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ORIGINAL PAPER

The Relationship Between Religiosity and Anxiety: A Meta-analysis

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Abstract

Several research studies from the USA and Western industrialized countries have reported a negative association between religiosity and anxiety. However, Arabic studies using mainly Muslim samples are limited. The objective of the present study was to apply meta-analysis statistical techniques to 10 Arabic studies of this association. All of the respondents were Arab citizens, ranging in age between 14 and 43 years, and the vast majority of them were Muslims. Religiosity and anxiety were assessed with seven different scales. In all of the studies, the administration of the scales was in small group sessions and in the Arabic language. Pearson correlation coefficients were calculated between the religiosity and anxiety scale scores. All the correlations were negative. All but one were statistically significant, ranging from −0.16 to −0.43. The mean effect size was −0.22, and the impact of age and gender on the correlation was not significant. This result suggests that religiosity may affect anxiety by providing buffering and coping mechanisms.

Keywords Religiosity · Anxiety · Meta-analysis · College students · Arabs

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Introduction

The objective of the present investigation was to conduct a meta-analysis of studies on the association between religiosity and anxiety. This analysis was carried out using 10 studies, with a total of 12,208 participants, all of whom were Arab citizens with the vast majority of them being Muslims.

The psychology of religion has witnessed a rapid growth in research during the past decades (Argyle 2000; Emmons and Paloutzian 2003; Loewenthal 2000; Pargament 1997; Spilka et al. 2003; Wulff 1997). Over these decades, a growing body of research has explored the relation between religiosity and mental health and psychopathology, including anxiety (Seybold and Hill 2001), and this association has attracted considerable attention (Koenig et al. 2012).

Francis Galton (1872), Hall (1882), James (1902), and Starbuck (1899) were early supporters of the salutary effect of religion on mental health. On the other hand, Freud (1953) portrayed the religious person as neurotic and delusional. He referred to religious rituals as obsessive–compulsive acts and criticized religion as a psychopathological phenomenon. Following this view, several authors have proposed that religion is a factor in causing mental illness (Kendler et al. 1997; Trappler and Endicott 1997; Cook 2015).

Empirical studies on the relation between religiosity and anxiety have produced inconsistent or mixed results (Gorsuch 1988). Some studies have reported that religiosity decreased anxiety, that is, a negative association between these variables. Based on Allport and Ross's (1967) distinction between intrinsic religiosity (seeing religion as an end in itself) and extrinsic religiosity (using religion as a means for achieving other ends, such as increased social interaction), Baker and Gorsuch (1982) found that intrinsic individuals were less anxious than extrinsic individuals. Similarly, Wilson (1976) reported that intrinsically oriented Christians were more religious and less anxious on trait and existential anxiety scales than were extrinsically oriented Christians. Sturgeon and Hamley (1979) found that intrinsic individuals were significantly less anxious and had greater internal locus of control than did extrinsic individuals.

Koenig et al. (1993) argued that religiosity reduced the likelihood of anxiety disorders. Harris et al. (2002) reported that a constellation of religious variables had a significant, negative relationship with trait anxiety. Leonardi and Gialamas (2009) found that church attendance and belief salience were associated with better life satisfaction, while Zohra and Irshad (2012) found that men and women suffering from generalized anxiety disorder had a lower degree of religiosity (See also Davis et al. 2003; El-Jamil 2003).

Not all studies, however, have demonstrated a healthy impact of religiosity on anxiety (e.g., Spellman et al. 1971), while a third group of researchers have found no significant correlations between religiosity and anxiety. For example, Pfeifer and Waelty (1999) found no correlation between neuroticism and religiosity, neither in psychiatric patients nor in a control group. Using a sample of medical students, Kritchmann and Strous (2011) found no significant association between religiosity and anxiety or depression. Jansen et al. (2010) reported that

self-reported religiosity was significantly related to depression but not anxiety (see also Francis and Jackson 2003; King and Schafer 1992; Snoep 2008; Storch et al. 2002).

Despite these conflicting results, the studies reporting a negative association between religiosity and anxiety outnumber the studies which found a positive association or no association.

In order to explain these inconsistent results, Lowenthal (1995, p. 219) proposed that religion is too comprehensive a category to look at in relation to mental health, and that mental health is too comprehensive a category to look at in relation to religion. Furthermore, Hackney and Sanders (2003) noted that the association between religiosity and both mental health and psychopathology varies as a function of their operationalization and conceptualization. However, Lavric and Flere (2010) noted that most research on this association has been carried out on samples from the USA and the UK, with some exceptions (e.g., Abdel-Khalek 2007b; Abdel-Khalek and Lester 2007, 2012; Baroun 2006).

The term religiosity, from an Islamic point of view, is related to religious faith, practice, knowledge, and general code of conduct (Zohra and Irshad 2012), as well as a way of life. There are three major postulates of Islam: (1) monotheism, (2) Muhammad as a prophet, and (3) belief in the hereafter. The pillars of Islam are five: testimony, prayers, fasting during the month of Ramadan, alms giving, and pilgrimage (Abou El Azayem and Hedayat-Diba 1994; Quraishi 1984). The aim of the present analysis was to conduct a meta-analysis of 10 studies to explore the association between religiosity and anxiety among samples from the understudied Arab, mainly Muslim, population.

Methods

Studies

A total of 10 studies (with 12,208 subjects) were included in the present analysis, eight of which have been published. All participants were Arabs, mainly Muslims, and classified into three categories as follows: secondary school students, undergraduates, and governmental personnel. Their mean age ranged between 14 and 43 years. Table 1 presents some descriptive data.

Psychometric Tools

I. Religiosity scales

1. *The Intrinsic Religious Motivation* (IRM; Hoge 1972). The IRM has 10 statements answered on a 5-point scale (1 = Strongly disagree, to 5 = Strongly agree). The total score can range from 10 to 50, and a high score indicates high intrinsic religiosity. A factor analysis has demonstrated that it is a unidimensional scale with good reliability (Hoge 1972). The IRM assesses intrinsic religiosity and is neutral to the denomination or type of faith (Muslim, Christian, Jewish, or other).

Table 1 Number of participants, age, and the correlation between religiosity and anxiety

Sample	*N*	Age *M* (SD)	*r*	References	Measures		Country
					Anxiety	Religiosity	
Boys	1312	15.9 (1.4)	−0.220	Abdel-Khalek (2002)	KUAS	SRS	Kuwait
Girls	1272	15.9 (1.3)	−0.220	Abdel-Khalek (2002)	KUAS	SRS	Kuwait
Boys	3181	14.6 (2.4)	−0.249	Abdel-Khalek (2007b)	KUAS	SRS	Kuwait
Girls	3158	14.7 (2.3)	−0.224	Abdel-Khalek (2007b)	KUAS	SRS	Kuwait
Boys	249	16.8 (1.5)	−0.223	Abdel-Khalek (2011)	KUAS	SRS	Kuwait
Girls	250	16.7 (1.7)	−0.232	Abdel-Khalek (2011)	KUAS	SRS	Kuwait
UG MF	460	21.9 (3.0)	−0.180	Abdel-Khalek and Lester (2007)	KUAS	SRS	Kuwait
UG MF	192	20.9 (1.5)	−0.181	Abdel-Khalek and Lester (2012)	KUAS	SRS	Kuwait
UG *M*	109	22.0 (3.0)	−0.174	Abdel-Khalek and Naceur (2007)	KUAS	SRS	Algeria
UG *F*	135	20.8 (2.7)	−0.429	Abdel-Khalek and Naceur (2007)	KUAS	SRS	Algeria
M + *F*	941	16.5 (1.2)	−0.240	Baroun (2006)	KUAS	IRM	Kuwait
M + *F*	199		−0.250	Abdel-Khalek and Murad (2001)			
Boys	250	16.9 (0.7)	−0.284	Abdel-Khalek unpublished	Various	Various[a]	Kuwait
Girls	250	17.0 (0.8)	−0.217	Abdel-Khalek unpublished	Various	Various[b]	Kuwait
Adults *M*	124	43.6 (9.5)	−0.276	Abdel-Khalek unpublished	Various	Various[c]	Kuwait
Adults *F*	126	36.7 (5.9)	−0.222	Abdel-Khalek unpublished	Various	Various[d]	Kuwait

UG undergraduates, *M* male, *F* female, *KUAS* Kuwait University Anxiety Scale, *SRS* self-rating scale of religiosity

[a]The median of 7 correlations is presented

[b]The median of 8 correlations is presented

[c]The median of 2 correlations is presented

[d]The median of 3 correlations is presented

The IRM scale was translated into Arabic by Abdel-Khalek (2007a). Then, this translation was carefully evaluated and corrected by linguists and psychologists. Among Arab students, the IRM had good alpha reliabilities: 0.94, 0.87, and 0.90 in males ($n = 73$), females ($n = 172$), and the combined group ($N = 245$), respectively.

2. *The Muslim Attitude towards Religiosity Scale* (MARS; Wilde and Joseph 1997). This scale contains 14 items adapted from the Francis Attitude towards Christianity Scale (Francis and Stubbs 1987). Example items are as follows: "I find it inspiring to read the Qur'an," and "Mohammed (peace be upon him) provides a good mode of conduct for me." Each item was rated by the respondent on a 5-point Likert scale ranging from 1: Strongly disagree to 5: Strongly agree. Scores on the total scale had a possible range of 14–70, with higher scores indicating a more positive attitude.

This scale was translated into Arabic by Abdel-Khalek (2013). Then, this translation was carefully evaluated and corrected by linguists and psychologists. One of the items was excluded because it is not suitable for Muslim women: "I observe my daily prayers in the Mosque." In Islam, it is highly preferable for women to pray in their homes. The Arabic version correlated 0.67 ($N=99$; $p<0.001$) with the Hoge (1972) IRM scale, indicating the convergent validity of the present scale. Cronbach's alpha coefficient was 0.86, indicating good internal consistency.

3. *The Arabic Scale of Religiosity* (ASR). This scale assesses internal religiosity regardless of any given religion or denomination. It consists of 15 statements to be answered on a five-point intensity scale, anchored by 1 (Strongly disagree) and 5 (Strongly agree). Principal component analysis yielded one highly loaded factor. Cronbach's alpha and test–retest reliabilities were 0.91 and 0.87, respectively, indicating high internal consistency and temporal stability. Criterion-related validity ranged between 0.53 and 0.74, indicating acceptable to high validity. Descriptive statistics were available for university students from Egypt, Kuwait, and Algeria (Abdel-Khalk 2017).
4. *The single-item measure of religiosity* (SRS). A self-rating scale, in the form of a question, was used to assess religiosity: "What is your level of religiosity in general?" This question was followed by a scale with numbers from 0 to 10. The participant was requested: (a) to respond according to his or her global estimation and general feeling (not their present states); (b) to know that the zero is the minimum and the 10 is the maximum score; and (c) to circle a number which seems to him or her to accurately describe their actual feeling. A high score indicates a high religiosity.

The 1-week test–retest reliability for this rating scale was 0.87, indicating high temporal stability and corroborating the trait-like nature of the score. Criterion-related validity of this measure ranged between 0.50 and 0.58 (Abdel-Khalek 2007a).

II. Anxiety scales

1. *The State-Trait Anxiety Inventory*—Trait subscale (STAI-T; Spielberger et al. 1983). This subscale contains a 20-item Likert scale that assesses trait anxiety. The scale asks the respondents to rate how they feel "generally" according to a 4-point scale in response to self-descriptive statements. Using bilingual subjects, the correlations between the English and the Arabic forms of the scale were 0.78 and 0.85 for males and females, respectively, which were considered acceptable. Test–retest reliability, alpha reliability, and criterion-related validity were adequately demonstrated (Abdel-Khalek 1989).
2. *The Kuwait University Anxiety Scale* (KUAS; Abdel-Khalek 2000). This scale has four comparable versions in Arabic, English, German, and Spanish. It consists of 20 brief statements. Each statement is answered on a 4-point

intensity scale, anchored as follows: 1 (Rarely) and 4 (Always). Reliabilities of the scale ranged from 0.88 to 0.92 (alpha) and between 0.70 and 0.93 (test–retest), indicating good internal consistency and stability. The criterion-related validity of the scale ranged between 0.70 and 0.88 (five criteria), while the loadings of the scale on a general factor of anxiety were 0.93 and 0.95 in two factor analyses, demonstrating the scale's criterion-related validity. The discriminant validity of the scale has also been demonstrated. Factor analysis of the scale items yielded three factors labeled Cognitive/Affective, Subjective, and Somatic anxiety. The scale has displayed good psychometric properties in different Arab, American, British, German, and Spanish samples (Abdel-Khalek and Lester 2003; Abdel-Khalek and Maltby 2009; Abdel-Khalek et al. 2004).

3. *General Health Questionnaire—Anxiety scale* (GHQ-A; Goldberg and Williams 1991). This scale consists of five statements answered on a four-point rating scale format, anchored by No (1) and Very much (4). The possible total score ranges from 5 to 20. A high score indicates high anxiety. The Arabic version had good to high internal consistency and validity. This scale was translated into Arabic and adapted by Hasan (1999).

Statistical Analysis

The data analysis for this meta-analysis was carried out with the software R (R Development Core Team 2011), using its package metafor (Viechtbauer 2010).

The effect on the correlation from different possible mediating variables (age and gender) was examined with meta-regression models. We evaluated the publication bias analyzing a funnel plot, and we studied the heterogeneity between studies with the index I^2 which evaluates the proportion of the total variance that is attributable to the heterogeneity (Higgins and Thompson 2002).

Results

Descriptive statistics and correlations are shown in Table 1. The correlations range from −0.174 to −0.429, with a median of −0.223, and all but one were statistically significant. It appears that the correlations are somewhat higher when the samples are classified by sex and the correlations calculated for males and females separately, but there was no trend for the correlations for males to be higher or lower than those for females. It may be concluded that the relation between religiosity and anxiety is significant and negative, but not very strong.

The funnel plot was symmetrical (Fig. 1), and so the publication bias appears to be negligible. We found a high homogeneity ($I^2 = 0\%$), which means there is low variability between the studies, and the correlations are not affected by the specific demographic characteristics of the studies (gender and age). This finding is consistent with the results of the analysis of the impact of these two variables on the correlations; that is, their effect on the correlation was not significant.

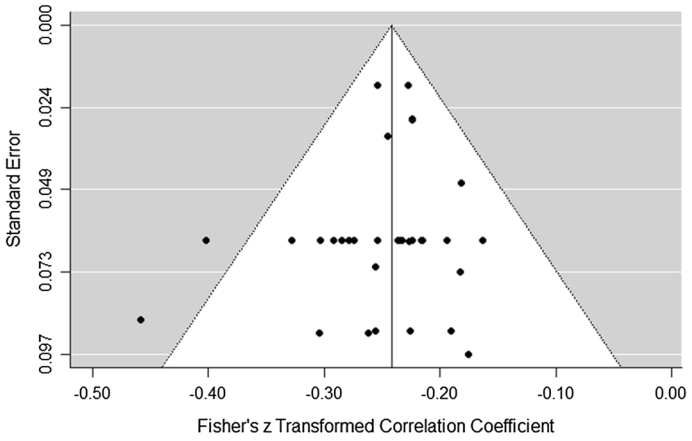

Fig. 1 Funnel plot

Discussion

The present investigation examined the results of 10 studies of male and female Arab participants, from 14 to 43 years, including students and government personnel. All of the correlations between religiosity and anxiety were negative, and all except one were statistically significant. These correlations ranged from −0.16 to −0.43. The mean effect size was −0.22, and the impact of age and gender on the correlations was not significant. The results, therefore, support the finding in the majority of Western studies of a negative association between religiosity and anxiety.

The majority of studies on this topic has been carried out in the USA and Western industrialized nations (Tay et al. 2014), that is, Anglo-Saxon, English-speaking, and mainly Christian populations. It is important to shed more light on this relation using other cultural and religious groups. As Lavric and Flere (2010) have stated, religious affiliation plays an important role as a moderator in the relation between religiosity and anxiety. The vast majority of the population in the Arab world are Muslims, with a high mean score on religiosity (e.g., Abdel-Khalek and Thorson 2006; Thorson et al. 1997).

How can this negative association between religiosity and anxiety be explained? Pargament (1997) suggested that religion in Islamic populations may be considered a coping mechanism when facing problems and hardships, and religiosity is an effective anxiety-buffering mechanism. Similarly, Mattis (2002) suggested that adherents use religiosity to cope with adversity, accept reality, gain courage, confront limitations, recognize purpose, and achieve growth. In Islam, in addition, several practices are available to relieve anxiety and other negative emotions, including ablution and prayer five times a day, reciting the Qur'an, remembering Allah, calls and invocations, and fasting for a month each year (Ramadan).

The results of the present study must be viewed within the limitations imposed by the data. Foremost among them is the sample composition. Notwithstanding the large number of studies and large sample size, the findings relate only to students

and government personnel, and their recruitment was not random but one of convenience. However, it may be concluded that clinicians treating anxiety might be able to make use of anxiety's negative association with religiosity among Muslim clients. Islamic beliefs and practices may be helpful when integrated into the psychotherapeutic process with Muslim clients.

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