapt and
extend the scales that are based on Christian practices
and beliefs (i.e., the Francis and Stubbs’ s, 1987; Attitudes
toward Christianity Scale and Glock-Stark’s multi-
dimensional concept of religiosity, respectively). Whereas
another two scales, i.e., the Muslim-Christian Religious
Orientation Scale (Ghorbani Watson, Ghramaleki, Morris,
& Hood, 2002) and the Islamic Doctrinal Orthodoxy
Scale (Ji & Ibrahim, 2007) use secular psychological
views of motivation and existential experience rather than
a religious perspective as the basis. One exception,
however, is the Muslim Religiosity and Personality Index
(Hamzah et al., 2006) that conceptualises religiosity as a
representative of the tawhidic (divine unity) principle.
Though this scale has, to some extent, addressed some
of the constraints inherent in past scales used to assess
Muslims’ religiosity, it does not adequately address
aspects that relate to the general understanding and
practice of Islam as a way of life because it was initially
designed for youth in the context of nation building.

Our review of other Muslim religiosity scales (Table 1)
also indicates that the existing scales have issues in relation
to four aspects: (1) vague construct conceptualisation
due to the practice of developing, adapting, extending,
and interpreting the scales within the framework of
psychological, Christian, or other Western concepts of
religiosity; (2) the focus on religious belief or religious
behavioural components only; (3) the problem of
inadequate validation and reliability; and (4) the scale
length that reduces their usefulness in practical research
contexts. For these the development of a religiosity

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Table 1. A Summary of Religiosity Scales for use by Muslim Populations

| Scale                                         | Authors                  | Framework                                | Details                                                                 | Remarks                                                                 |
|-----------------------------------------------|--------------------------|------------------------------------------|-------------------------------------------------------------------------|-------------------------------------------------------------------------|
| The Muslim Attitudes Toward Religion Scale    | Wilde and Joseph (1997)  | Adapted from the Francis Scale of        | 14 items                                                               | +ve: Correlated moderately and negatively with Psychotism factor and moderately and positively with scores on Lie factor.       |
|                                               |                          | Attitude towards Christianity (Francis & Stubbs, 1987) | (α = 0.93) British Muslims (n = 50)                                     | -ve: Adapted and extended a Christian instrument or Western concepts to Muslim populations.                                |
| The Muslim-Christian Religious Orientation Scales | Ghorbani et al. (2002)  | Based on Allport’s religious motivation  | 9 items (α = not stated) Iranian university students (n = 178)          | +ve: Associated positively with extrinsic religious orientation, intrinsic religious orientation, and religious interest. Evidence of construct and predictive validity of the scores. |
|                                               |                          |                                          |                                                                         | -ve: Adapted and extended a Christian instrument or Western concepts to Muslim populations.                                |
| The Attitudes Toward Islam Scale              | Sahin and Francis (2002) | Based on Francis and Stubbs’s (1987) Attitudes Toward Christianity Scale | 23 items (α = 0.90) Muslim adolescents in Birmingham, United Kingdom (n = 381) | +ve: Correlated positively with personal salah (prayer). Positively linked to religious orientation, religious interest, and religious practices. Evidence of reliability and construct validity. |
|                                               |                          |                                          |                                                                         | -ve: Used young populations, so generalisability to other populations untested. Adapted and extended a Christian instrument or Western concepts to Muslim populations. |
| The Religiosity of Islam Scale                | Jana-Marsi and Priester (2007) | Based on the contents of the Holy Qur’an and the theoretical distinction between religious beliefs and behaviours | 19 items Beliefs subscale (α = 0.66) Behavioural Practices Subscale (α = 0.81) American Muslims (n = 71) | +ve: Correlated positively and moderately with a single-item self-rated religiousness measure. Some evidence of construct validity. |
|                                               |                          |                                          |                                                                         | -ve: Low reliability of the Beliefs subscale, small sample size, and vague construct conceptualisation. |
| The Islamic Religiosity Scale                 | Tiliouine, Cummins, and Davern (2009) | Assesses the relationship between Islamic religiousness, subjective well-being, and health | 11 items Religious Practices subscale (α = 0.77) Religious Altruism subscale (α = 0.62) Algerian Muslims (n = 2,909) | +ve: Have a strong positive relationship with subjective well-being. |
|                                               |                          |                                          |                                                                         | -ve: Vague construct conceptualisation. No evidence of construct validity. |
| The Islamic Doctrinal Orthodoxy              | Ji and Ibrahim (2007)    | Adapted Allport’s Intrinsic-Extrinsic religious orientation concept and Batson’s Quest Scale | 8 items (α = 0.90) Indonesian Muslim university students (n = 381)       | +ve: Predicted personal practice of religious activities, independent of extrinsic, intrinsic, and quest religiousness. |
|                                               |                          |                                          |                                                                         | -ve: Adapted and extended a Christian instrument or Western concepts to Muslim populations.                                |
| The Knowledge-Practice Measure of Islamic Religiosity | Alghorani (2008)        | Multiple-choice items that reflect both Islamic knowledge and the adherence to Islamic practices | 100 items (α = 0.92) U.S. Muslim high school students (n = 211)          | +ve: Good internal consistency. |
|                                               |                          |                                          |                                                                         | -ve: No evidence for criterion validity or predictive validity. Has many items. |

(continued)
scale that is grounded on a robust Islamic theoretical framework that goes beyond the knowing and behavioural manifestations of religiosity with better item reliability and efficiency is warranted, and the current study was conducted to address this need.

**Theoretical Framework.** The term *religion*, which originates from the Latin word “*religare*”, means to tie or bind fast (Online Etymology Dictionary, 2016). From the perspective of Islam, religion is the bond between God as the Ultimate Reality and His creations, with humans being one of the creations. It is a way of life (*al-din*) or path (*tariqat*) with God as the anchor that encompasses the sum total of a Muslim’s work, faith, and being. In Islam, the most valuable source that provides a comprehensive description of *al-din* is contained in a *hadith* known as “Hadith Jibril” (Sahih al-Bukhari, Vol. 6, Book 60, Number 300, Hadith 47). This *hadith* is important because it describes *al-din* as a concept with three essential constituents. The first is *islam*, which covers one’s religious obligations signified by acts of worship; the second is *iman*, which represents the cognitive and belief system in the understanding of God; and third, *ihsan*, which represents the actualisation of moral and spiritual excellence. These three concepts are not separate but connected to and necessary for each other to become a balanced and religious person (see Figure 1). This view is implicit in the writings of past Muslim scholars and researchers such as Al-Qardhawi (1985), Hawwa (1989), and Yassin (2001) who consider the intimate relationship between these three concepts. In essence, it can be argued that *al-din* or religion in Islam

| Scale | Authors | Framework | Details | Remarks |
|-------|---------|-----------|---------|---------|
| The Muslim Religiosity-Personality Inventory | Hamzah et al. (2006) | Religiosity as a representative of the *tawhidic* (divine unity), which consists of 2 “Islamic worldview” constructs and 2 “Religious personality” constructs | 56 items | Worldly Islamic Worldview ($\alpha = 0.83$) Spiritual Islamic Worldview ($\alpha = 0.67$) Ritual ($\alpha = 0.90$) Mu’amalat ($\alpha = 0.83$) Muslim youths from four states selected randomly in Malaysia ($n = 1,692$) • +ve: Robust theoretical framework. • -ve: Designed for youth only, thus, did not fully address aspects that relate to the general understanding and practice of Islam as a way of life. Has many items. |
| The Psychological Measure of Islamic Religiousness | Abu-Raiya, Pargament, Mahoney, and Stein (2008) | Multi-item measure assessing different dimensions of Islam in 3 separate studies | 59 items | 7 subscales ranged from $\alpha = 0.77$ to 0.97 Muslims in Israel and the United States Study 1: $n = 25$ Study 2: $n = 64$ Study 3: $n = 340$ • +ve: Desirable variability, and discriminant, convergent, predictive, and incremental validity, using multiple mental and physical health criterion variables. • -ve: Many items. Needs more testing in various settings to confirm applicability, reliability, and validity. |
| The Muslim Experiential Religiousness | Ghorbani, Watson, Gerannmaye-pour, and Chen (2014) | Based on the concept of religious consciousness, i.e., a loving submission and closeness to God | 15 items | ($\alpha = 0.90$) Iranian students from Universities and Islamic seminaries in or near Tehran ($n = 627$) • +ve: Good reliability and evidence for validity in multiple studies. • -ve: Measures spirituality and religiousness - two distinct constructs from religiosity. |
| The Five Dimensions of Muslim Religiousity Scale | El-Menouar, (2014) | Based on Glock’s multidimensional concept of religiosity | 22 items | 5 subscales ranged from $\alpha = 0.64$ to 0.90. Muslims living in selected German cities ($n = 228$) • +ve: Some evidence of validity and reliability. • -ve: Low reliability of the Orthopraxis subscale. Adapted and extended a Christian instrument or Western concepts to Muslim populations. |
| The Muslim Daily Religiousness Assessment Scale | Olufadi (2016) | 21 items | 3 subscales ranged from $\alpha = 0.76$ to 0.82. Muslim students from two Nigerian universities Study 1: $n = 368$ Study 2: $n = 160$ • +ve: Validated through exploratory and confirmatory analyses. Evidence for convergent, discriminant, and predictive validity in multiple studies. • -ve: Focuses only on the externalisation of religious behaviour. |

*Table 1. A Summary of Religiosity Scales for use by Muslim Populations (Continued)*
is treated as unidimensional in nature, and researchers, therefore, are recommended to test their theories on this basis appropriately.

While the word Islam literally means submission to anything having power over the person, in Islam, it specifically refers to obedience to Allah SWT. Based on Figure 1, a person can submit to God at three levels. At the first level, islam, this is done via works or religious practices such as worship and rituals (e.g., performance of prayers [salat], fasting [sawm], alms [zakat], pilgrimage [hajj]), and other social obligations. The iman level involves understanding and beliefs in God, his prophets, angels, scriptures, and resurrection. The final level, ihsan, in contrast to the previous levels, is the inner dimension where a person performs supererogatory acts of worship in his/her devotion to Allah SWT. This can be seen as a spiritual transformation from the exoteric to the esoteric with the goal of being an insan kamil (a perfect or universal human) or the actualisation of virtue and goodness, in line with the role that God has decreed for humans. Ihsan, therefore, is the highest level that could be attained by a person, and by achieving it, a Muslim is assumed to have totally submitted. In other words, total submission or obedience is possible only when one knows the facts of one’s existence and has firm faith based on knowledge and conviction.

Against this backdrop, it can be argued that the definition of religion and, by extension, religiosity, emphasises the bodily action or human activity (islam), the mind or understanding of God (iman), and the spirit or actualisation of virtue and goodness (ihsan). On the basis of this framework, the construct of “religiosity” for the scale developed in this study is measured by items assessing various aspects of a person’s islam, iman, and ihsan. Our framework differs from previous work in that (1) we have constructed, developed, and interpreted our scale within the framework of an Islamic religious perspective rather than adapting from a secular or Western scale; (2) we have focused not only on religious practice and belief, but also included the inner dimension of actualisation of virtue; and (3) we have grounded the framework in a theorisation of islam, iman, and ihsan. Our framework enables us to avoid developing redundant items; hence, overcoming a common drawback of the existing scales.

2. Methods

We followed a rational approach to scale development (Clark & Watson, 1995), which required the identification of salient concepts or dimensions, inspection of items from existing scales, writing sets of items for the new instrument, and validating the instrument through field-testing. First, the concepts and items of this scale were identified after consultation with subject matter experts and informed by the review of literature relating to religiosity (Study 1). Next, scale refinement was conducted based on data of 195 employees from a matriculation centre (Study 2). The scale was then validated in two studies with a sample of academic and administrative staffs from a local university (n = 183; n = 315).
(Study 3), and a sample of employees from the same university but who were not involved in the previous studies (n = 315) (Study 4). Each of these studies was elaborated in the subsequent section. Figure 2 summarises the scale development procedures used in these studies.

3. Results and Discussion

Study 1: Scale Conceptualisation and Item Generation. The development of any scale typically starts with a theoretical basis that could explicitly define “the phenomenon to be measured and its sub-components” (Joint Research Centre-European Commission, 2008, p. 22). As discussed in the previous sections, the three concepts outlined in Hadith Jibril are assumed to be the defining features of Islam as a religion and is one way of conceptualising and framing work in religiosity. Following this framework, we define religiosity as the theoretical basis that could explicitly define content validity ratio (CVR) and content validity index (CVI) (Lawshe, 1975) were calculated for each item. Using the CVR cut-off of 0.60, a total of 237 items was retained, and a CVI of 0.76 was drawn. Operationally, this showed a high percentage of overlap between the test items and the religiosity construct; suggesting a satisfactory content validity for the scale.

Study 2: Scale Refinement. The 237 items selected after the content validation exercise were refined using the Rasch analysis via WINSTEPS software (Linacre, 2006) performed on 195 staff (Academic = 63.0%; Administrative = 37.0%), with the age ranged from 20-60 years old (M = 36.7, SD = 7.9). Results showed an excellent person reliability coefficient (i.e., 0.96; demonstrating that the person’s ordering/hierarchy would be replicated with a high degree of probability if the measured sample were to be given a similar set of items), good person separation index (i.e., 4.80; indicating that the items on the religiosity scale could separate persons with different levels of religiosity), and little disordering of the step calibrations or thresholds. Additionally, the Rasch dimension explained 82.6% of the variance in the data, with the first contrast in the residuals explained only 1% of the variance, which was what would be observed in data that would fit the Rasch model. Given this amount of variance in the first contrast, it was evident that there was no secondary dimension measured by the items on this scale; hence demonstrating unidimensionality. Mean-while, the item-responder map (i.e., Wright map) generated by the Rasch model was used as a quick visual inspection to evaluate our construct definition. Using this map (see Appendix), only items that were above the mean were selected, and problematic items such as those that were not able to discriminate, those with very low coefficient values, those that did not fit the model (misfit), and those with notable differential item functioning were dropped. After all these procedures were taken into account, 93 items were selected.

We then used the maximum likelihood analysis with Promax rotation to factor analyse these 93 items. Linacre (1998) argued that conducting a factor analysis after a Rasch analysis would allow the off-dimensional factors (i.e., residuals of those parts of the observations not explained by the Rasch dimension) to be investigated and for this reason, an exploratory factor analysis was carried out. In this study, Promax was used as the rotation procedure as we expect the factors to correlate. The results demonstrated only one factor, and it explained 35.14% of the variance in the data. As suggested by Stevens (2002) and Field (2009), only items with a factor loading of 0.50 and above were...
chosen for inclusion in the refined scale. Using this cut-off value, 70 items were identified and the Cronbach's alpha was then computed, yielding a coefficient of 0.98, indicating good internal consistency between the items in the refined scale. Since the results of both the Rasch and exploratory factor analyses yielded a single factor structure with adequate content and construct validity, stability, and internal consistency for the proposed scale, a structural equation modelling for confirmatory factor analysis was not required (Ho & Lee, 2011), and thus not conducted in the subsequent validation studies.

**Study 3: Scale Validation 1.** The purpose of this phase of the study was to establish the construct and criterion-related validities of the 70 items scale. We used a new sample of 183 employees consisting of 19.3% academic staff and 70.4% administrative staff. Within this sample, 62 were males, 117 were females, and four did not indicate their gender. The mean age for the total sample was 37.7 years ($SD = 8.9$ years).

For a scale to have construct validity, it must demonstrate an association between the test scores and the prediction of a theoretical trait, and to do so, it must show evidence of both convergent validity (i.e., where measures of similar theoretical constructs are expected to be related to each other or converge together) and discriminant validity (i.e., where measures of dissimilar theoretical constructs should not be related to each other or the extent to which they differ; Cohen, Swerdlik, & Sturman, 2013). To achieve this aim, our new scale was validated by evaluating it against four existing scales - these scales were published in scientific journals for use in the public domain; therefore, permission to use them were granted for non-commercial research.

To test the convergent validity of the refined instrument, we examined the correlations between our newly developed religiosity scale with two established religiosity scales: the Muslim Attitude towards Religiosity Scale (MARS; Wilde & Joseph, 1997), and the UPM Religious Personality Scale (RUPM; Hamzah, et al., 2006). Both scales had been used as measures of religiosity, similar to our 70 items scale. As expected, significant positive correlations were found between our scale and the two scales; correlations between our scale and RUPM was $r = 0.39$, $p < 0.01$, and between our scale and MARS was $r = 0.44$, $p < 0.01$. The magnitude of the correlation coefficients was also not too large, with shared variances of 15% and 19%, indicating that our scale measured something related to, but also sufficiently unique from, each of the two criterion measures. To examine discriminant validity, we correlated our scale with a measure of antagonistic work behaviour (five items) from the On-the-Job Behaviour Scale by Lehman and Simpson (1992), and no significant correlation was observed, $r = -0.02$, *ns*. This result implied that the current scale measured a unique and distinct construct from that assessed by the antagonistic work behaviour scale; hence, establishing its discriminant validity.

Concurrent validity was measured by correlating our scale with several existing measures of work-related behaviours. Using the six-item Organisational Commitment Scale (Marsden, Kallaberg, and Cook, 1993), the three-item Job Satisfaction Scale (Cammann et al., 1979), and the 17-item of On-the-Job Behaviour Scale (Lehman and Simpson, 1992), the results showed that our religiosity scale was positively and significantly correlated with organisational commitment, $r = 0.23$, $p < 0.01$, job satisfaction, $r = 0.18$, $p < 0.05$, and positive work behaviour, $r = 0.31$, $p < 0.01$, but was negatively correlated with psychological withdrawal behaviour, $r = -0.11$, $p < 0.05$. No significant correlation was observed between the scale and physical withdrawal behaviour, $r = -0.08$, *ns*. These results indicated that our scale had some criterion-related validity as measured by concurrent validity.

| Items ($\alpha = .92$) | Concept | Factor Loadings |
|------------------------|---------|-----------------|
| I strive for both worldly affairs and the hereafter as advised by Prophet Muhammad (SAW). | Iman | 0.778 |
| I avoid behaviour that will be punished in the hereafter. | Iman | 0.774 |
| The more knowledge I have, the more humble I should become. | Iman | 0.769 |
| I teach my family members the greatness of Allah. | Islam | 0.757 |
| I feel bad doing something forbidden even if I know others are also doing it. | Ihsan | 0.733 |
| I strive to follow my aql (rationality) more than my nafs (lust). | Iman | 0.716 |
| I am pleased with what I have. | Ihsan | 0.705 |
| For fear of Allah I will always tell the truth. | Ihsan | 0.678 |
| I teach my family members to always remember Allah. | Islam | 0.675 |
| At any point of time in life, I can strengthen my relationship with Allah. | Iman | 0.665 |
Taking these results altogether, the refined scale has been shown to have content validity (i.e., the extent to which a measure adequately represents the defined domain of interest that it is designed to measure) and construct validity (i.e., the extent to which a measure agrees with the theoretical constructs), as well as demonstrates the evidence of criterion-related validity (i.e., concurrent validity) with a good internal consistency (i.e., the Cronbach alpha = 0.98).

**Study 4: Scale Validation 2.** The objectives of the second validation study were to reduce the number of items in the 70-item scale and to confirm the structure of this shortened version by establishing its convergent, discriminant, and concurrent validity. To achieve these objectives, we used a new sample of 315 employees at a local university, consisting of 39.4% males and 60.6% females. The mean age of the total sample was 37.7 years ($SD = 10.1$).

We used factor analysis to reduce the number of items, and this was carried out as follows. First, we examined the inter-item correlation matrix among the 70 items, and Bartlett's test of sphericity suggested that the correlation matrix was significant (chi-square = 17611.33, $p < 0.0001$) and the Kaiser-Meyer-Olkin test showed that the sample size relative to the number of items was sufficient ($KMO = 0.956$). The measures of sampling adequacy statistics also showed that the correlations among the individual items were strong enough to suggest that the correlation matrix was factorable. Second, we identified items with inter-item correlations of 0.65 and based on this exercise, 36 items remained. We then factor-analysed these items and took the top 10 highest loading items. We factor analysed these 10 items and the screen plot clearly indicated one factor explaining for 57.42% of the variance. Table 2 shows these 10 items, the concepts that they represent, and their factor loadings. These 10 items, with a Cronbach alpha value of 0.92, formed the shortened final scale that was used in the subsequent analyses.

To test for the construct validity of this 10-item scale, we examined its correlations with the Muslim Attitudes towards Religiosity Scale (MARS; Wilde & Joseph, 1997) and with antagonistic work behaviour scale (Lehman & Simpson, 1992). The former tested the convergent validity of the final scale against a religiosity scale that was regularly used in the West but developed without a proper Islamic framework. To have a convergent validity, our scale must be strongly and positively correlated with MARS. In contrast, we would expect very weak or zero correlation between our scale and antagonistic work behaviour scale because these two measures tap on different constructs, i.e., religiosity versus counter-productive work behaviour, respectively. As expected, results showed a positive and highly significant correlation between our religiosity scale and MARS ($r = 0.66$, $p = 0.0001$). On the other hand, the association between our religiosity scale and antagonistic work behaviour was weak ($r = -0.13$, $p = 0.018$). These results indicated that our shortened religiosity scale had a construct validity (see Table 3).

However, because of the sizeable amount of overlap between MARS and our scale, i.e., 43.56% shared variance, an important question that arose was whether our religiosity scale was unique and distinct enough to warrant it to be considered as a new measure. We used a

| Measures                        | Mean | SD  | α  | 1    | 2    | 3    | 4    |
|---------------------------------|------|-----|----|------|------|------|------|
| Revised Religiosity Scale       | 36.77| 3.78| 0.92|      |      |      |      |
| MARS                            | 62.33| 5.56| 0.66*|      |      |      |      |
| Antagonistic Work Behaviour     | 13.87| 6.50| -0.13+| -0.16*|      |      |      |
| Organisational Commitment       | 19.30| 2.75| 0.45*| 0.41*| -0.22*|      |      |
| Integrity                       | 66.40| 9.35| 0.30*| 0.34*| -0.11+| 0.36*|      |

*p < 0.01, *p < 0.05

| Measures                        | $R^2$ | SE B  | $\beta$ | $R^2$ | SE B  | $\beta$ |
|---------------------------------|-------|-------|--------|-------|-------|--------|
| MARS                            | 0.167***| 0.14 | 0.409***| 0.113***| 0.50 | 0.336** |
| Religiosity Scale               | 0.057***| 0.18 | 0.315***| 0.012*| 0.66 | 0.146* |
| Final model                     | $F (2, 312) = 44.79, p < 0.0001$ | $F (2, 312) = 22.22, p < 0.0001$ |

***p < 0.0001, **p < 0.01, *p < 0.05

Note: $\beta = \text{standardised regression coefficient}$
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hierarchical regression to examine if our scale could help explain the additional variance over and above MARS in the prediction of two work performance outcomes: organisational commitment (Marsden, Kallaberg, & Cook, 1993) and integrity (Schlenker, 2008). Table 4 shows that our scale is indeed able to explain for additional variance over and above MARS in predicting integrity and organisational commitment. These findings, therefore, provided support that our 10-item scale had a concurrent validity to merit it as a new religiosity scale.

Despite the growing interest being shown in issues surrounding religion, empirical insights into the construct of religiosity among Muslim populations have remained debatable. The current study is an attempt to address this gap by developing and validating a new religiosity scale, which we have named as the IIUM Religiosity Scale (IIUMReisS). In that respect, the present study makes two important contributions. First, it provides a theoretical and empirical-based conceptualisation of religiosity as one, unidimensional construct that encompasses aspects of belief (iman), actions (islam), and actualisation of virtue and goodness (ihsan). Second, it provides evidence of the psychometric adequacy of the new scale by demonstrating that it is internally reliable, valid, and correlated predictably with a range of work performance variables. In particular, we have found that religiosity is positively correlated with workplace integrity and organisational commitment, but is negatively correlated, albeit weakly, with antagonistic work behaviour. Furthermore, relative to the MARS measure, our new scale has shown adequate incremental validity in predicting organisational commitment and integrity.

One of the major strengths of our scale lies in its short scale length and its simplicity to use, which may overcome the limitations of the previous Muslims religiosity scales. With the inclusion of islam, iman, and ihsan items, the scale allows a comprehensive assessment of the religious beliefs and practices of Muslims. Moreover, when used in combination with other organisational-related scales, it provides additional information that may promote positive personal development and spiritual growth in organisational settings. Our findings, therefore, lend further support to the role of religion in promoting positive behaviours at the workplace as well as in understanding behaviours that could impede work performance. Overall, these results suggest that this new scale is appropriate for measuring religiosity among Muslims.

In developing the IIUMReisS, the framework used is based on the authoritative Hadith Jibril, with the three concepts of islam, iman, and ihsan, and items are generated to reflect these concepts. However, findings from our studies, particularly Study 2 and 4, have shown only one factor present in the scale. This is no surprise considering that the three concepts are closely interrelated and difficult to distinguish. For example, Al-Qarhdawi (2000) noted the intimate relationship between knowledge and iman with spiritual growth (or ihsan) of a believer. In his earlier work, Al-Qarhdawi (1985) also listed the spiritual outcomes of ihsan such as spiritual tranquillity, being hopeful, love, steadfast, as well as morality, and highlighted the relationship between iman with various aspects of life such as economic, politics, social, education, and work performance. The concepts of islam, iman, and ihsan have also been used interchangeably to mean the same thing. For example, Hawwa (1989) used the term islam whereas Yassin (2001) used the term iman when talking about “things that nullify syahadah” [maybe a reference here?], implying that both islam and iman were used when explaining the act of entering or exiting from a specific religion.

While our new scale is founded on the concepts of islam, iman, and ihsan from “Hadith Jibril”, it should be noted that this is not the only way of conceptualising religiosity in Islam. The study by Hamzah et al. (2006) utilised a tawhidic (divine unity) framework for their religiosity scale, consisting of an Islamic worldview (knowledge, beliefs, and understanding) and personality (worship). Other researchers may also explore the use of other theoretical framework based on other sources in the Islamic tradition to construct their own Islamic religiosity scale. In addition, while we welcome the use of this new scale to gauge personal religiosity among Muslims in relation to their performance at work, it is important to consider our findings in light of three limitations. First, the validation exercises for the scale have been carried out on samples from an Islamic academic institution. In future research, the association between religiosity and behaviours at the workplace has to be tested on employees from other Islamic and non-Islamic institutions of higher learning to see whether the current findings can be generalised beyond the samples used in this study. In addition, the field testing should extend to the non-academic work settings to further establish the external validity of the scale. Second, more research is needed to assess the extent to which the scale can predict other positive and negative workplace behaviours. And third, in the current study, our measurement of religiosity relies solely on self-report, which may be prone to response bias. Hence, future research in this area should consider other sources of data such as peer and supervisor performance ratings, which may provide more objective information.

Measuring religiosity comes with its own challenges, particularly because it has been viewed as comprising multiple concepts that might relate to one another in different ways. Many have tried to discover the best approach and tools in measuring it and different
frameworks have been used to conceptualise religiosity. While we make no claims for coverage of all relevant concepts, our findings do provide strong support for the unidimensionality (i.e., scale items representing a common underlying factor or construct) and psychometric properties (i.e., internal consistency, content, construct, convergent, discriminant, and concurrent/incremental validities) of our scale. Therefore, the newly developed scale can be used for self-assessment and continuous personal development, as well as serve as a guide to improving one’s religiosity and spiritual growth.

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