The Role of Religion on Suicidal Behavior, Attitudes and Psychological Distress in
University Students: A Multinational Study

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Abstract

The purpose of this study was to determine the association of religion to suicidal behavior, attitudes and psychological distress in 5572 students from 12 countries by means of a self-report questionnaire. Our results showed that an affiliation with Islam was associated with reduced risk for suicide ideation, however affiliating with Orthodox Christianity and no religion was related to increased risk for suicide ideation. While affiliating with Buddhism, Catholic religion and no religion associated with lowered risk for attempting suicide, affiliation with Islam was related to heightened risk for attempting suicide. Affiliation with Hinduism, Orthodox Christianity, Protestantism, Catholicism, other religions and with no religion was associated with decreased risk for psychological distress but those reported affiliating with Islam evinced greater risk for psychological distress. The associations of the strength of religious belief to suicidal ideation and attempts were in the expected direction for most but it had a positive relation in respondents affiliating with Catholicism and other religions. Students reporting affiliation with Islam, Orthodox religion and Buddhism were the least accepting of suicide but they displayed a more confronting interpersonal style to an imagined peer with a suicidal decision. It was concluded that the protective function of religion in educated segments of populations (university students) and in university students residing in Muslim countries where freedom from religion is restricted or religion is normative and/or compulsory is likely to be limited. Our findings suggest that public policies supporting religious freedom may augment the protective function of religion against suicide and psychological distress.

Key words: Religion, suicide, psychological distress, attitudes, cross-cultural

Religion, suicide and psychological distress

Introduction

A well-established regularity in suicidology is that the rates of suicidal behaviore show large intersocietal variation (Värnik, 2012). The main research variable in this study, religion, has also usually been assumed to be related to the intersocietal variation of suicidal behaviors (Bertolote, & Fleischmann, 2015). For instance, low suicide rates in persons affiliating with Islam and in nations with predominantly Muslim populations are attributed either to the explicit condemnation of suicide by Islamic scripture (Lester, 2006; Shah, & Chandia, 2010) or to underreporting (Pritchard, & Amanullah, 2007). All religions have explicit or implicit sanctions against self-killing with varying degrees of severity (Nelson, Hanna, Houri, & Klimes-Dougan, 2012).

Religion is a complex but unified system of beliefs, practices and institutions about the sacred (Durkheim, 1976). From an evolutionary perspective it has been argued that religion, as an integral cultural syndrome, has evolved to reduce the fitness costs and improve the fitness benefits of their fellow members at both individual and group levels along with the cultural evolution (Boyer, & Bergstrom, 2008). According to Purzycki, Haque, and Sosis, (2014), religious systems help to increase adaptive capacities of its believers in a constant social, physical, psychological and existential flux. As a self-reflecting agent, human beings are aware of their own inevitable death and this is a source of existential anxiety. A study by Vail, Arndt, and Abdollahi, (2012) provides empirical support to the view that religious beliefs help people to cope with this existential anxiety.

Suicide is an extreme form of desperation. How does religion protect its believers against such desperation? Colucci and Martin (2008) and Stack (2000) have identified three theoretical formulations about the link between religion and suicide. The first one is the social integration theory (Durkheim, 1897/1951), and the second one is the network theory (Pescosolido, 1990). Both theories argue that religion exercises its protective function against

suicide through developing informal relationships and promoting communal community ties that increase networking and feelings of integration. On the other hand, The third one is the religious commitment theory (Stark, Doyle & Rushing, 1983; Stack, 2000). It assumes that core religious beliefs opposing suicide prevent individuals from considering suicide as an option during difficult times.

The social integration, network and religious commitment theories outlined above suggest that religion is associated with better mental health. The scientific literature indicates that religion may be a protective factor against diminished psychological well-being (Bonelli, & Koenig, 2013; Kang & Romo, 2011). Findings from a recent longitudinal study by Zou, Huang, Maldonado, Kasen, Cohen and Chen, (2014) showed that religious service attendance reduces depressive symptoms significantly. Note that reduced mental health is one of the strongest risk factors for suicidal behavior. Religion is also assumed to be a deterrent against suicidal behavior (Dervic, Oquendo, Grunebaum, Ellis, Burke, & Mann, 2004; Wu, Wang, & Jia, 2015). Further, acceptability of suicide is lower in religious than in nonreligious people (Stack, & Kposowa, 2011), and higher levels of suicide acceptability was found to be associated with contemplating, planning and attempting suicide (Joe, Romer, & Jamieson, 2007). However, some research including a recent review by Lawrence, Oquendo and Stanley (2015), present a complex picture of the relation between religion and suicidal behavior. Lawrence et al. (2016) concluded that religious affiliation was protective against suicidal attempts and suicide but not against suicidal ideation.

There are two major methodological flaws of the scientific endeavor investigating the link between religion and psychological distress and/or suicidal behaviore. First, most of the previous empirical work on the issue is carried out with samples from industrialized Western nations. Second, except for the work by Sisask et al. (2010) most studies are of ecological nature which includes other confounding variables such as levels of economic development,

education, secularization, etc. Bearing these methodological considerations in mind we tested whether religious affiliation and the strength of one's religious belief were related to nonfatal suicidal behavior, psychological distress, and attitudes towards suicide and suicidal individuals. If so, which religions have a possible relationship? We sought answers to these questions in university students from 12 nations. From a methodological point of view, in order to make cross-cultural comparisons the samples should be comparable to each other. University students are similar in several important aspects such as age, level of education, level of intellectual capacity or media exposure. As a result, we chose to study college students to make samples from different countries as comparable as possible.

Methods

Participants

A total of 5572 (55.3% women) university students (mean age = 22.1, SD = 3.5 years) from 12 countries volunteered to participate in the study. Samples were from the countries that were identified by Inglehart and Baker (2000) as belonging to four culture zones (1) Confucian (China, population = 1,355,692,576, sample n = 627 and Japan, population = 127,103,388, sample n = 246), (2) Islamic (Iran, population = 80,840,713, sample n = 1000; Jordan, population = 7,930,491, sample n = 436; Palestine (West Bank), population = 2,731,052, sample n = 358; Saudi Arabia, population = 27,345,986, sample n = 413; Turkey, population = 81,619,392, sample n = 497 and Tunisia, population = 10,937,521, sample n = 484), (3) English speaking (UK, population = 63,742,977, sample n = 150 and USA, population = 318,892,103, n = 239) and (4) Catholic (Austria, population = 8,223,062, sample n = 627 and Italy, population = 61,680,122, sample n = 471). Participants were recruited from one public university in each country but from two public universities in Jordan and Palestine.

The gender and age distributions differed significantly among countries (gender, $\chi2$ = 294.56, df = 11, $p < 0.001$; age, $F(11, 5407) = 105.61$, $p < 0.001$). There were more female

participants than male participants. However, in the Japanese and Saudi Arabian subsamples, there were more men than women. The US sample was the youngest and the UK sample was the oldest. The number of siblings of students differed significantly between samples ($F(11, 5560) = 366.45$, $p < 0.001$). Jordanian and Palestinian samples had the highest number of siblings and the Chinese had the lowest number of siblings.

Out of the larger data set, so far we have published two papers on the prevalence of suicidal behavior and psychological distress (Eskin et al., 2016a) and attitudes towards suicide and suicidal persons (Eskin et al., 2016b) in which we describe sociodemographic characteristics of participants and the administration of research processes in more detail. In the first paper we found that 29% of the whole group reported having considered killing themselves, 7% reported having attempted to kill themselves and more than 1/3 of the sample scored above the conservative GHQ-12 ≥ 5 cut-off points. Significantly more participants from Austria and the UK reported suicidal ideation while significantly fewer students from China, Italy, Saudi Arabia, Tunisia and Turkey reported suicidal ideation. Significantly more students from Jordan, Palestine, Saudi Arabia, and to some extent from Turkey reported attempting suicide, but significantly fewer participants from Austria, China, Italy, Japan and the US did so. In the second paper we found that the Austrian, the UK, the Japanese and the Saudi Arabian samples were the most accepting of suicide and the Tunisian, the Turkish, the Iranian and the Palestinian samples were the least accepting. The Turkish, the US, the Italian, and the Tunisian samples were the most socially accepting a suicidal friend and the Japanese, the Saudi Arabian, the Palestinian and the Jordanian samples were the least accepting of such a friend. Acceptance of suicide was inversely related to social acceptance for a suicidal friend. We also found in the second paper that individuals were more likely to report more suicial behavior and psychological distress, if they had accepting attitudes towards suicide but rejecting attitudes towards suicidal persons. Further, participants with an accepting attitude to

suicide but rejecting attitude to suicidal persons were more likely to be from countries with high suicide rates and significantly high suicidal behavior reporting samplesIn addition, these individuals were more often from high suicide rate countries and samples than their counterparts.

Instrument

A self-administered questionnaire was utilized to collect data. The questionnaire included questions about nonfatal suicidal behavior, religious affiliation and strength of religious belief, attitudes towards suicide and suicidal individuals, individualistic-collectivistic value orientations and a measure of psychological distress. In this paper, the associations of religious affiliation and strength of religious belief to nonfatal suicidal behavior, attitudes and psychological distress are reported. (In order to keep a clear focus, the associations of individualism-collectivism values to suicidal behavior, psychological distress and suicidal attitudes will be reported in a separate paper).

Demographics

In a short demographics questionnaire that was prepared by the lead researcher, students were asked to indicate their gender, age, and the number of siblings they have., and their field of study.

Religious affiliation

One question (What is your religion?) asked about the participants' religious affiliation based on 15 choices (Buddhism, Hinduism, Roman Catholic, Protestantism, Islam, Christian Orthodox, Judaism, Shintoism, African Religion, I have no religion, Shamanism, Sikhism, Taoism, Mormonism and Other than these). Since few participants in our sample reported having affiliated with African religion (n = 22), Shintoism (n = 20), Taoism (n = 13), Judaism (n = 10), Shamanism (n = 4), Mormonism (n = 4) and Sikhism (n = 3), they were merged into the other religion category. Based on the historical claims (For instance

Durkheim's) about the relationship between Protestantism and suicide we have divided

Christianity into three (Catholic, Orthodox and Protestant).

Strength of religious belief

Another question (What is the strength of your religious belief?) asked about the

strength of their religious belief on a 7-point Likert scale ranging from "None whatsoever (0)"

to "Very strong (6)".

Suicidal behavior

There were five questions about past and current suicidal behavior (Yes = 1, No = 0):

(1) Have you ever thought of killing yourself? (2) Have you, during the past 12-months,

thought of killing yourself? (3) Do you have thoughts of killing yourself right now? (4) Have

you ever made an attempt to kill yourself? (5) Have you, during the past 12-months, made an

attempt to kill yourself?

Participants responding affirmatively to all or at least one of the first three questions

were dichotomized as having suicidal ideation and participants responding affirmatively to

both or one of the questions 4 and 5 were dichotomized as having attempted suicide.

Psychological Distress

The 12-item General Health Questionnaire (GHQ-12; Goldberg, & Williams, 1988) is

the most widely used screening tool for assessing psychological distress. The reliability and

the validity of the GHQ-12 are well established (Goldberg, Gater, Sartorius, Ustun, Piccinelli,

Gureje, & Rutter, 1997). The standard method of 0-0-1-1 scoring was used in the study. In

this method, a score of 0 was assigned to the first two low stress alternatives and a score of 1

was given to the two high stress alternatives. The method results in individual scores that

range from 0 to 12. The internal consistency reliability of the GHQ-12 in this study was 0.87

with item-total correlations ranging from 0.45 to 0.62. Goldberg et al., (1997) suggested

varying GHQ-12 cut-off points from a low of 2 to a high of 4 in 15 centers. Therefore, we

used three cut-off (GHQ-12 ≥ 3, 4, 5) points in this study.

Attitudes towards suicide

Twenty-four item Eskin's Attitudes towards Suicide Scale (E-ATSS, Eskin, 1999a;

2004; 2013; Eskin et al., 2016b) with five point Likert type response options ranging from

"Completely disagree (1)" to "Completely agree (5)" was used to measure students' attitudes

towards suicide. A principle component analysis with varimax rotation extracted six factors:

1. Acceptability of suicide (α = 0.91); 2. Punishment after death (α = 0.93); 3. Suicide as a sign

of mental illness (α = 0.94); 4. Communicating psychological problems (α = 0.79); 5. Hiding

suicidal behavior (α = 0.82); 6. Open reporting and discussion of suicide (α = 0.62) that

explained 73.10% of the total variance.

Attitudes towards suicidal persons

Eskin's Social Reactions to Suicidal Persons Scale (E-SRSPS) begins with a short

description of "an imagined suicidal close friend" who decides to kill him/herself and share it

with participant. By means of 20 possible reactions to this friend, students were asked how

they would react or feel on 5-point Likert scales ranging from "Completely disagree (1)" to

"Completely agree (5)" (Eskin, 1999a; Eskin, 2004; Eskin, 2013; Eskin et al., 2016b). A

principle component analysis with varimax rotation extracted four factors: 1. Social

acceptance (α = 0.90); 2. Helping (α = 0.83); 3. Disapproval of suicidal disclosure (α = 0.77);

4. Emotional involvement (α = 0.63) that explained 60.73% of the total variance.

Procedure

First, a battery of survey was prepared by the principle investigator (M. Eskin). Then,

the other researchers were invited via e-mail to join the study. All researchers worked for a

university and collected their portion of the data at their institution, but in Jordan and

Palestine, data were also collected at a second university. On the first page of the

questionnaire packet, students were told that the study was anonymous. Contact information

of the investigator collecting data was provided on the first page of the survey for participants

to get in touch and ask possible questions they may have had.

All researchers were requested to only undertake data collection after having received

approval from relevant institutional review boards for research ethics. With the exception of

Austria where such an approval was formally not necessary according to the relevant legal

requirements and regulations, ethical approval was obtained in all study sites. In the United

Kingdom, the IRB approved the study first but later the data collection was stopped

prematurely by the IRB due to one member's concerns over the possible distress the suicide-

related questions could cause. Almost all of the researchers in this study reported having no

legal sanctions against suicidal behavior in their respective country. However, this was not the

case for Jordan. According to the Jordanian Penal Code, "The person who attempts suicide

will be punished by imprisonment from three months to two years."

Statistical Analyses

First, the eight religion categories were coded as dummy variables and then, their

associations with suicidal behavior and psychological distress were tested by calculating the

odds ratios (ORs) by using the chi-squarebinary logistic regression analysis procedure. In

calculating the ORs, age, sex and the number of siblings were taken as covariates and hence

their effects were controlled for. In the first series of ORs, the control or reference group

included participants who reported not affiliating with a religion. In the second series of ORs

reported in Table 1, the control or reference group included participants who reported

affiliating with all otherny religions and those not affiliating with a religion. Point-biserial

correlation coefficients were calculated between strength of religious belief and suicidal

behavior, and psychological distress. Two one-way Multivariate Analyses of CoVvariances

(MANCOVAs) were performed to explore the relation between religious affiliation (IV) and

suicidal attitudes (DVs) by entering the age and number of siblings as covariates. Scheffé procedure was employed to do multiple comparisons. Finally, Pearson product-moment correlation coefficients were calculated between strength of religious belief and suicidal attitudes.

Results

Religious affiliation and belief

The distribution of religious affiliation by country showed that the majority of participants in each country reported affiliating with the dominant religious tradition, with the exception of China, The UK and The USA where the majority reported affiliating with no religion. The majority affiliations by country were as follows: Austria (n = 254, affiliation with Roman Catholicism = 41,5%), China (n = 471, affiliation with no religion = 80.2%), Iran (n = 1000, affiliation with Islam = 100%), Italy (n = 226, affiliation with Roman Catholicism = 49.1%), Japan (n = 105, affiliation with Buddhism = 46.7%), Jordan (n = 414, affiliation with Islam = 98.8%), Palestine (n = 347, affiliation with Islam = 97.2%), Saudi Arabia (n = 403, affiliation with Islam = 97.6%), Tunisia (n = 470, affiliation with Islam = 97.3%), Turkey (n = 450, affiliation with Islam = 93.0%), UK (n = 69, affiliation with no religion = 46.0%), USA (n = 69, affiliation with no religion = 28.9%).

The mean (SD) strength of religious belief ratings on a 7 point scale by country were as follows: Austria 1.7 (1.7), China 1.2 (1.3), Iran 4.2 (1.5), Italy 2.4 (2.1), Japan 1.7 (1.5), Jordan 4.7 (1.1), Palestine 4.7 (1.3), Saudi Arabia 4.7 (1.4), Tunisia 4.6 (1.3), Turkey 4.1 (1.6), UK 2.4 (2.3), and USA 3.1(1.8).

The mean (SD) strength of religious belief ratings by affiliated religion were as follows: Buddhism 2.51 (1.51), Hinduism 3.21 (1.82), Islam 4.48 (1.40), Orthodox 3.02 (1.82), Protestant 2.71 (1.95), Catholic 2.73 (1.85), and other religion 2.88 (2.13).

Religious affiliation, suicidal behavior, and psychological distress

Religion, suicide and psychological distress

The odds ratio (95% CI) of participants affiliating with any religion having thought of suicide relative to those with no religious affiliation was 0.8277 (0.7067 – 0.9689), (χ^2 Wald = 12.356.30, df = 1, p < 0.051. The odds ratio (95% CI) of participants affiliating with a religion having attempted suicide relative to those with no religious affiliation was 1.89 45 (1.0438 – 2.0358), (χ^2 Wald = 16.194.91, df = 1, p < 0.051). The odds ratios (95% CI) of participants affiliating with a religion having scored above the three cut-off points of GHQ-12 relative to those with no religious affiliation were at GHQ-12 ≥ 3, 1.4672 (1.2650 – 1.7098), (χ^2 Wald = 59.8625.23, df = 1, p < 0.01, at GHQ-12 ≥ 4, 1.4168 (1.2145 – 1.6594), (χ^2 Wald = 49.8219.27, df = 1, p < 0.01,) and at GHQ-12 ≥ 5, 1.437 (1.2147 – 2.011.69),2 (χ^2 Wald = 47.9118.16, df = 1, p < 0.01.

The associations of religious affiliation to suicidal behavior and psychological distress are shown in Table 1. The table shows that while participants who affiliated with Orthodox religion and those unaffiliated with a religion were significantly more likely to report suicidal ideation; participants who affiliated with Islam were less likely to report suicidal ideation. Participants who affiliated with no religion, Buddhism and Catholicism were significantly less likely to report attempting suicide but those affiliating with Islam were significantly more likely to report attempting suicide. Participants affiliating with Hinduism, Protestantism, Catholicism, other religions and those having been unaffiliated with a religion were significantly less likely to score above the three cut-off points of GHQ-12 ≥ 3 but participants affiliating with Islam were significantly more likely to score above the three cut-off points of GHQ-12.

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Table 1 about here

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Religious belief, suicidal behavior, and psychological distress

Religion, suicide and psychological distress

Table 2 displays the point-biserial correlation coefficients between suicidal behavior and psychological distress and strength of religious belief according to religious affiliation. The strength of religious belief correlates inversely significantly with suicidal ideation in participants affiliating with Hinduism, Islam, Orthodox Christianity, and Catholic religions. A negative correlation was observed between strength of religious belief and suicide attempts in students affiliating with Islam but there were positive correlation between religious belief and suicide attempts in participants affiliating with Catholicism and those affiliating with other religions. The correlation coefficients between religious belief and scoring above the three cut-off points of GHQ-12 were negative and reached significance only in participants affiliating with Islam.

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Table 2 about here

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Religious affiliation and suicidal attitudes

The means and standard deviations for E-ATSS and E-ATSPS factor scores are presented in Table 3. The one-way MANCOVA on attitudes towards suicide factors produced a significant main effect for religious affiliation, $F_{(7,5419)} = 74.30$, $p < 0.0001$. Univariate F tests showed religious affiliation differences on all factors: acceptability of suicide (F = 95.29, $p < 0.0001$), punishment after death (F = 553.61, $p < 0.0001$), suicide as a sign of mental illness (F = 60.65, $p < 0.0001$), communicating psychological problems (F = 12.28, $p < 0.0001$), hiding suicidal behavior (F = 59.59, $p < 0.0001$), and open reporting and discussion of suicide (F = 22.87, $p < 0.0001$).

The one-way MANCOVA on attitudes towards an imagined suicidal friend factors yielded a significant main effect for religious affiliation, $F_{(7,5419)} = 17.92$, $p < 0.0001$. Univariate F tests showed significant religious differences on all factors: social acceptance (F

Religion, suicide and psychological distress

= 7.61, p < 0.0001), helping (F = 12.04, p < 0.0001), disapproval of suicidal disclosure (F = 13.39, p < 0.0001) and emotional involvement (F = 39.27, p < 0.0001) factors.

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Table 3 about here

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In order to ease the comprehension of our findings, mean E-ATSS and E-ATSPS factor scores were ordered from the lowest to the highest under the respective tables for affiliated religion. The results of post-hoc comparisons with Scheffe tests are given in Table 4.

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Table 4 about here

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Strength of religious belief and suicidal attitudes

Table 5 presents the correlation coefficients between the strength of religious belief and attitudes towards suicide and suicidal persons. The highest positive correlation was between punishment after death and participants' strength of religious beliefs, and the highest negative one was between participants' strength of religious beliefs and acceptability of suicide in total sample. For these factors similar patterns were observed for the participants affiliated with Hinduism, Orthodox Christianity, Protestantism, and Catholicism.

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Table 5 about here

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Discussion

The present study aimed at testing the effects associations of religious affiliation and the strength of religious belief on to suicidal behavior and attitudes, and psychological distress

in student samples. Scientific investigations have often confirmed showed that being affiliated with a religion is associated with better mental health (Zou et al., 2014) and a lower propensity for suicidal behavior (Dervic et al., 2004; Sisask et al., 2010; Wu et al., 2015). Our results confirm are in line with these findings for suicidal ideation, but disconfirm contrast them for suicide attempts and psychological distress. In this study, participants reporting an affiliation with a religion were found to be at a greater risk for attempting suicide and scoring above the cut-off points of GHQ-12 than those reporting no religious affiliation. These results are in stark contrast to findings from a recent review of 89 studies by Lawrence et al. (2016) who found religion to be a protecting factor against suicide attempts, but not against suicidal ideation. The studies covered in this review were conducted mainly with samples from Western nations. The overwhelming majority of participants from Muslim countries in the present study reported having affiliated with religion. Therefore, the difference between our findings and the findings from Lawrence et al. might be a reflection of social, economic and political conditions in Muslim countries. This is an overview, but does it apply to affiliation with specific religious traditions?

An examination of the associations of affiliation with specific religious traditions to suicidal behavior and psychological distress presents a more nuanced picture (Table 1). While having affiliated with Islam was associated with reduced odds for of contemplating suicide ideation, affiliating with Orthodox religion and not affiliating with a religion were associated with heightened odds of considering suicide. Except for the case of Orthodox Christianity the findings are in line with theoretical expectations. Since no country adhering to Orthodox religion was included in our study, the association between affiliation with Orthodox religion and suicide ideation might be due to minority stress. However, an examination of the associations of religious affiliation to suicide attempts and psychological distress reveals contrasting patterns. Affiliation with Buddhism and Catholicism was associated with reduced

odds of attempting suicide. To our surprise, affiliating with no religion was associated with reduced odds for attempting suicide which is theoretically an inconsistent relation. Another theoretically contradictory finding is the relation between affiliation with Islam and reports of suicide attempts. In line with findings from previous work (Eskin, 1999b; Eskin, Palova, & Krokavcova, 2014; Eskin, Voracek, Stieger, & Altinyazar, 2011; Lester, 2006) our findings demonstrate that participants reporting affiliation with Islam have heightened odds of having attempted suicide despite prohibiting attitude of their religion to suicide and they also scored above the three cut-off points of GHQ-12.

Why is affiliation with Islam associated with reduced odds of for contemplating suicide ideation but heightened odds of attempting suicide and higher levels of psychological distress? Two plausible explanations may be offered for these contradictory findings. First, according to Schacter, Guerin, and St Jacques (2011), individuals have a tendency to distort and reconstruct their past memories into meaningful personal narratives. As a result, students from Muslim countries may be reconstructing their own past memories to fit them in with the doctrines of their religious faith. The attempt, however, as a concrete act may not be amenable for distortion. Second, the observed associations might reflect the effects of contextual factors. An overwhelming majority of participants affiliating with Islam are from the Islamic countries; only 61 were from other countries. According to Freedom in the World 2015 report by Freedom House (2015) only Tunisia is classified as free in terms of political rights and civil liberties, Turkey as partly free, and the other Muslim countries included in our study are classified as not free. Religious affiliation has a normative character in Islamic countries. In other words, there is freedom to religion but freedom from religion is limited and involves risks for life and/or social exclusion. Our findings suggest that freedom of choice is essential for religion to exercise its protective function. One can argue that when a belief system is

coerced either by law or by social norms it loses its protective function and becomes a risk factor.

However, when religious belief is taken into account participants' strength of religious belief was associated inversely with suicidal ideation in the total sample, and in the students reported affiliating with Hinduism, Islam, Orthodox Christianity, and Catholicism religions. But, the strength of belief was unrelated to suicide attempts in the total sample but inversely related to attempting suicide in participants affiliating with Islam, and positively in those affiliating with Roman Catholic religion and other religions. Strength of religious belief seems to be protective against psychological distress in Muslim participants but the magnitudes of associations are negligible.

Suicide acceptability is related to broader cultural values and is higher in nonreligious than in religious people (Stack & Kposowa, 2016). The findings from our study confirm thissupport previous findings. For instance, acceptability of suicide was the highest in students who reported affiliations with Protestantism, no religion, and Catholic religion while it was the lowest in the participants affiliating with Islam, Orthodox Christianity and Buddhism. Participants affiliated with Islam expressing the lowest acceptance for suicide is in line with the findings from Stack and Kposowa, (2011). The highest mean of punishment after death factor scores was seen for the participants affiliating with Islam, Orthodox Christianity, and Hinduism while the lowest scores were in those affiliating with no religion, Catholic religion and Protestantism. The strength of religious belief was inversely related to acceptance of suicide and, positively related to a belief in punishment after death.

An examination of participants' attitudes towards an imagined suicidal friend reveal that the lowest social acceptance of and helping for a suicidal friend were observed in students reported affiliating with Buddhism, other religion and no religion while the highest scores were seen in those affiliating with Orthodox religion, Catholic religion, Hinduism and

Protestantism. Participants affiliating with Orthodox, Catholic and Protestant religions were the least disapproving of a suicidal disclosure in contrast to those affiliating with Buddhism, Islam and no religion. Respondents affiliating with Protestantism, Catholicism and Hinduism displayed least emotional involvement in a fictitious suicidal peer, while those affiliating with Islam, Orthodox religion and with no religion were emotionally most involved in a peer with a suicidal decision. The strength of participant's religious belief was positively related to these attitudinal factors.

Taken together, the currentour findings indicate that the association of religion to suicidal behavior, suicidal attitudes, and psychological distress involve complex issues reflecting effects of both personal and contextual factors. Religious affiliation and the strength of religious belief may be protective against suicidal behaviore and psychological distress for some people in some sociocultural contexts but not so for others in other sociocultural contexts. Recently, Lester and Walker (2017) have showed religiosity to be protective for suicidal ideation in European American students but not in African American students. An unexpected finding from our research is the higher percentages of suicidal attempts and psychological distress in participants who reported affiliating with Islam despite the lowest suicide acceptance in this group. It seems that religiosity is protective for most participants but its protective function seems to be limited for people affiliating with Islam for attempting suicide and to some extent for those affiliating with Orthodox Christianity for suicide ideation. The associations of the strength of religious belief to suicidal behavior are in large part in the expected direction but in participants reported affiliating Catholic religion and other religions, stronger belief was related to more suicide attempts. The effect association of religious belief on to psychological distress was negligible.

Limitations

Although results from this multinational study provide some valuable insights into the relation of religion to suicidal behavior, attitudes and psychological distress, a number of considerations should be taken into account when generalizing our results. First, the university students may not be representative of the general populations of the countries under consideration. Second, the preventative function of religion for mental health may not be as strong in educated segments of populations as it is in the general populations. Third, religious affiliation and strength of religious belief may be too general concepts to examine the effects of religion. Fourth, our findings from this cross-sectional study should not be interpreted in a causal way. Finally, one should bear in mind a possible volunteer bias in our study. Since data were collected from consenting students, it is possible that participants who chose to participate in the study were somewhat different than those who did not consent to be part of the study. For instance, the students who refused to participate may have greater propensity to suicide or psychological distress.

Implications

Our findings have a number of research and policy implications. First, future research may benefit from examining the association of religious orientation and coping to suicidal phenomena and psychological distress instead of using global variables such as affiliation and strength of belief. Second, more research is needed about suicidal phenomena and psychological well-being in Muslim countries. Third, the influence of minority stress on suicide and psychological distress should be addressed in future research. Next, future research should address social policies or interventions for minimizing adverse effects of minority stress. Finally, sociopolitical measures enhancing not only freedom to religion but also freedom from religion may augment the protective function of religion against suicide and psychological distress in Muslim countries.

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Table 1. Odds Ratios (OR) between religious affiliation and suicidality and scores above the three cut off points of GHQ-12.

Religious Affiliation	Suicide Ideation		Suicide Attempt		GHQ-12 $\geq$ 3		GHQ-12 $\geq$ 4		GHQ-12 $\geq$ 5	
	OR	%95 CI	OR	%95 CI	OR	%95 CI	OR	%95 CI	OR	%95 CI
Buddhism	0.921.16	0.8467 − 1.6228	0.3528[ab]	0.130 − 0.9675	0.1.1395	0.8471 − 1.5128	1.160.98	0.8673 − 1.5631	1.190.99	0.8772 − 1.6234
Hinduism	1.50	0.923 − 2.434	0.8779	0.3229 − 2.4219	0.465[b]	0.28 − 0.764	0.6158[a]	0.364 − 1.020.97	0.641	0.375 − 1.1205
Islam	0.732[b]	0.634 − 0.841	2.151[b]	1.6097 − 23.7821	1.8398[b]	1.6077 − 2.0821	1.822.00[b]	1.6078 − 2.0924	1.792.00[b]	1.5577 − 2.026
Christian Orthodox	1.657[ab]	1.113 − 2.436	0.570	0.218 − 1.5736	0.740	0.497 − 1.1205	0.571[ab]	0.363 − 0.9081	0.494[b]	0.296 − 0.8374
Christian Protestant	1.2632	0.827 − 12.9201	0.327	0.087 − 1.3012	0.7061[a]	0.450 − 1.070.93	0.690[a]	0.4438 − 1.090.95	0.763	0.4539 − 1.1903
Christian Catholic	1.0410	0.8590 − 1.2834	0.4437[b]	0.262 − 0.7563	0.7465[b]	0.6154 − 0.8978	0.6456[b]	0.5246 − 0.7869	0.6456[b]	0.5145 − 0.870
Other Religion	1.1825	0.8793 − 1.5968	1.2706	0.7462 − 21.1982	0.7062[ab]	0.5246 − 0.9583	0.7768[a]	0.570 − 1.080.92	0.8069[a]	0.580 − 1.120.96
Have no religion	1.229[b]	1.0412 − 1.429	0.6953[ab]	0.439 − 0.9673	0.658[b]	0.591 − 0.679	0.7160[b]	0.6152 − 0.8369	0.7058[b]	0.5950 − 0.8268

Associated chi-square valuesWald Statistics are significant at: [a] $P < 0.05$; [b] $P < 0.01$

Table 2. Point-biserial correlation coefficients between strength of religious belief and suicidality and scores above the three cut off points of GHQ-12 by religious affiliation.

Religious Affiliation	Suicide Ideation		Suicide Attempt		GHQ-12 ≥ 3		GHQ-12 ≥ 4		GHQ-12 ≥ 5	
	r	*Df*	*r*	*df*	*r*	*df*	*r*	*df*	*r*	*df*
Total sample	− 0.14[b]	4042	− 0.01	4041	− 0.04[a]	4249	0.02	4249	0.02	4249
Buddhism	0.03	189	− 0.07	189	− 0.05	187	− 0.09	189	− 0.06	187
Hinduism	− 0.26[a]	71	− 0.03	71	− 0.07	71	− 0.09	71	− 0.01	71
Islam	− 0.17[b]	2863	− 0.10[b]	2862	− 0.04[a]	3128	− 0.06[b]	3128	− 0.06[b]	3128
Christian Orthodox	− 0.21[a]	109	− 0.06	109	0.01	96	0.09	96	0.05	96
Christian Protestant	− 0.13	97	0.02	89	− 0.02	89	0.01	89	0.01	89
Christian Catholic	− 0.10[a]	511	0.10[a]	511	0.01	490	− 0.02	490	− 0.03	490
Other Religion	− 0.01	202	0.17[a]	202	− 0.02	188	− 0.04	188	− 0.01	188

P values are significant at: [a] *P < 0.05;* [b] *P < 0.01, one-tailed.*

Table 3. Means and standard deviations of the attitudes towards suicidality factors by participants' religious affiliation

Attitude factors	Buddhism		Hinduism		Islam		No religion		Orthodox		Protestantism		R. Catholic		Other religion	
	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD	M	SD
Attitudes to suicide																
Acceptability of suicide	2.07	0.80	2.11	0.98	1.62	0.81	2.35	0.91	1.78	0.76	2.37	0.90	2.14	0.85	2.12	0.92
Punishment after death	2.31	0.77	2.33	0.96	3.86	0.97	1.84	0.79	2.51	1.00	2.19	0.90	2.04	0.86	2.31	1.00
Suicide as sign of mental illness	2.67	0.97	2.82	1.11	3.43	1.25	2.45	1.01	2.96	1.13	2.76	1.00	2.78	1.10	2.77	1.06
Communicating problems	3.73	0.66	4.01	0.70	3.73	0.90	3.66	0.83	4.12	0.74	3.85	0.65	3.99	0.70	3.82	0.85
Hiding suicidal behavior	2.98	0.96	2.22	0.90	2.90	1.10	2.37	0.98	2.11	0.99	2.06	0.91	1.95	0.98	2.52	1.14
Open reporting &discussion	2.70	0.85	3.18	0.94	3.06	1.06	2.83	1.07	3.18	1.07	3.22	0.90	3.47	0.84	2.85	1.05
Attitudes to suicidal persons																
Social acceptance	3.64	0.75	3.96	0.86	3.89	0.83	3.88	0.66	4.13	0.66	3.88	0.60	3.97	0.57	3.86	0.76
Helping	3.94	0.57	4.12	0.64	4.09	0.78	4.05	0.60	4.21	0.57	4.18	0.51	4.29	0.55	3.96	0.68
Disclosure disapproval	2.91	0.72	2.59	0.95	2.79	0.83	2.58	0.76	2.36	0.74	2.46	0.64	2.37	0.71	2.68	0.73
Emotional involvement	3.05	0.89	3.00	0.97	3.46	0.89	3.10	0.90	3.16	0.95	2.63	0.83	2.99	0.94	3.03	0.97

E-ATSS factor scores from the lowest to the highest:
   Acceptability of suicide: Islam, Orthodox, Buddhism, Hinduism, Other religion, Catholicism, No religion, Protestantism
   Punishment after death: No religion, Catholicism, Protestantism, Buddhism, Other religion, Hinduism, Orthodox, Islam
   Suicide as sign of mental illness: No religion, Buddhism, Protestantism, Other religion, Catholicism, Hinduism, Orthodox, Islam
   Communicating problems: No religion, Buddhism, Islam, Other religion, Protestantism, Catholicism, Hinduism, Orthodox
   Hiding suicidal behavior: Catholicism, Protestantism, Orthodox, Hinduism, No religion, Other religion, Islam, Buddhism
   Open reporting & discussion: Buddhism, No religion, Other religion, Islam, Hinduism, Orthodox, Protestantism, Catholicism

E-SRSPS factor scores from the lowest to the highest:
   Social acceptance: Buddhism, Other religion, No religion, Protestantism, Islam, Hinduism, Catholicism, Orthodox
   Helping: Buddhism, Other religion, No religion, Islam, Hinduism, Protestantism, Orthodox, Catholicism
   Disclosure disapproval: Orthodox, Catholicism, Protestantism, No religion, Hinduism, Other religion, Islam, Buddhism
   Emotional involvement: Protestantism, Catholicism, Hinduism, Other religion, Buddhism, No religion, Orthodox, Islam

Table 4. Post-hoc comparisons of country E-ATSS factor scores* (above the diagonal) and E-SRSPS factor scores** (below the diagonal) with Scheffe tests

Religions	Buddhism	Hinduism	Islam	No religion	Orthodox	Protestantism	R. Catholic	Other religion
1. Buddhism		5	1, 2, 3, 6	1, 2, 5	4, 5, 6	5, 6	5, 6	5
2. Hinduism			1, 2, 3, 5	2				
3. Islam	1,4	4		1, 2, 3, 5, 6	2, 3, 4, 5	1, 2, 3, 5	1, 2, 3, 4, 5, 6	1, 2, 3, 5
4. No religion	1,3		3,4		1, 2, 3, 4	4	1, 2, 3, 4, 5, 6	2
5. Orthodox	1,3		3			1	1, 2	
6. Protestantism	3,4		3,4	4	4			
7. R. Catholic	1,2,3		2,3,4	2,3				5, 6
8. Other religion			4				2,3	

* E-ATSS factors:
 1. Acceptability of suicide, 2. Punishment after death, 3. Suicide as a sign of mental illness, 4. Communicating psychological problems, 5. Hiding suicidal behavior, 6. Open reporting and discussion of suicide.
** E-SRSPS factors:
 1. Social acceptance, 2.Helping, 3. Disclosure disapproval, 4. Emotional involvement

Table 5.Correlation coefficients between attitudes towards suicidality and participants' strength of religious beliefs.

Attitude factors	Total sample		Buddhism		Hinduism		Islam		Orthodox		Protestantism		R. Catholic		Other religion	
	r	df	R	df	r	df	r	df	r	df	r	df	r	df	r	df
Attitudes to suicide																
Acceptability of suicide	− 0.38[c]	5572	− 0.09	190	− 0.50[c]	75	− 0.23[c]	3145	− 0.37[c]	109	− 0.40[c]	97	− 0.39[c]	512	− 0.17[a]	202
Punishment after death	0.61[c]	5572	− 0.03	190	0.43[c]	75	0.22[c]	3145	0.57[c]	109	0.63[c]	97	0.47[c]	512	0.34[c]	202
Suicide as sign of mental illness	0.26[c]	5572	− 0.06	190	− 0.12	75	0.07[c]	3145	0.10	109	− 0.00	97	− 0.05	512	0.02	202
Communicating problems	0.10[c]	5572	0.14[a]	190	0.23	75	0.15[c]	3145	0.21[a]	109	0.15	97	0.12[b]	512	0.09	202
Hiding suicidal behavior	0.17[c]	5572	− 0.10	190	− 0.05	75	0.03	3145	− 0.10	109	0.03	97	0.00	512	0.08	202
Open reporting &discussion	0.05[c]	5572	− 0.06	190	0.15	75	0.00	3145	− 0.06	109	− 0.14	97	− 0.01	512	− 0.04	202
Attitudes to suicidal persons																
Social acceptance	0.03[a]	5572	0.24[b]	190	0.06	75	0.01	3145	0.22[a]	109	0.00	97	0.14[b]	512	0.14	202
Helping	0.05[b]	5572	0.22[b]	190	− 0.17	75	0.06[b]	3145	0.09	109	− 0.14	97	0.09[a]	512	0.01	202
Disclosure disapproval	0.13[c]	5572	− 0.16[a]	190	0.17	75	0.09[c]	3145	0.14	109	0.14	97	0.07	512	− 0.09	202
Emotional involvement	0.19[c]	5572	0.06	190	0.17	75	0.09[c]	3145	0.25[b]	109	0.12	97	0.22[c]	512	− 0.05	202

P values are significant at: *[a] P < 0.05; [b] P < 0.01; [c]P< 0.001.*