

Religiousness as a Predictor of Suicide: An Analysis of 162 European Regions

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Research on religion as a protective factor has been marked by four recurrent limitations: (1) an overemphasis on the United States, a nation where religiosity is relatively high; (2) a neglect of highly secularized zones of the world, where religiousness may be too weak to affect suicide; (3) restriction of religiousness to religious affiliation, a construct which may miss capturing other dimensions of religiousness such as the importance of religion in one's life; and (4) an overwhelming use of the nation as a unit of analysis, which masks variation in religiousness within nations. The present article addresses these limitations by performing a cross-national test of the following hypothesis: The greater the strength of subjective religiousness, the lower the suicide rate, using small units of analysis for a secularized area of the world. All data refer to 162 regions within 22 European nations. Data were extracted from two large databases, EUROSTAT and the European Social Surveys (ESS Round 4), and merged using NUTS-2 (Nomenclature of Statistical Territorial Units) regions as the unit of analysis. Controls are incorporated for level of economic development, education, and measures of economic strain. The results of a multiple regression analysis demonstrated that controlling for the other constructs in the model, religiousness is associated with lower suicide rates, confirming the hypothesis. Even in secularized European nations, where there is a relatively weak moral community to reinforce religion, religiousness acts as a protective factor against suicide. Future work is needed to explore the relationship in other culture zones of the world.

Suicide is a global social problem. It accounts for nearly one million deaths per year. In addition, there are approximately 20 million suicide attempts each year (WHO, 2014). The world's rate of suicide has been increasing steadily over the last half-century. For example, the male rate rose from 17 per 100,000 males in 1950 to 28 per 100,000 males in 2000. Suicide among the young represents more years of life lost than for other age groups. Globally, suicide now ranks as

the third leading cause of death for the young (Stack & Kposowa, 2011; WHO, 2014).

Over more than a century of research, scholars have found mixed evidence regarding the extent to which religion acts as a protective factor against suicide (e.g., Chon, 2015, 2017; Durkheim, 1897/1966; Hsieh, in press; Morselli, 1882; Stack, 1981; Zhang, Wiczorek, Conwell, & Tu, 2011; for reviews, see Collucci & Martin, 2008; Koenig, King, & Carson, 2012; Lester, 2000; Stack, 1982,

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2000; Stack & Kposowa, 2016). For example, in China, a highly secularized society where only approximately 10% of the population has a religious affiliation, religion does not protect against suicide and sometimes actually is associated with greater risk (Zhang et al., 2011). Further, a disproportionate amount of the research has been based on the United States (e.g., Bainbridge, 1989; Barkan, Rocque, & Houle, 2013; Ellison, Burr, & McCall, 1997; Stack, 2009; VanderWeele, Li, Tsai, & Kawachi, 2016), a nation with a relatively high level of religiosity (Chan & Thambu, 2016; Inglehart & Baker, 2000). It is not clear whether the results based on the United States would generalize to other nations marked by a variety of institutional and cultural frameworks.

The United States has a relatively conservative culture marked by strong religious- and family-oriented values (Inglehart & Baker, 2000). In such nations, the interpretation of religion's protective effect follows the moral community hypothesis, a notion dating back to Durkheim (1897/1966; Stack & Kposowa, 2016) that holds that the aggregate level of religiousness in a group (e.g., neighborhood, city, county, state, region, and nation) will affect the attitudes and behaviors of individuals of its members, including the religious and nonreligious. Religious teachings have a greater effect on religious individuals if these teachings are reinforced by those around them in everyday life (Baier & Wright, 2001; Stack & Kposowa, 2016; Stark, 1996). Hence, given the relatively high level of cultural traditionalism in the United States (values of family, religion, and nationalism), religion might be more apt than average to affect American individuals given the presence of a strong moral community (Inglehart & Baker, 2000; Stack & Kposowa, 2016). Work on more secularized nations, such as China and those in Europe, is needed as a check on this issue. There is some evidence that religion aggravates suicide risk in some regions, including western Europe and East Asia (Hsieh, *in press*; Zhang et al., 2011). For example, Hsieh (*in press*) determined that for western Europe, the higher the church

attendance rates, the higher the suicide rates. In southern Europe, church attendance rates were unrelated to suicide rates. In East Asia, a 1% increase in church attendance rates was associated with a 1% rise in suicide rates.

The present investigation tests a structural hypothesis for a sample of relatively secularized nations in Europe: The greater the religiousness in a population, the lower its suicide rate.

This study adds to the literature on religion and suicide in several ways. First, it is based on a sample of European nations, an area of the world relatively high in secularization (Inglehart & Baker, 2000; Kaufmann, Goujon, & Skirbekk, 2012). In contrast, previous cross-national work on this issue has included many less developed nations with low levels of secularization such as Islamic nations (e.g., Chon, 2015; Simpson & Conklin, 1989). The European context presents a challenge for the moral community thesis, as there are relatively fewer religious persons available to reinforce the religiousness of individuals (Stack & Kposowa, 2011).

Second, it is the first cross-national study to employ a measure of subjective religiosity: the mean level of the population's perceived religiousness. The self-reported mean level of perceived religiousness can capture the meaning of religion along a variety of dimensions. For example, of the 13 dimensions of religion (Koenig, McCullough, & Larson, 2001), the degree of subjective religiousness can tap private religiousness such as prayer, meditation, and closeness to God, as well as public religiousness such as church attendance. It can also capture persons who are devoted to their religious beliefs and who give meaning to their suffering through channels of religious coping (Stack, 1983; Stack & Kposowa, 2016). This particular metric has advantages over many alternative measures such as being a member of a religious group. Sheer membership may be for reasons of maintaining an air of social acceptability and have little consequences in everyday life (Koenig et al., 2001, 2012).

Third, the present investigation captures the variation in suicide and its correlates

that exists within nations. It does so using regions within nations as our unit of analysis. By matching suicide rates and religiousness levels for areas within nations, we are more apt to discover the true nature of the link between these population characteristics. Generally, small units of analysis can be more homogeneous than larger units of analysis. This strategy is consistent with within-nation studies in the United States (e.g., Bainbridge, 1989; Barkan et al., 2013; Ellison et al., 1997). Sometimes studies that use small units of analysis that closely match local population characteristics (religion and suicide) find associations, while studies based on the use of large units such as states do not (Stack, 2000). We are able to make this contribution through an innovative strategy for merging together data from two large cross-national data sets.

Finally, the religiousness–suicide relationship is assessed using suicide deaths as the dependent variable. This is in contrast to most of the previous work where the analysis of the relationship has been limited to forms of suicidality that fall short of death, such as nonfatal attempts and suicide ideation (Koenig et al., 2001, 2012; Stack, 2000). To the extent that deaths from suicide and nonfatal forms of suicide represent two different populations, it is important to study deaths separately (Stack, 2000).

PREVIOUS RESEARCH ON RELIGION AND SUICIDE DEATHS

A disproportionate amount of research on religion and suicide is either based on the United States or includes a large number of the less secularized nations of the world (e.g., Bainbridge, 1989; Barkan et al., 2013; Chon, 2015, 2017; Ellison et al., 1997; Stack, 2009; Stack & Kposowa, 2016; VanderWeele et al., 2016). In contrast, in this study we focused on the cross-national, aggregate analysis of suicide rates in more secularized nations. The existing relevant structural cross-national studies are listed in Table 1. Six of these nine published studies contain

many nations that are low in secularization (Chon, 2015, 2017; Huang, 1996; Moore, 2015; Simpson & Conklin, 1989; Stack, 1981).

The sample of 22 nations used in this study is marked by relatively high levels of secularization, a finding consistent with research using alternate measures of religiousness, such as organizational religiosity (Koenig et al., 2001, 20). Church attendance is a widely used reverse measure of secularization (Kaufmann et al., 2012; Koenig et al., 2012). Using the fourth wave of the World Values Surveys (WVS), Stack and Kposowa (2011) measured secularization as the national mean on the WVS item “Apart from weddings, funerals and christenings, how often do you attend religious services these days: from 1 = *never* through 8 *more than once a week*.” The mean level was relatively high in the Islamic culture zone (e.g., Bangladesh: 5.8, Iran: 5.5, Indonesia: 6.4, Pakistan: 7.08, Philippines: 6.10), among Hindus (India: 5.3), in Latin America (e.g., Mexico: 5.9, Peru: 5.83), and in Africa (Nigeria: 7.39, South Africa: 5.84, Zimbabwe: 6.27). The United States, with a mean church attendance of 5.31, is closer in church attendance to these less developed nations than to Europe. Europe is host to many of the most secularized nations (e.g., Belgium: 3.32, Bulgaria: 3.79, Czechoslovakia: 2.52, Estonia: 3.08, Finland: 3.16, France: 2.38, Germany: 3.22, Hungary: 3.03, the Netherlands: 3.12, Slovenia: 3.85, Sweden: 2.48, and United Kingdom: 2.75). All these secularized nations are included in this study. To the extent that low church attendance is related to overall lower religiousness, we would expect that this study’s focus on relatively secularized European regions would weaken the religiousness–suicide relationship. The assumed lower proportion of highly religious persons would tend to weaken the moral community available to reinforce religiousness and, as such, protect against suicide (Stack & Kposowa, 2016).

The hypothesis that religion acts as a protective factor against suicide has been tested using a variety of measures of

TABLE 1

Cross-National Studies (1981–2017) on the Relationship Between Religion Indicators and General Suicide Rates: Lead Author, Number of Countries in Sample, Type of Suicide Rate, Religion Measures, and Control Variables

Lead author	Number of nations in sample	Type of suicide rate	Religion measure (*=significant)	Number of control variables in model
Chon (2015)	83	TSR	Religious services*	6
Chon (2015)	83	TSR	Religious belief index*	6
Chon (2017)	124	TSR	50% + Islamic*; 50% + Orthodox*; 50% + Buddhist/Hindu; 50% + Catholic; 50% + Protestant; 25% + None Religious fractionalization*	
Fernquist (1998)	21	MSR	%Religious books*	4
Fernquist (1998)	21	FSR	%Religious books*	4
Fernquist (2007)	8	MSR	%Religious books*	7
Fernquist (2007)	8	FSR	%Religious books	7
Huang (1996)	48	TSR MSR FSR	(85% + Muslim or Catholic)*	7
Moore (2015)	41	TSR	Religious fractionalization*	4
Simpson (1989)	71	TSR TSR TSR	%Islam*; %Catholic; %Protestant	6 6 6
Stack (1981)	37	TSR MSR FSR	%Catholic	3
Stack (1983)	25	TSR	%Religious books*	2
Stack (1983)	25	6/8 FSR	%Religious books*	2
Stack (1983)	25	1/8 MSR	%Religious books*	2

TSR, total suicide rate; FSR, female suicide rate; MSR, male suicide rate.

*Variable statistically significant.

religion (e.g., Chon, 2015, 2017; Fernquist & Cutright, 1998; Moore, 2015; Stack, 1983; see review in Stack & Kposowa, 2016). The nine previous studies shown in Table 1 use such measures as attendance at church services (Chon, 2015), the proportion of religious books produced (Fernquist & Cutright, 1998; Stack, 1983), and various measures of the proportion of the population belonging to a number of religious denominations and combinations of religious affiliations (Chon, 2017; Huang, 1996; Simpson & Conklin, 1989; Stack, 1981).

This study proposes a new measure based on subjective religiosity, which is one of the 13 principal measures discussed by Koenig et al. (2001, 21). Subjective religiosity is commonly measured with a question

about how religious the subject considers himself or herself. It may capture elements of the other 12 dimensions of religion such as religious affiliation, belief or orthodoxy, organizational activities, private activities, religious coping, experience, knowledge, and commitment. All 13 measures have limitations. In this study, we take the mean level of subjective religiosity in a region as the structural measure, and we feel this measure generally has fewer shortcomings compared to others.

For example, the percentage of the population that is Catholic is a common measure. However, there has been a trend toward convergence between Catholics and Protestants in religious practice and beliefs over time. Hence, the percentage of the

population that is Catholic is less likely to predict suicide rates today than in Durkheim's period (Barkan et al., 2013; Chon, 2017; Ellison et al., 1997; Lester, 2000; Stack, 1981, 2000; Stack & Kposowa, 2011). For example, a recent review of 30 studies found that Catholics were at lower risk in only 11 studies. In six investigations, Catholics were actually at greater risk, and in 13, Catholics were at the same level of risk as other denominations (Koenig et al., 2012). A recent study of 124 nations reported that those with a 50% or greater Catholic population did not have a lower rate of suicide (Chon, 2017).

In addition to a focus on a more secularized section of the world, and the employment of a subjective measure of religiousness, the third contribution of this study is that it is based on smaller units of analysis than the previous nine studies. It is able to measure variation in both religion and suicide rates within each country's regions. All nine previous studies were based on large units of analysis, the nation. They were unable to assess within-nation variation in religion and suicide. This study follows previous work on single nations where suicide rates are closely matched with population characteristics rates in smaller geographic units such as cities (Bainbridge, 1989; Ellison et al., 1997) or provinces within Italy (Stack & Laubepin, 2016).

Briefly, none of the nine previous investigations included a subjective measure of religiosity. In addition, all are based on a large unit of analysis, the nation. This can mask important variation in both suicide and religiousness within nations. Most do not focus on the more secularized European nations. This study fills these gaps.

METHODS

European regions within nations are the unit of analysis. These help capture intra-country variation. Data were extracted from two large databases: European Social Survey (2008), Round 4, and EUROSTAT (Statistical Office of the European Communities,

2016). For administrative and statistical purposes, the European Union relies on three categories of regional divisions (or NUTS: Nomenclature of Statistical Territorial Units), ranging from macro- (NUTS-1) to micro- (NUTS-3) regional divisions. 2008 NUTS-2 data are used in this analyses. The year 2008 was selected because it offered the most complete data for the greatest number of countries/regions. In cases where variables were not available at the NUTS-2 level, NUTS-3 level data were downloaded then aggregated at the NUTS-2 level. The resulting data sets of EUROSTAT data and ESS data were checked region by region to ensure that they matched. If a region was missing from one data set, that region was deleted in the other. These data sets were then merged (m:1) into one data set containing data on 162 regions of 22 European countries (countries are listed in Appendix A). EUROSTAT provided complete data on suicide rates, as well as education, gross domestic product (GDP), poverty, and unemployment for all 162 regions in the study. While these data are collected by member states' statistical authorities, EUROSTAT's role is to subject them to rigorous harmonization methods to provide data that allow for accurate comparisons between countries and/or regions. Complete data for the variables of interest were available for 36,390 of the 41,753 respondents in ESS.

The central dependent variable is the rate of suicide or the number of suicides in the region per 100,000 population of the region. To control for chance fluctuations, these rates are calculated as 3-year averages (2007–09).

The main independent variable is religiousness. Religiousness is measured in terms of self-reported subjective religiosity. Specifically, it is the average score of a region on the ESS question, "How religious are you?" Responses are coded on a 10-point spectrum from 0 = *Not religious at all*, through 10 = *Very religious*.

That the nations in this European sample of 162 regions within 22 countries are among the world's most secularized is witnessed by their mean levels of religiousness as

measured by mean levels of church attendance. Church attendance data are among the most available over time and space and are used extensively to measure secularization (e.g., Kaufmann et al., 2012). Based on the fourth wave of the WVS (Stack & Kposowa, 2011), the mean for 69 nations is 4.56. There are WVS survey data for 19 of the nations in the present sample. A working definition of the world's most secularized nations can be those with means at least one half of a standard deviation (1.26) below the world mean (i.e., 3.32 or below). A majority of the nations in the present sample fit this criterion (Belgium: 3.32, Czechoslovakia: 2.52, Estonia: 3.08, Finland: 3.16, France: 2.38, Germany: 3.22, Hungary: 3.03, the Netherlands: 3.12, Sweden: 2.48, United Kingdom: 2.75). The only other nations meeting this cutoff for secularization are disproportionately in Europe or East Europe (Denmark: 2.38, Latvia: 3.24, Russia: 2.45, Iceland: 3.13, China: 1.42, and Vietnam: 2.71). However, the present sample does include some nations with low secularization (Ireland: 6.06 and Poland: 6.07).

Control variables are drawn from previous cross-national research (e.g., Chon, 2015, 2017; Durkheim, 1897/1966; Fernquist & Cutright, 1998; Simpson & Conklin, 1989; Stack, 1983). The first control variable is education. Education is viewed as contributing to secularization to the extent that it increases critical thinking, scientific inquiry, and weakens religious authority (Durkheim, 1897/1966; Stack & Laubepin, 2016). It is extracted from EUROSTAT and defined as the percentage of pupils and students in all levels of education, or percentage of the population that is enrolled in school (all levels of education). Because of EU mandates and classification schemes, the data on education provided by EUROSTAT are of fairly high quality, but education systems and degree structures differ between countries, which may affect certain figures in spite of data harmonization efforts. Using enrollment numbers is a cruder but safer way of measuring education than using degree completion, for instance, which may be influenced by country-level differences in degree structure.

The final three variables, also extracted from EUROSTAT and drawn from models in the previous literature (e.g., Chon, 2015, 2017; Durkheim, 1897/1966; Fernquist, 2007; Fernquist & Cutright, 1998; Simpson & Conklin, 1989; Stack, 1983), provide controls for economic conditions. Economic growth and prosperity can enhance materialistic values, which can replace or weaken religious values. First, the level of economic development is measured as per capita GDP. Second, there is the presence of poverty, to varying degrees, within a given level of prosperity. From the standpoint of the theory of economic strain and deviant behavior (Agnew, 1992; Zhang et al., 2011), a gap between economic goals and the means to these goals, herein the incidence of impoverishment, can promote deviant behaviors, including suicide. Durkheim (1897/1966) argued, however, that poverty was a school for social constraint and, as such, would act as a protective factor. Graphical analysis indicates that this variable is skewed so it was treated with a logarithmic transformation. Finally, a measure of unemployment, another commonly used measure of strain, was included. The unemployment rate is defined as the percentage of the active age population that was not employed during the reference week, had actively sought work during the past 4 weeks, and was ready to begin working immediately or within 2 weeks. This variable was also marked with skewness and so was also log transformed. Descriptive statistics are provided in Table 2.

We note that there is substantial variation in religiousness within our 162 regions. While the mean is 4.74, as reported in Table 2, the standard deviation is 3.01. While the block of 22 nations is, as discussed earlier, one of the most secularized in the world, there is, nevertheless, evidence of substantial variation within it.

Data were analyzed using Stata (Stata-Corp, LLC, College Station, TX 77845). The ESS population weight [pspwght] was applied. Bivariate correlation coefficients (Table 3) suggest that multicollinearity is not present.

TABLE 2
Descriptive Statistics for All Variables in the Analyses, European Regions, 2008^a

Variable	Obs	Mean	SD	Min	Max
Suicide rate	162	12.99	5.83	2.4	34.5
Religiousness	162	4.74	3.01	0	10
% enrolled in education programs	162	21.87	3.13	14.2	35.9
GDP	162	24,268.36	12,991.17	3,000	64,400
Poverty rate	162	22.53	7.81	8.8	54.5
Unemployment rate	162	6.55	3.02	1.8	20

^a3-year averages (2007–09) are used for suicide and homicide rates. *Source:* European Social Surveys and EUROSTAT.

TABLE 3
Correlation Coefficients Between All the Variables and Levels of Significance (N = 162 European Regions)

	(1)	(2)	(3)	(4)	(5)	(6)
(1) Suicide rate	1.00					
(2) Religiousness	-.11***	1.00				
(3) Education	.21***	.02	1.00			
(4) GDP	-.14***	-.03***	.40***	1.00		
(5) Poverty	-.05***	.13***	-.34***	-.56***	1.00	
(6) Unemployment	.03***	.04***	-.13***	-.38***	.51***	1.00

*** $p < .001$.

Variance inflation factors (VIFs) confirmed an absence of severe multicollinearity: The highest VIF score (GDP) is 2.24. All other scores are under 2.

ANALYSIS

The results of the multivariate regression analysis are presented in Table 4. Controlling for the other predictor variables, the greater the religiousness of a region, the lower its suicide rate. The coefficient of the religiousness variable is over 19 times its standard error. This meets the test of significance at the $p < .001$ level. Controlling for the other predictors, the greater the index of education, the greater the suicide rate. This measure of tolerance was anticipated to act as a risk factor. The level of economic development term has a negative sign indicating the higher the level of economic development, the lower the suicide rate. The more

economically developed European regions enjoy a higher standard of living and lower risk of suicide. This finding would be anticipated from the parabolic nature of the relationship between economic development and suicide reported elsewhere (Stack, 1993).

The results on the two economic strain measures were mixed. Controlling for the other variables, the higher the poverty rate, the lower the suicide rate, a relationship consistent with Durkheim (1897/1966). The unemployment rate was unrelated to the suicide rate.

According to the *R*-squared statistic, 13.3% of the variance is explained by the model. That the model provides a reasonable fit to the data on suicide rates is indicated by the significant *F* statistic.

CONCLUSION

Previous cross-national research has neglected subjective measures of the strength

TABLE 4

Religiousness and Controls as Predictors of Regional Suicide Rates (N = 162 Regions in 22 European Nations)

Independent variable	Regression coefficient	SE	t Statistic
Religiousness	-.206***	.0108	-19.04
Tolerance (Education)	.595***	.0112	53.28
Level of economic development	-.000150***	.00000259	-58.02
Economic strain			
Poverty	-2.125***	.106	-20.08
Joblessness	-.129	.0705	-1.82
Constant	11.05***	.397	27.82
R ²	.133		
F statistic	959.7***		

Significance, two-tailed test.

*** $p < .001$.

of religiousness in a population as protective factors against suicide (Chon, 2015, 2017; Fernquist, 2007; Fernquist & Cutright, 1998; Huang, 1996; Moore, 2015; Simpson & Conklin, 1989; Stack, 1981, 1983). The measures of religion have included variables such as religious affiliation and religious books, but have fallen short of constructs that measure subjective religiousness, the national mean of the overall strength of religiousness reported by individuals.

Through an innovative merging of data from two international data archives, the present study was able, for the first time, to employ a measure of subjective religiousness for a large number of nations. The present study is the first cross-national study of suicide rates that employs the mean level of self-reported, subjective religiousness as its principal measure. In addition, this investigation is also the first of its kind to employ regions within nations for its units of analysis, thereby capturing within-nation variation that was missed in previous studies using sets of whole nations (Chon, 2015, 2017; Fernquist, 2007; Fernquist & Cutright, 1998; Huang, 1996; Moore, 2015; Simpson & Conklin, 1989; Stack, 1981, 1983). Importantly, the secularized European context of the present study provides a special challenge for testing the hypothesis given Europe's assumed weaker moral community. The results based on 162 regions within 22

European nations show that the mean level of subjective religiousness predicts suicide rates. This association is independent of a set of socioeconomic control variables used in previous investigations (e.g., Chon, 2015, 2017; Fernquist, 2007; Stack & Laubepin, 2016).

The present study has some of the same limitations as previous structural studies. There is the danger of the ecological fallacy. For example, as the study is, such as its predecessors, based on aggregated data (Chon, 2015, 2017; Fernquist, 2007; Fernquist & Cutright, 1998; Huang, 1996; Moore, 2015; Simpson & Conklin, 1989; Stack, 1981, 1983), it is not possible to determine how many of the suicides are high or low in religiousness. Caution should be exercised in applying these structural findings to investigations on individuals. Further, the nations under review include former communist nations as well as noncommunist European nations. Future work might explore the model within these two culture zones (Inglehart & Baker, 2000).

Nevertheless, there is growing evidence from single-nation studies that religion acts as a protective factor against suicide at the individual level of analysis (Kleiman & Liu, 2014; Stack, 2009; VanderWeele et al., 2016). This evidence includes a recent cohort investigation of 89,708 nurses followed over a 15-year period. Those attending religious

services at least once per week at baseline were fully five times less likely than those never attending to die through a suicide (VanderWeele et al., 2016). A cross-sectional analysis of individual-level data on 15,739 deaths from the National Mortality Follow-Back Survey also established religiousness as a predictor of suicide deaths. Each unit increase in an index of religious activities decreased the risk of a suicide death by 16% (Stack, 2009). Further work is needed, however, to assess the aggregate-based findings of the present study. Work on other nations, including both aggregate level and individual levels of analysis (as well as work using multilevel models), is needed as the necessary data become available.

It is not fully clear how religiousness reduces suicide risk. There are numerous possible pathways between religiousness and suicide completions. These include factors already known to be related to religiousness. For example, religiousness is associated with many areas of well-being, including low odds of drug and alcohol abuse, physical health, marital stability, lower depression, and social support (Koenig et al., 2012; Robins & Fiske, 2009). For example, 86% of 278 studies reported that religion reduced alcohol abuse, an important risk factor for suicide, while 73% of 40 studies found that religion reduced hopelessness, also a risk factor (Koenig et al., 2012). In particular, the social support offered by coreligionists to suicidal individuals can reduce thwarted belongingness and perceived

burdensomeness, elements of the interpersonal theory of suicide (Joiner, 2005; Robins & Fiske, 2009). Eighty-two percent of 74 studies, mostly at the individual level of analysis, found that religion enhanced social support (Koenig et al., 2012, 303). Conceivably, the mean level of such support in regions might be associated with lower suicide rates. As data become available, further work is needed to include some of these factors to test for possible mediator effects between religiousness and suicide rates. This work could clarify the pathways between religiousness and suicide.

Future work might focus on religious beliefs as the data become available. Religious commitment theory (Stack, 1983; Stack & Kposowa, 2016) argued that a few core beliefs such as a belief in hell, God, and an afterlife might be enough to prevent suicide. For example, belief in a reward of a blissful afterlife for those suffering in earthly life might assuage or soften suicidal tendencies among those who suffer from stressful life events such as divorce, death of a loved one, unemployment, physical disabilities, and so on. Suffering can be more readily endured if salvation and heavenly glory are offered as rewards for persevering through these trials of life. There is one recent cross-national investigation that found an association between national levels of religious beliefs and suicide rates (Chon, 2015). Such beliefs can function as a coping mechanism (Stack & Kposowa, 2016).

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APPENDIX A

NATIONS IN THE ANALYSIS AND THEIR SUICIDE RATES

Nation	2007–09 Average suicide rate
Belgium	18.8
Bulgaria	12.1
Croatia	18.5
Czech Republic	14.1
Cyprus	4.7
Estonia	18.5
Finland	19.0
France	16.9
Germany	11.4
Greece	3.3
Hungary	25.5
Ireland	11.5
the Netherlands	9.1
Norway	11.6
Poland	16.3
Portugal	10.2
Slovakia	11.7
Slovenia	20.8
Spain	7.2
Sweden	13.0
Switzerland	15.0
United Kingdom	6.9

^aSuicide rates are per 100,000 people.
Source: Statistical Office of the European Communities (2016).