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To cite this article: Deborah Cragun, Ryan T. Cragun, Brian Nathan, J. E. Sumerau & Alexandra C.H. Nowakowski (2016): Do religiosity and spirituality really matter for social, mental, and physical health?: A tale of two samples, *Sociological Spectrum*

To link to this article: <http://dx.doi.org/10.1080/02732173.2016.1198949>



Published online: 13 Jul 2016.



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Do religiosity and spirituality really matter for social, mental, and physical health?: A tale of two samples

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ABSTRACT

Some prior research has found that religiosity and spirituality can be related to health. However, the relationships are inconsistent, measures of religiosity and spirituality are often problematic and conflated with the health outcomes they are supposed to predict, and very little research on this topic specifies which aspects of health supposedly benefit from religiosity and spirituality. Using two sets of survey data (Sample 1 $N=347$; Sample 2 $N=404$), we examined whether religiosity and spirituality had direct or indirect effects on physical, mental, and/or social health. We found that spirituality, when conceptualized as belief and experience of the supernatural, had no direct or indirect effect on physical, mental, or social health. Religiosity had a small but significant direct effect on social health in one sample but not the other. We consider our findings in relation to religious privileging in the United States and how proreligious biases can lead to health inequalities.

Research on religion, spirituality, and health has proliferated in the past few decades, generally suggesting positive associations between religious belief and practice and an assortment of health outcomes (Ellison 1991; Hill et al. 2007; Hill and McCullough 2008; Levin and Vanderpool 1989; Maselko and Kubzansky 2005; Strawbridge et al. 1997; Wallace and Forman 1998). However, these conclusions have been subject to many criticisms outside religious and sociological research (Sloan 2006; Sloan and Bagiella 2002). Given their overwhelming focus on religion as a predictor of health outcomes, scholars have generally left the privileged position occupied by religion in contemporary America (Edgell, Gerteis, and Hartmann 2006; Hammer, Cragun, and Hwang 2013; Sumerau 2014) out of the conversation. Consequently, there is no way to determine if positive associations derive from religion itself or simply from religious people's membership in a socially privileged group capable of providing them with symbolic and material resources (Link and Phelan 2010). Further, it is unclear when and where there is an actual effect of religion on health or even if there is a consistent effect, because studies typically compare more religious people to other religious people who are not as actively involved in religion instead of comparing religious and nonreligious people (Hall, Meador, and Koenig 2008; Hwang, Hammer, and Cragun 2011). In addition, little is known about the effect of spirituality due to scholars' conceptualization of this term (see, e.g., De Jager Meezenbroek et al. 2012; Koenig 2012; Visser, Garssen, and Vingerhoets 2010). Research on spirituality almost exclusively defines this concept via attitudinal characteristics associated with better health that do not in fact require spiritual or supernatural belief, such as having "a purpose in life."

The present article uses data from two convenience samples containing both religious and nonreligious respondents to investigate claims about relationships between religion, spirituality,

and health. Specifically, this article investigates three research questions. First, does religiosity have a positive and direct influence on physical, mental, or social health? Second, what phenomena may account for any indirect effects religiosity exerts on physical, mental, or social health? Finally, will spirituality affect physical, mental, or social health when it is not conflated with well-being but rather is limited to beliefs in the supernatural?

Background

Two lines of scholarship undergird the questions explored in this study. First, we draw upon scholarship highlighting social conditions as fundamental causes of health inequalities to demonstrate the importance of recognizing the privileged position of religion in American society when seeking to understand any effects of religious belief and practice upon health. Second, we review existing studies of religion, spirituality, and health with special attention to the ways assumptions about the “goodness” or “value” of religious belief and practice lead to measurement issues that may explain some of the inconsistencies and unanswered questions in this literature. Taken together, these two discussions provide guidance for exploring the potential effects of religion and spirituality upon health.

Social conditions as fundamental causes of health inequalities

Link and Phelan (2010) posited that social factors may fundamentally cause health disparities because occupying privileged social positions grants access to flexible symbolic and material resources that help produce and maintain health. Specifically, people’s social locations may impose health risks by exposing them to environmental, behavioral, and/or social situations wherein they are more likely to experience negative health effects. Rather than focusing on individual or biological factors, Link and Phelan (2010) argued that understanding systemic patterns of health disparities requires exploring the ways that societal patterns of oppression and privilege prepare people for disparate health outcomes before any decisions regarding health-related behaviors and practices can be made. Key to this understanding is the detrimental effect that social marginalization has upon both overall health and access to information or opportunities to promote and protect health.

Medical sociologists have long noted the effects of social marginalization upon a wide variety of mental and physical health outcomes. Whether focused on individual experiences with prejudice or structural patterns of discrimination, researchers have consistently found that social marginalization predicts more negative health outcomes (see, e.g., Ferraro and Farmer 1996; Mays, Cochran, and Barnes 2007). For example, researchers have noted some ways that social marginalization breaks down people’s psychosocial resources, beliefs in fairness, and expectations of justice, which compromise mental health (see, e.g., Broman, Mavaddat, and Hsu 2000; Yuan 2007). Similarly, researchers have shown that chronic or continuous experiences of social marginalization leave people more vulnerable to physical impairment (see, e.g., Krieger and Sidney 1996; Sanders-Phillips et al. 2009). Further, researchers have demonstrated that occupying singular or multiple marginalized social positions reduces health over the life course by wearing away biological and psychological functioning (see, e.g., Grollman 2012; Nowakowski and Sumerau 2015). This type of marginalization can obviously affect individuals outside of religions when religions work to reinforce norms or laws that marginalize certain groups. However, research also shows that religious beliefs and policies can be detrimental to the health of members of religions that have doctrinal and policy positions that marginalize those members. Recent research shows that this is the case for LGBT Mormons, who report notably worse mental health as a result of their marginalized position within the LDS Church (Bradshaw et al. 2015; Crowell et al. 2015; Dehlin et al. 2015).

In a complementary fashion, medical sociologists have long noted health benefits that people may derive from their participation and/or existence within privileged social groups. The most obvious example of this relationship may be found in the robust relationships between class privilege (e.g., higher educational and socioeconomic status) and positive health outcomes (Link and Phelan 2010).

Similarly, researchers have noted that other privileges tied to existing racial, gender, and sexual inequalities provide lifelong benefits and the accumulation of health-related resources (see Collins 2005).

In light of the earlier discussion, it is noteworthy that religious belief and practice currently occupy a privileged position in American society (Sumerau 2014). In fact, many Americans have difficulty believing that nonreligious people are truly American (Edgell et al. 2006), and religious notions of morality often find voice in public policies that affect the entire population (see, e.g., Heath 2012; Robinson and Spivey 2007; Rose 2005). Further, researchers have found that religious beliefs are often embedded within government-sanctioned evaluations (Hammer et al. 2012) and that nonreligious people often face forms and levels of harassment and discrimination similar to those experienced by lower class, non-white, female, transgender, and nonheterosexual people (Cragun et al. 2012; Hammer et al. 2013). It is thus entirely possible that previous findings suggesting religious benefits for health may simply represent the common health benefits associated with privilege (Diener, Tay, and Myers 2011).

If previous findings are capturing the health benefits of social privilege, religious belief and practice may have limited or no positive—and potentially negative—health effects in situations where religion occupies a neutral or subordinate social position. In fact, studies exploring relationships between religion and health in Europe support this suggestion (see, e.g., Konkoly et al. 2012; Nicholson, Rose, and Bobak 2010; Pokorski and Warzecha 2011). In such cases, the national populations referenced rarely attend religious services and many people identify as nonreligious. Rather than finding positive relationships between religion and health, such studies generally find no relationship or negative effects. Likewise, there is a growing body of research looking at the consequences of cultural-religious marginalization of minority religious groups in the United States, like Muslims. Marginalization of Muslims in the United States arguably leads to health disparities as a result of perceived prejudice and discrimination (Laird et al. 2007). This study examines existing American research on religion and health while attending to the ways privilege (e.g., the assumption that religion leads to positive results) may account for benefits of religious belief and practice.

Religion, spirituality, and health

Investigations of potential relationships between religion, spirituality, and health have become commonplace in both medical sociology and the sociology of religion. Although scholars in these fields generally argue that religion is positive for physical, mental, and social health, the evidence they provide does not necessarily support such a conclusion. Rather, the data from these studies generally suggest that social experiences that may or may not be religious or spiritual in any way are good for people's health. In this section we review previous findings, noting ways that people may accomplish the same results without religion or spirituality while recognizing that religion and spirituality are potentially a pathway to better health for some. In so doing, our discussion reveals the ways that people's assumptions about the benefit of religion may lead people to grant religion inaccurate explanatory power.

A common reason researchers give for suggesting religion encourages health involves the promotion of healthy behaviors (see Musick, House, and Williams [2004] for a review in relation to mortality). For example, researchers have found that people attending churches were more likely to quit smoking (Strawbridge et al. 1997), have better diets (McIntosh and Shifflett 1984), be more physically active (Idler and Kasl 1997), and not abuse drugs and alcohol (Gartner, Larson, and Allen 1991) than religious people who don't attend churches as often. Although each of these behaviors—as well as many others that may be promoted in any organization—is in fact good for overall health, none of these behaviors are religious in nature. Rather, people may accomplish any of these behaviors due to the influence of, for example, peer groups, social networks, occupational norms, romantic partners, or many other social relationships.

In a similar fashion, researchers suggest that religion improves health by fostering social support and integration into communities. In so doing, researchers suggest that religious groups—like theatre

groups, secular organizations, sports teams, and alumni networks, to name just a few examples not explored in this literature—facilitate interaction with others who share common interests and values (see Ellison and George 1994; House, Landis, and Umberson 1988; Idler 1987). Once again, it is noteworthy that social support—instrumental and emotional forms—is positively associated with better health, but such support may easily be found without religious practice or belief in the supernatural. In fact, because these studies again show that more religious attendance facilitates more support than less religious attendance (see Ellison and George 1994), we learn only that less socially active people do not receive the same benefits as more socially active people, which suggests that the benefits are tied to social activity rather than exclusively to affiliation with a religion.

Alongside notions of social support and behavioral modification, researchers also point to prosocial activities and comfort as elements of religion that foster greater health. For example, researchers note that volunteering (Wilson and Musick 1997) and religious resources provided for people coping with difficult life events (Koenig 1994) facilitate greater health outcomes. Although once again there is no argument that prosocial activity and sources of comfort are good for overall health, the problem in this line of logic arises when we recognize that prosocial activities and coping resources can be found in schools, community centers, bowling leagues, intramural soccer leagues, and comic book conventions, as well as many other groups. These elements do not suggest that religion is positive for people's health but rather that these activities are good for health whether or not they are religiously motivated. If national surveys measured nonreligious groups like those just noted as often as they included a measure of religious activity, for example, it might be harder to grant religion explanatory power for elements that in and of themselves have little or nothing to do with religion itself.

Finally, some scholars point to the ability of religion to provide people with shared worldviews or belief systems that may be used to find purpose in life (Musick et al. 2004). Although we would again agree that religion may accomplish these tasks, we would also note that secular organizations, political parties, and artistic communities provide the same resources. It would once again appear that researchers are noting common health benefits that could be achieved through multiple sources before deciding that the existence of these common benefits within some religious traditions somehow means that having a religious affiliation itself promotes positive health outcomes. Although this line of thought matches contemporary patterns of religious privilege in America (Blumenfeld 2006; Edgell et al. 2006), it does not in fact tell us anything about religion other than perhaps that researchers expect religion to be “good” for people in the first place.

Although the aforementioned observations may seem strange to people inclined to see religion as a good thing, much research reveals potential negative effects of these elements of religion for marginalized groups. Marginalization at the hands of religious people, for example, has led many sexual minorities to develop unhealthy behaviors, as well as a sense of dislocation or lack of integration within their communities (Barton 2012). Further, studies have shown that groups marginalized by religion often experience a loss of social support coupled with feelings of guilt, shame, and fear (Dehlin et al., 2015; Wolkomir 2006). In fact, the development of a shared religious worldview has led many Americans to demonize and deny rights to marginalized groups throughout history (see, e.g., Collins 2005; Robinson and Spivey 2007; Wilcox 2009), and that can negatively affect the mental health of members of those very religions who also belong to these marginalized groups (Bradshaw et al. 2015; Dehlin et al. 2015). Whether or not religious promotion of the aforementioned prohealth elements is actually good thus depends upon the ways that religions conceptualize and treat other people. Of course, this once again suggests that it may not be religion or spirituality that is good for people's health but rather the benefits of finding acceptance within a social group.

Defining religiosity and spirituality in health research

One potential reason for the conflation of privilege, health-facilitating social experiences, and religion/spirituality may be found in the measurement of religiosity and spirituality in existing studies. As noted earlier, studies typically compared more active religious people to less active

religious people (Hill and Pargament 2003; Hwang et al. 2011), which ultimately removed any possibility of measuring the effect of religious affiliation itself (e.g., demonstrating a religious effect would require comparison to a nonreligious control group). Similarly, studies typically define spirituality—like the components just noted—in ways that do not require belief in anything spiritual or supernatural (De Jager Meezenbroek et al. 2012), which means all we are learning is that established social patterns that lead to better health (e.g., having a purpose, possession of social ties, etc.) still lead to better health when we call them by a different (i.e., religious) name.

These issues raise definitional concerns for the terms *religiosity* and *spirituality*. Because there are many ways of thinking about these terms, it can be difficult to measure them without an explicit definition (Zinnbauer et al. 1997). Religiosity, for example, refers to the many ways people can be religious by affiliating with a religion, attending services, participating in study groups, donating money, and any number of other practices (but see Guhin [2014] for another perspective on what religion can mean). On the other hand, spirituality is generally understood as the personal ways people believe in and interact with supernatural or spiritual entities (but, again, others define this differently; see Zinnbauer et al. 1997).

With both religion and spirituality, but particularly spirituality, there are no universal definitions in the academic literature. Spirituality is a fuzzy concept that has countless definitions, both in the academic literature and in the everyday lives of people, both those who consider themselves spiritual and those who do not. Scholars have suggested a variety of definitions. Besecke (2013), for instance, has seen spirituality more as meaning and connectedness, whereas Cimino and Smith (2014) argued that atheists can be spiritual but in a nonsupernatural way. These understandings of spirituality are just as valid as any other. However, they illustrate that there is substantial discordance in how people understand and define spirituality.

This raises problems with how to define and measure spirituality. Given our aims in this article, we are particularly interested in quantitative approaches to measuring spirituality. The issue of definitions of spirituality is arguably just as much a problem with quantitative approaches to studying the social world as it is a problem specific to the measure of spirituality. When trying to measure how “spiritual” someone is for a qualitative study, researchers can let people describe what they mean and then note the nuances. With quantitative studies it is not possible to get at all of the nuanced meanings that people ascribe to spirituality. There are basically two approaches available to the quantitative researcher. First, the researcher can decide not to define spirituality and simply ask people, “How spiritual are you?” The problem with this approach is that the researcher then has no idea what people mean by spiritual. This approach suffers from a validity problem. Equally valid understandings of spirituality could be astral projection, past life regressions, feeling God’s presence in one’s life, or feeling wonder and awe when looking at the stars. This introduces a problem when it comes to measurement and interpretation: In the resulting statistical models, how would researchers know what is actually being measured, and how would researchers know which interpretation of spirituality is contributing to any effects in the model? Without a clear definition of spirituality, it’s just as possible that astral projection is the core aspect of spirituality that contributes to positive mental health and not experiencing wonder and awe or feeling God’s presence. There is no way of knowing which understanding of spirituality matters for health if what is meant by spirituality is not included when asking the question.

This leads to the second quantitative approach to measuring spirituality: define it for participants. This is the approach we took. This is also problematic, but for a different reason: People don’t agree on what spirituality means. As a result, definitions of spirituality will be problematic because everyone thinks it means something different. However, this approach has the notable benefit of avoiding the validity problem of the other approach: If there is an effect of spirituality in the model, we know what definition of spirituality is responsible. In addition, including a definition for spirituality is not as problematic as not defining it because definitions are not “right” or “wrong.” Definitions are agreed upon in a given context (Chafetz 1978). Scholars may think a definition of spirituality is not their preferred definition, but whether it is preferred is secondary to whether the definition works

in a given context, is logical and clear, and can lead to valid and reliable operationalizations of the concept.

It is for these reasons we argue that researchers would be better served by explicitly defining what each term means in a given study so that measurements of these important concepts can be compared, contrasted, and replicated with multiple forms of data. This also does not preclude other researchers from using different definitions to see if alternative understandings of religiosity or spirituality have different effects. To this end, we draw upon a validated measurement scale—the NonReligious/NonSpiritual Scale (NRNSS; see Cragun, Hammer, and Nielsen 2015)—that explicitly defines religiosity as collective beliefs and behaviors related to the supernatural and defines spirituality as belief or connection to the supernatural that occurs outside of the context of organized religion. The NRNSS questions and definitions are included as the appendix.

Conceptualizing relationships between health dimensions, religiosity, and spirituality

Prior health research has established robust connections between physical, mental, and social dimensions of health (see, e.g., Cornwell and Waite 2009; Holt-Lunstad, Smith, and Layton 2010; Moak and Agrawal 2010). Although substantial findings suggest that social health influences both mental and physical functioning (see also Link and Phelan 2010), relationships between physical and mental health are not as clear (Lawlor and Hopker 2001). Based on these findings, in our analyses that follow, we chose to allow mental and physical dimensions of health to correlate rather than model a unidirectional relationship. Given that religion is essentially a social activity and can provide a source of social support for religious people, we would expect it to be positively related to social health. However, religiosity is unlikely to offer social support to nonreligious people, so we include religiosity and social support as separate predictors of social health.

The effect of social support on mental health is widely supported by previous research (Maulik, Eaton, and Bradshaw 2009). Religiosity may indirectly influence mental health by serving as a coping resource, boosting positive emotions, and/or neutralizing negative emotions for groups of people accepted and supported within religious organizations. Social and emotional support may thus mediate the relationship between religiosity and mental health for many religious individuals, but this is unlikely to be true for people marginalized by religious norms or nonreligious people. As such, we hypothesize that religiosity may have an indirect influence on mental health through its effects on social health for religious people, though we modeled both a direct (not shown) and indirect effect in our study.

Although prior research has also suggested positive influences of spirituality on mental health, these findings are questionable because studies measure spirituality as a general sense of well-being unrelated to spiritual or supernatural beliefs (De Jager Meezenbroek et al. 2012). When spirituality is not conflated with general well-being, we hypothesize it will not be a significant predictor of mental health outcomes. Specifically, we suggest that a general sense of well-being lies at the heart of previous findings rather than any direct effect due to spiritual belief or identity.

In the analyses that follow, we utilize a validated measure of religiosity and spirituality that accurately captures how (non)spiritual and (non)religious individuals are, allowing us to explore potential relationships between religion and health in two convenience samples. Rather than measuring the religious or spiritual differences between more and less religious people, then, we are able to compare religious and nonreligious people. Further, we utilize two samples to both explore and confirm our model and to demonstrate the usefulness of our proposed conceptual model across data sources in order to pave the way for future studies in this area.

Data and methods

As part of a course assignment to illustrate data collection and analysis, students in two separate sociology courses in consecutive semesters each recruited 10 adults to participate in a survey. Students

explained the purpose of the survey at the time of recruitment, but students did not remain with the participants while they completed the survey, and no personally identifying information was collected from the participants. A nonexperimental, cross-sectional study design was employed to gather quantitative data using self-reported, online questionnaires. This study was approved by the Institutional Review Board of Sunshine University, a university located in the Southeastern United States.

Participants

Participation was voluntary, and participants were not compensated. Participants had to be older than 18 and could not be college students. These were the only exclusion criteria. Because many studies use college students as participants, we chose instead to have college students recruit their friends and family members. This approach results in a more diverse group of participants but does not change the nonrepresentative nature of our study. Approximately 95% of participants were from the United States. Participants included residents of 36 states, with overrepresentation of residents from Florida and the Northeastern United States.

Measures

The questionnaire included validated instruments for measuring Health-Related Quality of Life (HRQoL) and religiosity/spirituality. In addition, several questions from the 2010 version of the Behavioral Risk Factor Surveillance System (BRFSS) were included to measure factors that influence health. The BRFSS was established by the Centers for Disease Control and Prevention as a state-based survey system assessing a variety of health behaviors, including health risks, preventive health practices, and health care access. We used measures from the BRFSS because they were developed by experts in the field. We chose those measures that have previously been shown to be strongly correlated with the three domains of HRQoL we measured.

Health-related quality of life

We used the Duke Health Profile to measure HRQoL (Parkerson, Broadhead, and Tse 1990). The Duke Health Profile contains 17 items that are combined in various ways to form 10 health dimensions. However, the current study focuses on the first three dimensions (physical, mental, and social health), as these should theoretically capture the multidimensionality that is inherent in the definition of HRQoL and each dimension consists of five mutually exclusive items. All items have three possible response options that are scored from zero to two and some negatively worded items that were subsequently reverse coded. Possible scores for each dimension range from 0 to 10, with higher scores indicating higher levels of health. A number of studies have provided evidence of the validity of the Duke Health Profile, as well as its ability to predict future health among, for instance, adult primary care patients and survival among patients with heart problems (Parkerson et al. 1990, 1991; Perret-Guillaume et al. 2010).

Religiosity and spirituality

Although there are many existing measures of religiosity (Hill and Hood 1999) and spirituality (Visser et al. 2010), many of these scales have a variety of limitations. For instance, most of the scales contain assumptions about the value of religion, which may bias results in favor of religious people. Similarly, many measures assume that being spiritual is inherently a positive characteristic (De Jager Meezenbroek et al. 2012). As noted earlier, many of these measures include questions that conflate being spiritual with positive well-being by including aspects of the very concept they are trying to predict, which results in misleading findings.

The NRNSS was developed specifically to address these concerns (Cragun et al. 2015). All of the questions can be answered by people who are nonreligious and nonspiritual, as well as people who are religious and spiritual. In addition, the religiosity dimension is not specific to any one religion or type of religion but generically examines the importance of organized or institutional religion to the individual. To address the problem of different conceptions of what it means to be spiritual, the

NRNSS provides a definition of “spiritual” that limits it to the domain of the supernatural. This definition makes sense in light of the root of the word *spiritual*—“spirit”—which is a supernatural (i.e., above or beyond the natural world) concept. Thus, individuals who score high in “spirituality” may or may not be involved in institutional religion, but they do believe that there are supernatural forces that influence their lives.

The scale includes 16 items, 2 of which are reverse scored so that higher scores represent higher levels of spirituality/religiosity. Responses are on a five-point scale, indicating strength of agreement or disagreement with each item; scores are the average of the items. Although the two dimensions are correlated, they were separated for this study so that the independent effects of religiosity and spiritually on health could be investigated.

Table 1. Comparison of sample 1 and sample 2 participants with respect to demographic and categorical independent variables.

Variable	Sample 1 <i>n</i> (%) ^a	Sample 2 <i>n</i> (%) ^a	χ^2	<i>df</i>	<i>p</i>
Gender ^b					
Female	186 (53.6)	250 (61.9)	5.25	1	.02*
Male	161 (46.4)	154 (38.1)			
Race/Ethnicity ^{c,d}					
White/Non-Hispanic	257 (78.0)	347 (87.5)	16.11	1	< .001*
Other ^e					
Black/Non-Hispanic	22 (6.7)	4 (1.0)			
Hispanic	38 (11.6)	39 (7.9)			
Asian	10 (3.1)	2 (0.5)			
Marital status ^{d,f}					
Married	183 (53.0)	204 (51.1)	0.27	1	.60
Not married	162 (47.0)	195 (48.9)			
Employment ^g					
Employed	254 (73.2)	306 (75.7)	0.64	1	.43
Unemployed/Retired	93 (26.8)	98 (24.3)			
Education level ^{d,h}					
Less than high school	9 (2.6)	10 (2.5)	6.31	5	.28
High school	49 (14.2)	73 (18.1)			
At least some college	92 (26.6)	89 (22.1)			
Associate's degree	34 (9.8)	35 (8.7)			
Bachelor's degree	117 (33.8)	126 (31.3)			
Advanced/Professional degree	45 (13.0)	70 (17.4)			
Income ⁱ					
< \$10,000	9 (2.6)	12 (3.0)	14.40	7	.04*
\$10,000–\$24,999	22 (6.3)	22 (5.4)			
\$25,000–\$49,999	63 (18.2)	62 (15.3)			
\$50,000–\$74,999	67 (19.3)	79 (19.6)			
\$75,000–\$99,999	61 (17.6)	48 (11.9)			
\$100,000–\$199,999	87 (25.1)	102 (25.2)			
\$200,000–\$499,999	30 (8.6)	60 (14.9)			
≥ \$500,000	8 (2.3)	19 (4.7)			
Chronic disease ^{d,j}					
Yes	63 (18.4)	78 (19.5)	0.68	1	.68
No	280 (81.6)	321 (80.5)			
Exercise ^{d,k}					
Yes	275 (80.2)	326 (81.7)	0.28	1	.60
No	68 (19.8)	73 (18.3)			

^aColumn percentages for each variable are adjusted for missing data and may not total 100 due to a rounding error.

^b*n* = 751.

^c*n* = 735.

^dNumber of participants varies due to missing responses for some items.

^eDue to small sample sizes for several racial/ethnic categories and to keep the path model simpler, race/ethnicity was categorized into *White/non-Hispanic* versus *Other* for the analyses.

^f*n* = 744.

^g*n* = 751.

^h*n* = 749.

ⁱ*n* = 751.

^j*n* = 742.

^k*n* = 742.

*Test is statistically significant at a two-sided critical alpha level of <.05.

Other validated health measures

Seeking to capture as much explanatory power as possible, we also included other measures commonly associated with positive health outcomes. First, we measured exercise as a single item from the 2010 BRFSS Questionnaire: “During the past month, other than your regular job, did you participate in any physical activities or exercises such as running, calisthenics, golf, gardening, or walking for exercise?” Response options included yes (1) and no (0).

Further, we measured sleep adequacy, body mass, and presence of chronic health conditions as they are consistently related with physical, mental, and social functioning. Sleep was measured using the following question from the 2010 BRFSS. “During the past 30 days, for about how many days have you felt you did not get enough rest or sleep?” Answers were reverse scored so that higher values indicated more nights of sufficient sleep. In terms of body mass, the participants’ heights and weights were self-reported and then used to calculate body mass index (BMI). BMI is a height-corrected measure of body build that is correlated with body fat and related health risks. BMIs were calculated using the following English system formula: $(\text{weight (lb)} / [\text{height (in)}^2] \times 703)$. Further, presence of a chronic health condition was measured with the following single-item question: “A chronic disease is an illness or disease that persists for a long time (typically 3 months or more). Examples include: diabetes, AIDS, asthma, depression, etc. Do you have a chronic disease?” Response options were yes (1) and no (0).

Finally, we sought to explicate the effects of religiosity and spirituality by separating these aspects from social and emotional support that could be gained from other sources. As such, social and emotional support was assessed independently of religiosity and spirituality with the following single-item question from the 2010 BRFSS: “How often do you get the social and emotional support you need? (Please include support from any source).” Response options were (1) never, (2) rarely, (3) sometimes, (4) usually, and (5) always.

Demographic variables

The following two demographic questions were asked, and response options for each are included in [Table 1](#): “In which of these groups did your total family income, from all sources, fall last year before taxes?” and “What is your highest level of education?”

Additional demographic variables included sex (male = 1, female = 0), employment status (employed = 1, unemployed = 0), marital status (married = 1, single/widowed/cohabiting/other = 0), race (white = 1, non-white = 0), and age (continuous).

Analysis

Data screening and sample comparisons

Data from the two samples were initially analyzed separately using SPSS 19.0. Scores for each of the three health subscales (social, mental, and physical) were screened for univariate normality. The two data sets were then combined, and chi-square and independent sample *t*-tests were performed to describe and compare the two samples.

Path modeling

We developed our model using the first data sample and then tested whether it was generalizable by specifying the same model using data from another sample. Although we could have combined the data sets and conducted just a single path analysis, there is a compelling reason not to do so. As Cudeck and du Toit (2009) argued,

One of the best practical strategies to protect against the problems of overfitting in exploratory studies is replication. This procedure is venerable and highly regarded, not only in statistics but in science generally. It is not often encountered in practice but is convincing when it occurs. (P. 523)

Two identical path models (one for each data sample) were sequentially specified according to our theoretical model and estimated using Mplus version 6.0 and maximum likelihood estimation. Path modeling allowed us to examine the relationship among variables and simultaneously test direct and indirect relationships between religiosity and spirituality (R/S) and the three health dimensions (physical, mental, social) while controlling for demographics and influences of other key variables related to HRQoL.

To determine the fit between the hypothesized model and the two data samples, we examined several global fit indices as has been recommended for path analysis and structural equation modeling (see Buhi, Goodson, and Neilands 2007; Hu and Bentler 1999). The chi-square goodness-of-fit test statistic indicates absolute model fit by comparing the observed covariance matrix with a covariance matrix from a fitted model. A chi-square that is statistically significant indicates a lack of model fit; however, this measure is highly sensitive to large sample sizes, which is why additional fit indices are also typically reported. The comparative fit index (CFI) adjusts for sample size when comparing a target model with a null baseline model. Although there are no concrete rules of thumb, a CFI close to .95 or above is generally considered necessary for good fit. The root mean square error of approximation (RMSEA) is another absolute fit index. Values of the RMSEA less than .05 have been suggested as indicative of good fit, and those in the range of .05 to .08 may indicate adequate fit (Browne and Cudeck 1993). Last, the standardized root mean square residual (SRMR) was evaluated. A cutoff value less than .08 for the SRMR has been suggested as an indication of good model fit. Values close to the recommended cutoff points provide evidence for the utility of a model, whereas those further away indicate inconsistencies between the data and model. When there are inconsistencies, additional paths are sometimes added or removed based on theoretical knowledge and modification indices generated by the software.

Results

Data screening and sample comparisons

Each of the dimensional measures of health were approximately normally distributed in both samples based on visualization of box-plots as well as the finding that all absolute skewness and kurtosis values were less than .9. The two independently collected samples show similarities (Tables 1 and 2), except that Sample 2 had higher proportions of female ($p = .02$) and White/non-Hispanic ($p < .001$) individuals, lower average BMI ($p = .03$), and lower levels of religiosity ($p < .001$).

Path analysis

The same path model was specified using data from each of the two independent samples. Standardized results with beta coefficients (e.g., estimates of effect size) for each statistically significant path are illustrated in Figures 1 and 2. The chi-square goodness-of-fit tests and other fit indices suggest that model fit was good for both Sample 1 and Sample 2 data. The chi-square measure was not significant in either sample, indicating no significant model misfit. Both samples had CFIs above .99, RMSEAs below .05, and SRMRs below .08. Although the effects of demographic variables on each of the health dimensions were controlled for, the beta coefficients for many of these paths were not statistically significant, and these paths are therefore not shown in the figures in order to simplify the figures and highlight similarities and differences between the results from both samples.

Social health predictors

Emotional and social support was the strongest predictor of social health in both samples (Figures 1 and 2). For Sample 1 (Figure 1), the path from religiosity to social health was significant ($\beta = .15$, $p = .003$). In Sample 2, the path from religiosity to social health was estimated as part of the model

Table 2. Comparisons of sample 1 and sample 2 participants with regard to age, and continuous independent and dependent variables.

Variable	Sample 1		Sample 2		t	df	p
	n	M (SD)	n ^a	M (SD)			
Age at time of survey	347	40.20 (15.30)	404	42.00 (16.30)	-1.58	749	.11
BMI ^b	333	26.50 (6.00)	397	25.60 (4.90)	2.19	728	.03*
Adequate sleep ^c	343	21.00 (7.90)	399	21.50 (7.60)	1.00	740	.32
Social and emotional support ^d	342	4.08 (0.93)	399	3.95 (0.97)	1.77	739	.08
Duke Physical subscale ^e	347	7.42 (2.08)	403	7.29 (2.20)	0.84	748	.40
Duke Mental subscale ^e	347	7.85 (1.92)	403	7.63 (1.81)	1.60	748	.11
Duke Social subscale ^e	345	7.79 (1.80)	402	7.70 (1.76)	0.65	745	.52
Spirituality ^f	347	3.60 (0.91)	404	3.30 (0.86)	4.54	749	<.001*
Religiosity ^f	347	3.50 (1.00)	404	3.10 (0.95)	5.80	749	<.001*

^aNumber of participants varies due to missing responses for some items.
^bBody mass index (BMI) is calculated using self-reported weight and height.
^cScale ranges from 0 to 30 and was reverse scored so that higher scores indicate adequate sleep.
^dScale ranges from 1 to 5, with higher scores indicating emotional and/or social support is received more often.
^eSubscales from the Duke each range from 0 to 10, with higher scores indicating better self-perceived health.
^fScales range from 1 to 5, with higher scores indicating greater levels of spirituality or religiosity.
 *Test is statistically significant at a two-sided critical alpha level of <.05.

but is not shown in the figure because it was not statistically significant ($p = .125$). Exercise was consistently and positively associated with social health in both samples. In contrast, the strength of association between the demographic variables and social health was less robust, as illustrated by different paths being statistically significant for each of the two samples. Overall, a greater proportion of variation in social health was explained in Sample 1 ($R^2 = .263$) versus Sample 2 ($R^2 = .159$).

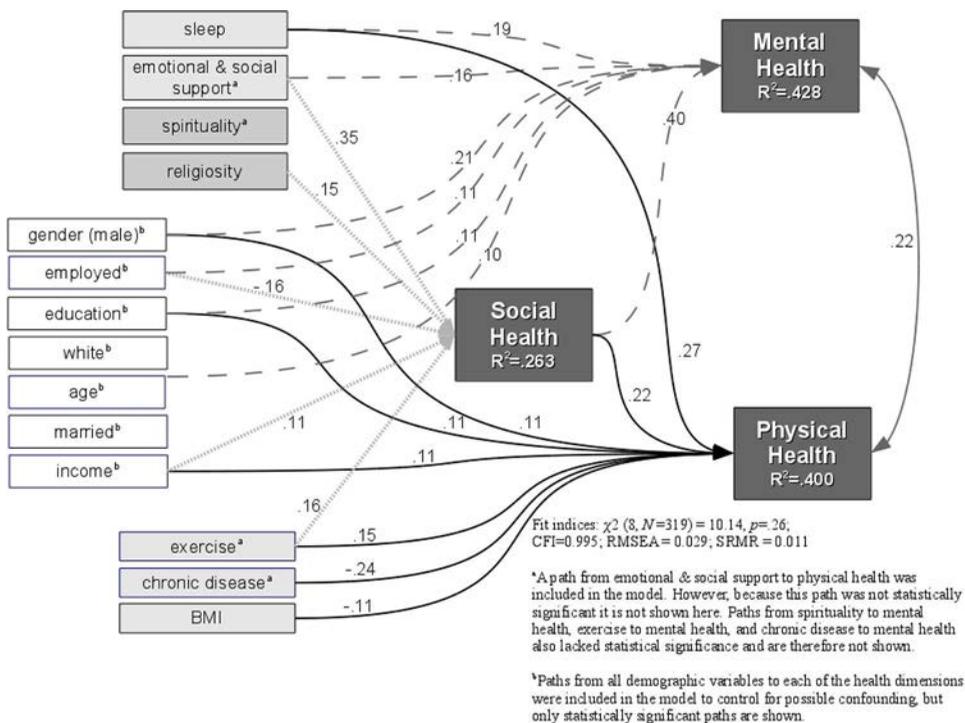


Figure 1. Path model for Sample 1 (standardized solution). Note. BMI = body mass index; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

Downloaded by [Jason Sumner] at 13:25 13 July 2016

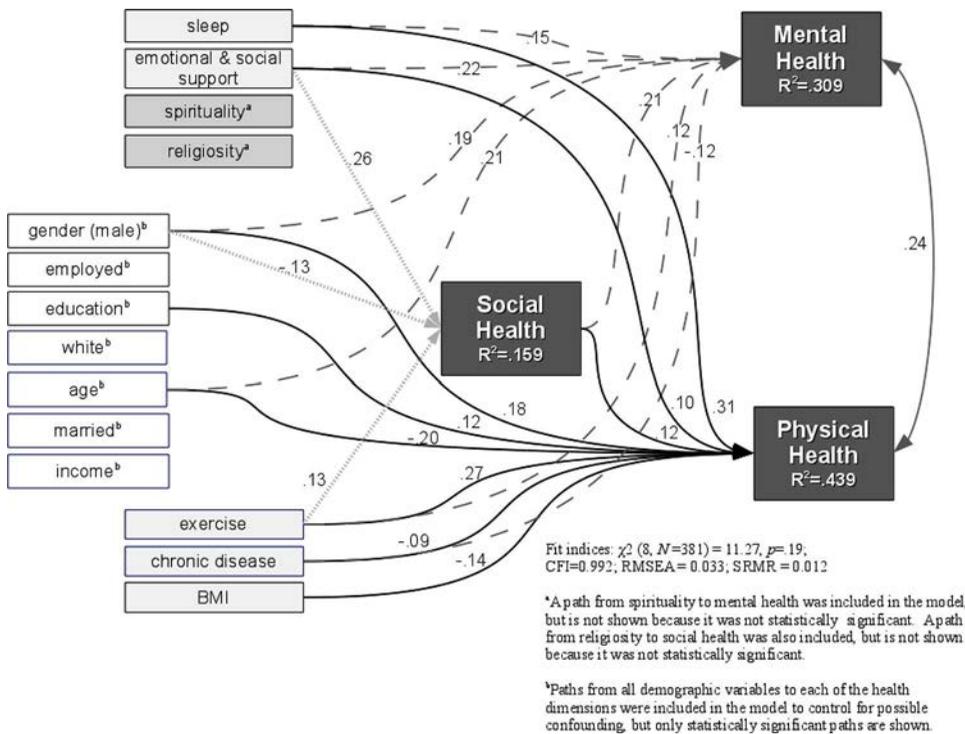


Figure 2. Path model for Sample 2 (standardized solution). Note. BMI = body mass index; CFI = comparative fit index; RMSEA = root mean square error of approximation; SRMR = standardized root mean square residual.

Mental health predictors

The path coefficients from spirituality to mental health were not significant for Sample 1 ($p = .06$) or Sample 2 ($p = .10$). Social health was among the most important positive predictors of mental health in both samples. However, given that religiosity predicted social health only in Sample 1, its contribution to mental health was also confined to Sample 1. The effect of religiosity on mental health was small and indirect ($\beta = .06$); in a separate analysis (not shown) we modeled a direct path, but it was not significant. Several demographic variables were significant predictors of mental health in Sample 1, including sex (male individuals have better mental health), higher education, being employed, and age (older individuals had better mental health). Only sex and age were significant predictors of mental health in Sample 2, and less of the variation in mental health was explained in Sample 2 ($R^2 = .309$) than in Sample 1 ($R^2 = .428$), though a moderate amount of variation in mental health is explained in both samples.

Physical health predictors

Adequate sleep was the strongest predictor of physical health in both samples. Social health had a significant influence on physical health in both samples, but the relationship was not as strong as the relationship between social and mental health. Neither religiosity nor spirituality was directly related to physical health in either sample. In Sample 1, the indirect effect of religiosity on physical health through social health is quite small ($\beta = .03$). As expected, having a chronic health condition and a higher BMI both predict worse physical health. Other factors associated with physical health in Sample 1 include sex (male individuals report better physical health), education, income, and exercise. Most of these variables had similar effects on physical health in Sample 2, with the exception of income, which was not significant. Age, however, was significant for Sample 2, with older

individuals reporting significantly worse physical health. In addition, emotional and social support demonstrated a statistically significant direct path to physical health in Sample 2. In contrast, the relationship between emotional and social support with physical health was entirely mediated by social health in Sample 1 because the direct path was not statistically significant.

Discussion

In this study, we sought to answer three questions proposed by existing studies of religiosity, spirituality, and health. First, we tested whether religiosity had a positive influence on physical, mental and/or social health by directly examining explicitly religious effects on these dimensions. Although a positive relationship between religiosity and social health emerged in our first sample, this relationship was not statistically significant in our second sample. This may be due to the higher level of religiosity in our first sample. As suggested by previously discussed literature in this field, those who are more active in social groups—religious or otherwise—may experience positive effects on social health, a benefit that can disappear with lack of activity even when one retains a religious affiliation. In other words, our data suggest that having a religious affiliation does not automatically or necessarily make someone healthier; however, participating in the social aspects of religion (e.g., attending religious services) can positively contribute to social health. We found no direct effects when we explored religiosity in relation to mental and physical health outcomes. This suggests that contemporary findings about the health benefits of religion may be misinterpreting the relationship between religiosity and health.

Alongside direct effects, we also sought to learn if religiosity had indirect effects on physical, mental, or social health. Once again, our findings reveal only small, indirect effects in Sample 1. Although Sample 1 suggests that religiosity has an indirect effect on mental and physical health via its influence on social health, we once again note that social activity appears to be the driving mechanism here rather than religion. Because religiosity itself—aside from facilitating social activity—only appears to matter for health when found in high levels, our findings both support previous studies comparing more and less religious people and reveal that using religion to explain such relationships can miss the mark. Rather, religion may be beneficial to health only *if* it encourages people to be socially active, in much the same way that participation in other organizations becomes healthy only *if* it encourages high levels of social activity.

We also sought to establish potential health effects due to spirituality. When defined in nonreligious terms (e.g., when defined as spiritual rather than simply in terms of well-being and purpose in life regardless of religious influence), spirituality provided no health benefits. In fact, we found no predictive utility from spirituality in either sample, and there were no modification indices suggested by the software where spirituality would be related to any health dimensions. The sample sizes in our study provided adequate power to detect even small relationships. Thus, when defined in terms of spiritual elements, spirituality likely offers no substantial health effect. This finding lends weight to the notion that previous research mischaracterizes spiritual effects by defining this term as a positive characteristic at the outset of the study, which artificially creates findings that support the belief that spirituality positively impacts health (Visser et al. 2010).

Before proceeding to our conclusions, there are several limitations as well as strengths worth noting in relation to our study. One limitation involves the use of two nonrandom convenience samples with no clear sampling frame. Although the diversity of our samples is an improvement over college student populations, the absence of a clear sampling frame makes generalizability difficult. Generalizability is further limited by a lack of racial/ethnic diversity in our samples. However, our ability to find good model fit using data from two large independent samples serves as a strength of this study and increases confidence in the relationships demonstrated to be consistent in both samples. Nevertheless, data from more diverse samples and from representative samples of well-defined populations should be used to further validate and improve upon our model.

Another limitation of our study is the use of measures of religiosity and spirituality that may not be universally agreed upon. Cragun et al. (2015) provided definitions in their scale that confine

religiosity to organizations and spirituality to the supernatural. We chose to use this scale because it avoids many problems that other scales have. For instance, Cragun et al.'s NRNSS is not specific to a single religion but rather can be answered by members of any religion; it can be answered by non-religious people; and it provides a consistent, albeit limited, definition of spirituality so that it is clear what is being measured by the idea of spirituality. Even so, our findings have to be interpreted in light of these definitional limitations. In other words, high levels of involvement with organized religion may contribute to social health but have no substantial influence on physical or emotional health. Likewise, when conceptualized as believing in and experiencing the effect of the supernatural in an individual's life, spirituality has no effect on physical, mental, or emotional health. This does not necessarily indicate that spirituality, when measured in other ways, may have no effect on physical, mental, or emotional health. However, we would urge future researchers to use caution when measuring spirituality that they not conflate measures of spirituality with measures of meaning or subjective well-being, as doing so conflates that which is being predicted with itself.

A principle strength of our study involves the recognition of religious privilege in contemporary American society and, as a result, the use of an improved measure of religiosity and spirituality that more accurately captures explicitly religious and spiritual beliefs and behaviors while separating these from nonreligious and nonspiritual elements of social behavior. We also utilized a multidimensional measure of HRQoL that allowed us to determine whether religiosity and spirituality have different effects on varied health dimensions. Despite these strengths, measures used to predict health dimensions are self-reported, and several are single-item questions that may be open to variability in how they are interpreted by respondents. As such, our model may need to be refined in relation to other measures of HRQoL utilizing biosocial, clinical, and other direct methods of data collection.

Although complex, it is also worth noting that our model seems to be missing some key variables for explaining health dimensions. In the case of social health, for example, we were able to explain only 26.3% and 15.9% of the variation in the two samples, respectively. It may also be that social health is influenced by differences in cultural perceptions, secular belief systems, marginalization, and/or privilege not captured in our surveys, or other constructs we did not measure. Despite good model fit indices, it is possible that other competing models could also demonstrate important nuances, and likely that other elements will be uncovered that could bolster the strength of our proposed model. Further, although path modeling using cross-sectional data can suggest causal directions, it cannot prove causation. With all these factors in mind, we suggest that our analysis provides a starting point for reconsidering and more accurately measuring relationships between religiosity, spirituality, and health, which we encourage other researchers to refine, replicate, and test within and between varied populations.

Conclusion

Seeking to specify what—if any—actual effects religiosity and spirituality have upon health, we addressed limitations in previous studies by utilizing a validated measure of religiosity and spirituality that allows for accurate comparisons between religious and nonreligious people. We also specified a conceptual model that separates explicitly religious and spiritual influences (e.g., attendance at religious services and belief in the supernatural) from influences people may receive from both religious and nonreligious sources (e.g., social support). In so doing, our findings call for a reconsideration of the effects—or lack there of—of religiosity and spirituality on health outcomes.

Religiosity may in some cases have a direct effect on social health, but neither religiosity nor spirituality directly influences other dimensions of health. Rather, as suggested by the variables in previous studies (e.g., organizational attendance and activity, social support, prosocial behavior), the path to health relied upon social behaviors instead of any conception of the divine or specifically religious practice.

These findings call into question the explanatory power that researchers have granted religion and spirituality. Although people who are religious may gain health benefits from their social activity, people who are not religious may gain the same benefits from social activity in secular organizations

(Galen and Kloet 2011). By the same token, as suggested by Musick and associates (2004) and comparisons between more or less religious people throughout the literature, individuals who report a religious affiliation may not receive the social health benefits of religion if they do not participate, just as individuals with no religious affiliation will not receive social health benefits if they do not participate in secular social organizations. If, however, religious affiliation facilitated greater health in and of itself, this would not be the case. Rather, in such a scenario we would be able to find religious effects that nonreligious people miss out on, and we would find some effect of religious affiliation itself regardless of people's participation in religious services. Such patterns are not found in either our study or the previous literature, which suggests that scholars have granted religion explanatory power it does not deserve. It may thus be time for researchers to reconsider our assumptions about religion, spirituality, health, and the ways these phenomena intertwine in the social world.

One way to accomplish this reconsideration involves recognizing the privileged social location of religion in contemporary American society and taking steps to make sure this social context does not erroneously color our research endeavors. Sociologists have long recognized the ways people unintentionally grant nonempirical explanatory power to privileged social groups, belief systems, and structures due to their (often unconscious) internalization of these systems of power (see, e.g., Collins 2005). In so doing, people—including researchers—come to believe in these socially constructed “ways of knowing and explaining” the world that maintain existing inequalities and privileges. As such, it could be the case that people raised and trained in a society wherein religion occupies a privileged social position (e.g., Edgell et al. 2006) grant religion explanatory powers even when it is not warranted.

It may be the case that existing research on religiosity, spirituality, and health tends to offer religious explanations for health outcomes simply because people have been taught by American society to expect positive associations between religion and well-being (see Sumerau 2014). Considering that such studies rarely have a nonreligious comparison that would allow empirical demonstration of a religious effect and generally assign activities that are not limited to religion with religious significance, they may do a better job demonstrating effects of religious privilege on research than expanding our understanding of pathways to better health. In so doing, previous research on religion, spirituality, and health could be missing the empirical mark given that scholars may assign explanatory power to religion even though their data suggest the relationships they find could be achieved in a multitude of ways without the existence of religious or spiritual factors.

Although participating in a religion may be useful for religious and spiritual people seeking better health, there is no reason to believe it would offer any health benefits—social, mental, or physical—for nonreligious people or people marginalized by religious traditions. Further, by granting explanatory power to social elements (e.g., religion or spirituality) that are not essential for the behaviors that could improve health, we run the risk of missing out on many other potential ways we could reach the same health outcomes and effects in both secular and religious populations. If we seek greater understanding of the best pathways to better health for all people, it may be time to ascertain what (if any) actual effects religion and spirituality might have upon the social, physical, and mental health of society as a whole. In so doing, we could gain a better understanding of health that would likely be useful to people whether or not they are religious.

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Appendix

The Nonreligious–Nonspiritual Scale (NRNSS)

Religion is defined as follows in the NRNSS:

"Many people have heard the word 'religion' before and probably have some understanding of what that means. For this survey, we want you to think about religion in a specific way. When you think about religion for the following questions, we want you to think of institutionalized religion, or groups of people that share beliefs regarding the supernatural (i.e., gods, angels, demons, spirits) that are members of an organization. In this sense, the Roman Catholic Church would be a religion as it is a group of people with shared beliefs toward the supernatural and who are members of an organization. Members of a soccer club would not be considered a religion because they do not have shared beliefs toward the supernatural, while Hindus or Mormon would as they belong to an organization that emphasizes the membership's shared beliefs toward the supernatural."

Participants are then asked to indicate how strongly they agree (1) or strongly disagree (5) with eight statements:

- I'm guided by religion when making important decisions in my life.
- Religion is the most powerful guide of what is right and wrong.
- When faced with challenges in my life, I look to religion for support.
- I never engage in religious practices.*
- Religion helps me answer many of the questions I have about the meaning of life.
- I would describe myself as a religious person.
- Religion is NOT necessary for my personal happiness.*
- I would be bothered if my child wanted to marry someone who is NOT religious.

Spirituality is defined as follows in the NRNSS:

“Some people use the terms ‘spirituality’ and ‘spiritual’ in a broad, NON-supernatural sense. They see those terms as just having to do with: a special or intense experience, an appreciation for existence, meaning in life, peacefulness, harmony, the quest for well-being, or emotional connection with people, humanity, nature, or the universe. In this way, an atheist could technically describe her or himself as being ‘spiritual’ or as having had a ‘spiritual experience.’ In contrast to that broad approach, when you answer the items in THIS questionnaire we’d like you to think about ‘spirituality’ and ‘spiritual’ in the specific, SUPERNATURAL sense. And by ‘SUPERNATURAL’ we mean: having to do with things which are beyond or transcend the material universe and nature. God, gods, ghosts, angels, demons, sacred realms, miracles, and telepathy are all supernatural by this specific definition.”

Participants are then asked to indicate how strongly they agree (1) or strongly disagree (5) with eight statements:

- Spirituality is important to me.
- The rightness or wrongness of my actions will affect what happens to me when my body is physically dead.
- I have a spirit/essence beyond my physical body.
- All other things being equal, a spiritual person is better off.
- The supernatural exists.
- I engage in spiritual activities.
- I feel a sense of connection to something beyond what we can observe, measure, or test scientifically.
- I cannot find worthwhile meaning in life without spirituality.

Note. Two items are reverse coded, indicated by an asterisk. The citation for the scale is Cragun et al. (2015).