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RELIGION AND DEPRESSION: EXAMINING THE NATURE OF THE RELATIONSHIP

by

STEPHANIE HANSARD

Under the Direction of Mathew Gayman

ABSTRACT

After more than a century of research, the nature of the relationship between religion and mental health still is not fully understood. Some studies find that religion is associated with better mental health. Other studies find that religion is associated with worse mental health. Many prior studies have conceptualized religion either as individual religiosity or as religious group participation, with mixed results. It is also necessary to establish the temporal relationship between religion and mental health. While prior religion could influence subsequent mental health, prior mental health could also influence subsequent religion. It is also important to identify factors which this relationship. Results of the present study show that a) prior religion is associated with subsequent mental health, b) individual religiosity and religious group participation relate to subsequent mental health in different ways, c) these relationships are partially mediated by personal mastery, social support, and physical disability.

INDEX WORDS: Religion, Religiosity, Mental health, Depression, Mastery, Social support, Disability

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by

STEPHANIE HANSARD

A Thesis Submitted in Partial Fulfillment of the Requirements for the Degree of

Master of Arts

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Georgia State University

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2014

RELIGION AND DEPRESSION: EXAMINING THE NATURE OF THE RELATIONSHIP

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1 INTRODUCTION

The role of religion for psychological well-being has long been of sociological interest. Durkheim (1915) argued that religion provides a sense of mattering to one's life and a source of social support, both of which can have psychological benefits (Taylor and Turner 2002; Thoits 2010). While some studies have shown that religion is linked to better mental health (Cohen, Yoon, and Johnstone 2009; Acevedo 2010; Pargament, Magyar-Russell, and Swank 2005), other research shows a negative link between religion and psychological well-being (Pargament 2002; Elliasen, Taylor, and Lloyd 2005). Several important limitations to this prior work have likely led to mixed findings and/or limited our ability to draw conclusions regarding the association between religion and mental health, and the nature of this relationship.

One limiting factor in our ability to draw conclusions regarding the association between religion and mental health stems from variations in the measurement of religion across studies. Scholars often conceptualize religion either as religiosity (subjective commitment to religion, prayer, and religious comfort-seeking) or as religious group participation (such as worship attendance). Religiosity may improve mental health by providing a source of coping (Moreira-Almeida and Koenig 2008). Alternatively, higher levels of religiosity may undermine one's sense of personal mastery, which has negative implications for mental health (Schieman, Nguyen, and Elliot 2003). In regard to religious group participation, more participation may improve mental health by providing a source of social support (Baetz et al. 2006; Levin, Markides, and Ray 1996). However, other studies have found that negative interactions as part of religious group participation, which may result from stigmatizing responses to mental illness, are harmful to mental health (Stanford 2007; Wright et al. 2007). Given these mixed results, and the fact that individual religiosity and religious group participation are associated with each other (Greenfield

and Marks 2007; Koenig 2009), research is needed to assess the independent contributions of both aspects of religion.

Another limitation to current knowledge stems from the inability to establish a temporal order between religion and mental health. While scholars have argued that prior levels of religiosity/involvement influences subsequent mental health (Acevedo 2010; Baetz et al. 2006; Cohen et al. 2009; Greenfield and Marks 2007; Krumrei et al 2011; Ferarro and Kelley-Moore 2000), it is also possible that prior mental health could predict subsequent religiosity/involvement (Eliassen et al. 2005). However, with few exceptions (Krumrei et al 2011; Ferarro and Kelley-Moore 2000), much of prior research on the relationship between religion and mental health employs cross-sectional data (Acevedo 2010; Baetz et al. 2006; Cohen et al. 2009; Eliassen et al. 2005; Greenfield and Marks 2007). In order to establish the temporal order between religion and mental health, longitudinal research is warranted.

In order to further understand the importance of religion for mental health, research is also needed to identify factors that mediate this relationship. While some researchers have argued that religion translates into better mental health by increasing coping resources, few studies have directly assessed the mediating effects of coping resources such as mastery and social support (for exceptions see Baetz et al. 2006; Eliassen et al. 2005). It is also possible that physical disability mediates the relationship between religion and mental health by limiting individuals' ability to participate in religious activity should they want to (Sorenson, Grindstaff, and Turner 1995), thus also limiting the potential mental health benefits from religious participation. Using data from a two-wave panel study involving a community-based sample of adults living in Miami, Florida (Physical Challenges and Health Study), this research advances our understanding of the relationship between religion and mental health in several important ways. Because these data in-

clude measures for both aspects of religion – religiosity and religious group participation – analysis will assess whether both aspects of religion are independently linked to subsequent depressive symptoms. Employing two waves of data, analyses will establish the temporal relationship between religion and mental health by testing whether Wave 1 religion predicts Wave 2 depressive symptoms. The data employed also include established and highly reliable measures of coping, allowing for mediation analysis involving mastery and social support. Finally, because the larger study sample includes an over-sampling of persons with a self-reported physical disability, this study is uniquely situated to assess the potential mediating effect of physical disability in the religion—mental health relationship.

2 THEORY

Durkheim (1915) found that religion serves an important role for psychological health by providing individuals with a sense of mastery and support. Specifically, he posited that religion is linked to better mental health through an increased sense of mastery and social support (Durkheim 1915). In this same spirit, contemporary scholars have argued that the mental health benefits of religion will manifest indirectly through increased mastery and perceived social support (Siermarco et al. 2011; Acevedo 2010; Pargament et al. 2005).

Mastery refers to the belief that one is in control of his or her own life, as opposed to believing that one's life is controlled by external forces (Pearlin and Schooler 1978). Research demonstrates those with a greater sense of mastery report better mental health (Pearlin et al. 1981; Bovier, Chamot, and Perneger 2004). Individual religiosity, which includes subjective religiosity and religious coping, may benefit mental health by promoting a greater sense of personal mastery (Pargament et al. 2005). For instance, a person who believes in a God who helps

her with life problems may feel empowered to handle challenges and hopeful about the future. This increased sense of mastery may prevent (or deter) the manifestation of depressive symptoms. Alternatively, to the extent a person who frequently turns to God for help with her problems may feel powerless to effect change in her own life, individual religiosity may reduce one's sense of mastery and, in turn, increase risk for depressive symptoms (Schieman et al. 2003).

Cobb (1976) defined social support as "the perception that one is loved, valued, and esteemed, and able to count on others should the need arise." (Cobb 1976; Cassel 1976). Numerous studies have documented the mental health benefits of greater perceived social support (Broadhead et al. 1983; Uchino 2006; Thoits 1985; Turner, Frankel, and Levin 1983). Religious group participation may benefit mental health by promoting an increase in perceived social support from social network members (Acevedo 2010). For instance, a person who frequently attends religious services may come to feel that other members of her congregation care about her and are willing to help her. This increase in perceived social support may result in lower depressive symptoms (Acevedo 2010). Although religion has long been argued to benefit mental health through mastery and social support (Durkheim, 1915), few studies have directly assessed the mediating effects of mastery and social support on the religion—mental health relationship.

3 BACKGROUND

3.1 Aspects of religion

Sociologists since Emile Durkheim have been interested in the relationship between religion and mental health (Durkheim 1915). Despite a century of sociological research, the nature of this relationship remains unclear. While many studies have found a positive association between religion and mental health (Huang et al. 2012; Mirola 1999), others have found a negative associa-

tion (Krumrei et al. 2011). One possible explanation for the mixed findings may be variability in different aspects of religion under investigation across studies. Some studies conceptualize religion in terms of individual religiosity – spiritual coping, prayer, and subjective religiosity (Eliassen et al. 2005). Others conceptualize religion in terms of religious group participation in religious groups, including worship attendance, and congregational participation (Levin et al. 1996). These aspects of religion may relate to mental health in different ways.

Studies focusing on religiosity have revealed both a positive (Acevedo 2010; Baetz et al. 2006) and negative (McIntosh et al. 2011) association with mental health. On the one hand, religiosity may benefit mental health by promoting a greater sense of personal mastery (Pargament et al. 2005), which has been shown to be associated with better mental health (Turner, Taylor, and Van Gundy 2004). On the other hand, individual religiosity may harm mental health by undermining the individual's sense of mastery. For example, a person who turns to a higher power for help with her problems may feel ultimately powerless to solve her problems herself. This is supported by studies which find that higher religiosity is associated with worse mental health (O'Connor et al. 2003, Acevedo 2010).

Conceptualized as formal group participation (Cohen et al. 2009), studies employing a measure of religious worship attendance or participation in religious organizations have been more consistent in finding a positive relationship between religion and mental health (Acevedo 2010; Baetz et al. 2006; Pesocsolido and Georgiana 1989). Generally speaking, engaging in more social activities and interactions is conducive to better mental health (Aneshensel and Stone 1982; Musick and Wilson 2003). With few exceptions (Ellison et al. 2009), studies largely demonstrate that those who engage more frequently in formal religious group participation report better mental health (Ellison et al. 2001; Huang et al. 2012; Baetz et al. 2006; Acevedo 2010).

While individual religiosity and religious group participation may be differentially related to mental health, these two aspects of religion are highly correlated with each other (Greenfield and Marks 2007; Koenig 2009). Those who have higher subjective religiosity are more likely to participate in religious group activities more frequently; and those who frequently participate in religious group activities are more likely to describe themselves as highly religious. Thus, given that much of prior research has considered only one aspect of religion (Levin et al. 1996; Levin and Taylor 1998; Krumrei et al. 2011; Eliassen et al. 2005; Ellison et al. 2009), it is necessary to consider both aspects of religion simultaneously in order to establish whether they independently contribute to mental health.

One of the few studies which has looked at both constructs simultaneously, Acevedo (2010) found that religious group participation is associated with better mental health, while individual religiosity is associated with worse mental health. Another study found that the relationship between individual religiosity and mental health is a U-shaped curve, with those of moderate religiosity having less depression than those with very high or very low religiosity (Baetz et al. 2006). They also found that, independent of religiosity, there is a linear relationship between religious group participation and better mental health. Albeit limited, the available research does show that both individual religiosity and religious group participation independently predict mental health. However, the studies that have simultaneously included multiple indicators of religion are largely based on cross-sectional data, which limits our ability to determine the temporal order between religion and mental health.

3.2 Temporal order between religion and mental health

Religious group participation may provide a source of social support and integration into a social network which is beneficial to participants' mental health. This is supported by studies

which have shown that participation in collective religious worship is associated with lower depressive symptoms, lower psychological distress, and better subjective mental health (Levin and Taylor 1998; Levin et al. 1996). However, others have argued that prior mental health may predict subsequent religious involvement (Eliassen et al. 2005; Maselko et al. 2012; Krumrei et al 2011; Ferarro and Kelley-Moore 2000). Because much of prior research is based on cross-sectional data, a longitudinal study design is needed to assess whether prior religion is associated with subsequent mental health.

The few studies employing longitudinal data have provided support for the conclusion that prior religion is linked to subsequent mental health. For example, research demonstrates a negative relationship between individual religiosity – measured as religious coping – and subsequent mental health (Ferarro and Kelly-Moore 2000), which supports the idea that higher religiosity may undermine mental health. However, other longitudinal research demonstrates a positive relationship between religious group participation – measured as religious worship attendance – and psychological well-being (Levin et al. 1996), which supports the idea that greater religion group participation may benefit mental health. While these longitudinal studies provide an important step toward understanding the mental health consequences of religion, these studies only consider religiosity (Ferarro and Kelly-Moore 2000) or religious group participation (Levin et al 1996), but not both. Again, since these two constructs of religion are highly correlated with each other (Greenfield and Marks 2007, Koenig 2009) and have been found to relate to mental health differently (Baetz et al. 2006; Schnittker 2001), research assessing the multiple aspects of religion simultaneously is needed to better understand their independent contributions to mental health.

3.3 Mediators

3.3.1 Mastery

In order to better understand the relationship between religion and mental health, it is also important to identity the linking mechanisms. As previously discussed, religion may translate into mental health through various linking mechanisms such as mastery and social support (Eliassen et al 2005; Ellison et al. 2009; Ferraro and Kelley-Moore 2000; Levin and Taylor 1998; Levin and Markides 1996). Individual religiosity may promote a sense of mastery, since a religious individual may believe she has divine help and support in achieving her goals (Pollner 1989). Alternatively, one possible explanation for observed negative relationships between individual religiosity and mental health is that spiritual help-seeking undermines an individual's sense of mastery, since a believer may relinquish control to a higher power (Schieman et al. 2003). Indeed, prior studies have found that individual religiosity is associated with lower levels of personal mastery (Schieman et al. 2003). Mastery may also mediate the relationship between religious service attendance and depressive symptoms because greater attendance decreases the locus of control over one's life, which is known to be associated with poor mental health (Turner, Taylor, and Van Gundy 2004). While these findings related to religion and mastery have important implications for mental health, these studies do not directly assess whether personal mastery mediates the effects of religion on mental health (Schieman et al. 2003).

3.3.2 Social support

The observed positive relationships between more religious involvement and better mental health may also be due to the psychological benefits of social support gained through religious group participation (Acevedo 2010; Cohen et al. 2009; Pescosolido and Georgiana 1989; Levin et al.1996). Cohen and colleagues (2009) found that congregational support - a unique

measure of how much an individual feels supported by her or his religious congregation - was associated with better general mental health. While this provides some evidence to support the mediation hypothesis, the author is unaware of any studies that have directly assessed whether the link between various measures of religious involvement and mental health is explained by social support.

Alternatively, positive relationships between religious group participation and mental health may be due to a selection-effect, whereby those in poorer health are less likely to engage in religious group participation (Maselko et al. 2012). Depression, for example, is characterized by reduced desire and motivation to engage in social activities, and experiencing more depressive symptoms may result in reduced religious organization involvement (Eliassen et al. 2005). In addition, the stigma surrounding mental illness may lead persons with higher levels of depression to avoid religious group participation (Stanford 2007). In order to rule out these alternative interpretations, a longitudinal study design is needed to determine whether social support serves as linking mechanisms between prior religion and subsequent mental health.

3.3.3 Disability Status

Disability may also mediate the relationship between prior religion and subsequent mental health by limiting one's ability to participate in religious groups. For example, studies have found that adults with physical disabilities are less likely to attend religious services (Roff et al. 2006), which may increase the risk for depressive symptoms due to greater social isolation. However other studies indicate that persons with physical disabilities may be more likely to increase religious service attendance (Idler and Kasl 1997) and/or engage in spiritual comfort-seeking (Ferarro and Kelly-Moore 1997), which may alleviate (or deter) mental health problems.

4 RESEARCH HYPOTHESES

Drawing from theory and prior research, the following hypotheses will be tested:

$H_{1\ (\text{main effect})}$: Individual religiosity and religious group participation at Wave 1 will be associated with levels of depressive symptoms at Wave 2.

$H_{2\ (\text{mediation})}$: Individual religiosity and religious group participation at Wave 1 and subsequent levels of depressive symptoms will be mediated by mastery, social support and disability status.

5 METHOD

5.1 Sample

This study employs data from Wave 1 and Wave 2 of a two-wave panel study of adults residing in Miami-Dade County, Florida (Turner, Lloyd, and Taylor 2006). Described previously (Gayman, Turner, and Cui 2008), the original sampling frame consisted of 10,000 randomly selected households, which were screened for age, gender, race-ethnicity, disability status, and language preference. Based on this sampling framework, a sample was constructed such that each respondent with a physical disability was matched on age, gender, and race-ethnicity with a respondent who had no disability. The sample was also designed to include equal proportions of non-Hispanic White, African American, Cuban, and other Hispanic respondents, which is roughly consistent with proportions in Miami-Dade County. Respondents answered computerized questionnaires administered by trained interviewers in either English or Spanish. Wave 1 interviews were conducted between 2000 and 2001 with 1,986 individuals, representing 82 percent of the total sample selected to participate. Wave 2 interviews were conducted approximately three years later, and included 82.5 percent of Wave 1 participants (N=1,495).

5.2 Measures

5.2.1 Depressive Symptoms

This study employs data from Wave 1 and Wave 2 of a two-wave panel study of adults residing in Miami-Dade County, Florida (Turner, Lloyd, and Taylor 2006). Described previously (Gayman, Turner, and Cui 2008), the original sampling frame consisted of 10,000 randomly selected households, which were screened for age, gender, race-ethnicity, disability status, and language preference. Based on this sampling framework, a sample was constructed such that each respondent with a physical disability was matched on age, gender, and race-ethnicity with a respondent who had no disability. The sample was also designed to include equal proportions of non-Hispanic White, African American, Cuban, and other Hispanic respondents, which is roughly consistent with proportions in Miami-Dade County. Respondents answered computerized questionnaires administered by trained interviewers in either English or Spanish. Wave 1 interviews were conducted between 2000 and 2001 with 1,986 individuals, representing 82 percent of the total sample selected to participate. Wave 2 interviews were conducted approximately three years later, and included 82.5 percent of Wave 1 participants (N=1,495).

5.2.2 Subjective religiosity

Subjective religiosity (self-report of how religious one is) and religious help-seeking (frequency of turning to one's faith for help with daily problems) are used to measure respondents' individual religiosity. Subjective religiosity is a widely used measure in studies examining the relationship between religion and mental health (Schnittker 2001; Schieman et al. 2003). Participants were asked "How religious are you?" with response categories ranging from 1 "Very religious" to 4 "Not at all religious." Response categories are recoded such that higher values represent greater subjective religiosity.

5.2.3 Spiritual comfort-seeking

Frequency of spiritual comfort-seeking is a frequently used measure of religiosity, and attempts to measure the degree to which individuals turn to their religious beliefs for help with problems (Ferarro and Kelley-Moore 2000; Schnittker 2001). Respondents were asked "How often do you turn to your religion or your spiritual beliefs to help you deal with your daily problems? Would you say: 1 "always," 2 "often," 3 "sometimes," 4 "rarely" or 5 "never?" Response categories are recoded such that higher values of the variable indicate greater frequency of turning to religion for help with problems.

5.2.4 Religious service attendance

Frequency of religious service attendance is often used as a single-item indicator of religious involvement (Acevedo 2010; Levin et al. 1996). Respondents were asked: "Which of the following best describes how often you attend services at a church/temple/synagogue/mosque?" Answer categories were 6 "Never," 5 "About once or twice a year," 4 "Several times a year," 3 "Once a month," 2 "More than once a month," 1"Nearly every week," or 0 "Every week or more." Response categories are recoded such that higher values represent greater frequency of religious service attendance.

5.2.5 Mastery

Based on an established and highly reliable scale (Turner et al. 2004), mastery was measured by asking respondents the degree to which they agreed with a series of items (1=Strongly Disagree and 5=Strongly Agree). Example items include "You have little control over things that happen to you," "You often feel helpless in dealing with problems of life" and "Sometimes you feel that you are being pushed around in life." Each participant's score on the scale is the sum of scores across all ten items, with a possible range of 1-5 and an alpha of .77.

5.2.6 Perceived social support

Social support from family was measured using a sixteen-item scale. Respondents were asked to rate how much each statement about their families was true for them: 1 "Very true for you," 2 "Moderately true for you" to 3 "Somewhat true for you" 4 "Not at all true for you". Example items include: "You feel very close to your family," "Your family often lets you know that they think you are a worthwhile person," "You often feel that your family makes too many demands on you," and "Your family is always pointing out mistakes you have made." All items are recoded such that higher scores represent higher levels of family support (possible range = 0-64, alpha = .88). Support from friends was measured using an eight-item scale. Respondents were asked to rate how much they agreed with statements about their friends on a scale of one ("Very true for you") to four ("Not at all true for you"). Example items include: "You feel very close to your friends" and "When you are with your friends you feel completely able to relax and be yourself." All items were recoded such that higher response categories represent more support from friends (possible range = 0-32, alpha = .95).

5.2.7 Physical disability

The presence of disability status was established in responses to the question: "Do any adults in the household have a physical health condition or physical handicap that has resulted in a change in their daily routine or that limits the kind of or amount of activity they can carry out?" Those who confirmed having a disability at time of interview (N=559) are coded as 1= "disabled" and those who did not confirm a disability at the time of interview were coded as 0 = "non-disabled."

5.2.8 Controls

Analyses adjust for potential confounding variables that are known to be linked to both religion and mental health. Specifically, analyses control for age, gender, race-ethnicity, and socioeconomic status.

Age: Age is measured at Wave 1 (in years).

Gender: Respondents who identified as female were coded as 0, and those who identified as male were coded as 1.

Race-ethnicity: Race-ethnicity is measured using self-report. By study design, approximately twenty-five percent of respondents self-identified as Non-Hispanic white, African American, Cuban, and Non-Cuban Hispanic, which is largely consistent with the ethnic makeup of Miami Dade County. In regression analyses, non-Hispanic Whites are the reference group.

Socioeconomic Status: Socioeconomic status is measured using a combined standardized measure of respondents' self-reported income, educational attainment, and occupational prestige. Educational attainment was measured as number of years in school successfully completed. Occupational prestige was measured using the Hollingshead scale (1957).

6 PLAN OF ANALYSIS

6.1 Diagnostics

Diagnostic analyses were conducted in order to ensure that the findings from this study are not biased due to missing values, measurement, and/or attrition. First, those who had missing values on any study variable used in this investigation were compared to those with non-missing values on Wave 2 depressive symptoms, religion variables, and all mediators (mastery, social support and disability status). Results indicate that there were no substantive differences be-

tween those with missing values and those with no missing values. Second, diagnostic tests were performed in order to identify possible outliers, heteroscedasticity, and other violations of regression. No violations of regression assumptions were found. Third, attrition analysis was conducted in order to ensure that those lost at Wave 2 are not systematically different than those retained at Wave 2 on all Wave 1 study variables. Results indicate that there are no substantive differences between those included in Wave 2 and those not included in Wave 2.

6.2 Study Analyses

Both bivariate and multivariate analyses were conducted in order to investigate the relationship between religion and mental health. First, descriptive analyses were conducted to examine and compare the sample and variable characteristics at both waves. Table 1 shows the mean and standard deviation of each continuous measure, as well as frequencies and percentages of all non-continuous measures. Second, pairwise correlations were conducted among depressive symptoms, subjective religiosity, religious comfort-seeking, and frequency of religious service attendance. Mastery, family support, friend support, and disability status, were also included in the correlation analysis in order to identify their bivariate associations with religion and mental health. Third, multivariate analyses were used to assess the direct relationship between religion and depressive symptoms, as well as potential mediating effects of mastery, social support and disability status. Ordinary Least Squares (OLS) regressions were used to predict Wave 2 depressive symptoms using Wave 1 measures of religion and study mediators (Table 3). Model I assesses the relationship between Wave 2 depressive symptoms and all Wave 1 measures of religion simultaneously. In Model II, Wave 2 depressive symptoms are regressed on Wave 1 religion measures, controlling for age, gender, socioeconomic status, and race-ethnicity. All subsequent models include these controls. Next, I analyze the effects of potential mediators one at a time.

Model III introduces personal mastery into the regression. In Model IV, personal mastery is removed and social support from family and friends are stepped in simultaneously. In Model V, social support is removed and physical disability is included.

7 RESULTS

7.1 Descriptives

Descriptive statistics for the working sample are shown in Table 1. After deleting cases with missing values on study variables, the working sample includes 1,455 individuals. The mean age of the sample is 57 years (S.D. = 16.76). The working sample is 46% (N=672) female and 56% male (N=783). The working sample is 23.44% Non-Hispanic white, 24.26% Cuban, 21.86% Non-Cuban Hispanic, and 30.45% African American. Approximately three-quarters of the sample (71.26%) reported not having a physical disability.

The mean level of depressive symptoms (Wave 2) is 30.38 (S.D. = 9.20). The mean level of subjective religiosity was 1.88 (S.D. = .91). The mean level of spiritual comfort-seeking is 2.66 (S.D = 1.41). The mean level of religious service attendance is 2.66 (S.D. = 1.47). The mean level of personal mastery is 20.56 (S.D. = 5.40). The mean level of family support is 55.57 (S.D. = 9.74). The mean level of friend support is 26.41 (S.D. = 7.06).

Table 1 Descriptive Statistics of all Study Measures

		% (N)	M (SD)	Range
Sex				
	Male	53.81% (783)		
	Female	46.19% (672)		
Race-Ethnicity				
	Black	30.45% (443)		

Non-Hispanic White	23.44% (341)		
Cuban	24.26% (353)		
Non-Cuban Hispanic	21.86% (318)		
Disability Status			
Disabled	28.04% (408)		
Non-Disabled	71.96% (1,047)		
Age		57.04 (16.76)	18-93
Socioeconomic Status		30.42 (9.20)	-2.70-2.70
Depressive Symptoms (W2)		30.38 (9.21)	0-69
Subjective Religiosity		1.88 (.91)	0-3
Spiritual Comfort Seeking		2.66 (1.41)	0-4
Religious Service Attendance		1.67 (1.15)	0-3
Mastery		20.56 (5.40)	2-35
Family Support		55.57 (9.74)	0-64
Friend Support		26.41 (7.06)	0-32

Note. N=1,455

7.2 Pairwise Correlations

Pairwise correlations were conducted between all study measures (Table 2). At the bivariate level, neither subjective religiosity nor spiritual comfort-seeking is associated with subsequent depressive symptoms (Wave 2). However, religious service attendance is associated with lower levels of subsequent depressive symptoms (r=-.07, p=.01), and with higher levels of subjective religiosity and spiritual comfort-seeking. As for the potential mediators, personal mastery is associated with lower levels of depressive symptoms at Wave 2 (r=-.31, p=.00), as well as with lower levels subjective religiosity (r=-.06, p=.02), lower levels of spiritual comfort-seeking (r=-.10, p=.00), and lower levels of religious service attendance (r=-.14, p=.00). Social support from family is associated with lower levels of subsequent depressive symptoms (r=-.21, p=.00) and less risk for physical disability (r=-.06, p=.03). Social support from family was also associ-

ated with higher levels of subjective religiosity (r=.07, p=.01) and higher levels of personal mastery (r=.25, p=.00). Social support from friends is associated with lower levels of subsequent depressive symptoms (r=-.13, p=.00). Social support from friends is also associated with higher levels of subjective religiosity (r=.11, p=.00), higher levels spiritual comfort-seeking (r=.09, p=.00), higher levels of personal mastery (r=.11, p=.00), and higher levels of social support from family (r=.27, p=.00). Physical disability is associated with higher levels of subsequent depressive symptoms (r=.19, p=.00), higher levels of spiritual comfort-seeking (r=.06, p=.04), and lower levels of religious service attendance (r=-.06, p=.03). Together the bivariate results provide support for the link between religion and subsequent mental health. In addition, the correlations among religion, mental health and the potential linking mechanisms provide initial support for possible mediation effects.

Table 2 Pairwise correlations of study measures, correlation coefficient r (p-value)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Depressive Symptoms (W2)	-							
(2) Subjective Religiosity (W1)	-.01	-						
	(.74)							
(3) Spiritual Comfort-seeking (W1)	.04	.61***	-					
	(.17)	(.00)						
(4) Religious Service Attendance (W1)	-.07*	.56***	.49***	-				
	(.01)	(.00)	(.00)					
(5) Physical Disability (W1)	.19***	.03	.06*	-.06*	-			
	(.00)	(.35)	(.04)	(.03)				
(6) Personal Mastery (W1)	-.31***	-.06*	-.10***	-.00	-.14***	-		
	(.00)	(.02)	(.00)	(.92)	(.00)			
(7) Family Support (W1)	-.21***	.07*	.04	.10***	-.06*	.25***	-	
	(.00)	(.01)	.09	(.00)	(.03)	(.00)		
(8) Friend Support (W1)	-.13***	.11***	.09***	.16***	-.03	.11***	.27*	-
	(.00)	(.00)	(.00)	(.00)	(.29)	(.00)	(.00)	

Note. N = 1,455

*p≤.05, **p≤.01, ***p≤.001

7.3 Regression Analyses

In order to assess the independent relationships among religion variables and subsequent mental health, all religion variables are simultaneously regressed on Wave 2 depressive symptoms (Table 3). In Model I, depressive symptoms were simultaneously regressed on subjective religiosity, spiritual comfort-seeking, and religious service attendance. Consistent with the biva-

riate results, subjective religiosity is not associated with subsequent depressive symptoms and more frequent religious service attendance is associated with fewer depressive symptoms (b = -.89, p = .00). However, unlike the bivariate correlations, the multivariate model reveals a significant positive association between spiritual comfort-seeking and depressive symptoms (b = .60, p = .01) after adjusting for religiosity and religious service attendance. Additional analysis (not shown) reveals that religious service attendance is suppressing the association between spiritual comfort-seeking and depressive symptoms. This suggests that if individuals with higher levels of spiritual comfort-seeking reported similar levels of religious service attendance as those with lower levels of spiritual comfort-seeking then those with higher levels of spiritual comfort-seeking would be at increased risk for subsequent depressive symptoms. Results in Model II indicate that the main effects of spiritual comfort-seeking and religious service attendance on depressive symptoms are independent of socio-demographic characteristics (age, gender, socioeconomic status, and race-ethnicity).

Given the observed suppression effect of religious service attendance on the relationship between spiritual comfort-seeking and depressive symptoms, an interaction test was conducted assessing whether the relationship between spiritual comfort-seeking and depressive symptoms varies by level of religious service attendance (not shown in Table 3). Depicted in Figure 1, the pattern indicates that there is a negative relationship between spiritual comfort-seeking and depressive symptoms among those who report the highest frequency of service attendance but a positive relationship between spiritual comfort-seeking and depressive symptoms among those with less frequent service attendance (b -.45, p = .01). In other words, for those who attend religious services most frequently, spiritual comfort-seeking may have a protective effect on mental

health but for those reporting less religious service attendance spiritual comfort-seeking may have deleterious effects on mental health.

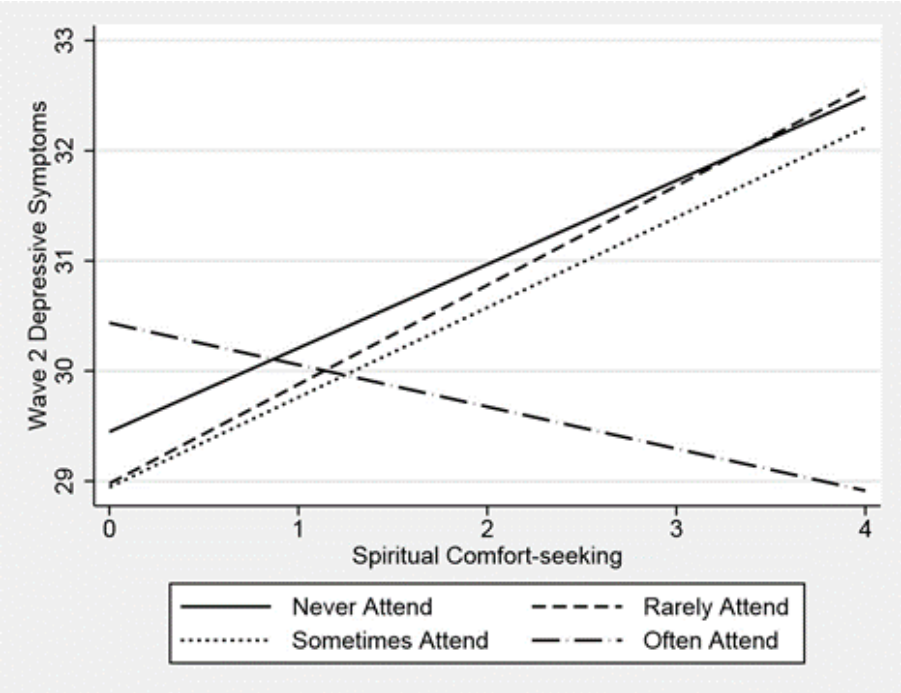

Figure 1

Model III tests the hypothesis that personal mastery mediates the relationship between spiritual comfort-seeking and subsequent depressive symptoms. Comparing the main coefficient for spiritual comfort-seeking and depressive symptoms (Model II: b=.50, p = .02) to the adjusted coefficient after stepping in mastery (Model III: b=. 39, p = .07), the results indicate that mastery partially mediates (22% reduction) the relationship between spiritual comfort-seeking and depressive symptoms (1 - .39/.50 = .22; Sobel = .19, p = .00). The results of Sobel tests show that personal mastery does not significantly mediate the relationship between religious service attendance and subsequent depressive symptoms (Sobel =.00, p=.98).

Model IV tests whether social support from family explains the associations between spiritual comfort-seeking and religious service attendance with subsequent depressive symptoms. Since friend support was not associated with depressive symptoms, no mediation test is war-

ranted. However, results show that family support partially mediates (20% reduction) the relationship between religious service attendance and subsequent depressive symptoms (1 - .48/.60 = .20; Sobel= -.19, p=.00). Sobel test results indicate that family support does not significantly mediate the relationship between spiritual comfort-seeking and subsequent depressive symptoms (Sobel = .06, p=.08).

Table 3. Depressive symptoms (Wave 2) regressed on religion, mediators, and controls

	I	II	III	IV	V
	B	B	B	B	B
	(S.E.)	(S.E.)	(S.E.)	(S.E.)	(S.E.)
Subjective Religiosity (W1)	-.03	-.89	-.00	.09	.05
	(.36)	(.26)	(.34)	(.34)	(.34)
Spiritual Comfort-seeking (W1)	.60*	.50*	.39	.47*	.41
	(.22)	(.22)	(.21)	(.22)	(.22)
Religious Service Attendance (W1)	-.89**	-.60*	-.49	-.48	-.41
	(.26)	(.25)	(.25)	(.25)	(.25)
Personal Mastery (W1)			-.43***		
			(.04)		
Family Support (W1)				-.16***	
				(.02)	
Friend Support (W1)				-.05	
				(.04)	
Physical Disability (W1)					3.60***
					(.53)
Adjusted R^2	.01**	.08***	.14***	.11***	.11***

Notes. N=1,455. Coefficients shown in table are unstandardized with standard errors in ( ). All models beginning with Model II control for age, gender (reference=female), socioeconomic status, race-ethnicity (reference=white)
*p≤.05, **p≤.01, ***p≤.001

Model V steps in physical disability in order to test whether physical disability mediates the relationship between religion (particularly religious service attendance) and subsequent depressive symptoms.. Comparing the coefficients for each religion variable in model II to model V results indicate that physical disability does not significantly mediate the relationship between spiritual comfort seeking and depressive symptoms (Sobel =.06, p=.07). However, physical disability does mediate the relationship between religious service attendance and subsequent depressive symptoms (Sobel = .10, p=.02). Together, these results suggest that the relationship between religion and subsequent depressive symptoms are partially mediated by personal mastery, social support from family, and physical disability.

8 DISCUSSION

This study sought to examine the nature of the relationship between religion and mental health. Specifically, this study assessed the independent contribution of multiple indicators of religion for subsequent depressive symptoms and the potential mediating effects of mastery, social support, and physical disability.

Hypothesis 1 stated that individual religiosity and religious group participation at Wave 1 will be associated with levels of depressive symptoms at Wave 2. Partially supporting this hypothesis, the results indicated that greater spiritual comfort-seeking is associated with higher levels of subsequent depressive symptoms and more frequent religious service attendance is associated with lower levels of subsequent depressive symptoms. The relationship between more religious organization involvement and better mental health is consistent with prior research (Acevedo 2010; Baetz et al. 2006; Pesocsolido and Georgiana 1989), and this study provides evidence that this positive association is independent of level of religiosity and spiritual

comfort-seeking. This further supports the interpretation that one way that religion can be conducive to better mental health is through increased social activities and interactions (Aneshensel and Stone 1982; Musick and Wilson 2003).

The observed relationship between spiritual comfort-seeking and depressive symptoms was only revealed after controlling for the level of religious service attendance. Post hoc interaction analysis assessing the conditional effects of spiritual comfort seeking on depressive symptoms by level of religious service attendance revealed that the protective role of spiritual comfort-seeking for mental health is only found among those who frequently attended religious services. For those reporting less frequent service attendance (never, rarely, and sometimes), greater spiritual comfort-seeking was associated with worse subsequent mental health. It is possible that for those who are the most engaged in greater religious group participation, spiritual comfort-seeking provides a more effective means of coping with daily problems because it is not seen as one's only source of support. This may mean that for those with the lowest levels of service attendance, spiritual comfort-seeking is a response to having "no one else to turn to" in times of distress. It is also possible, however, that the relationship between spiritual comfort-seeking and subsequent depression is spurious, and that those who are more socially isolated (thus less likely to participate in religious groups) are both more depressed and more likely to turn to their faith as a means of coping with daily problems.

Not in support of hypothesis 1, subjective religiosity is not associated with depressive symptoms, which is contrary to studies indicating a negative linear association between private spirituality and better mental health (Schieman et al. 2003, McIntosh et al. 2011). However one study found a non-linear association between religiosity and mental health (see Eliassen et al. 2005). Post hoc ANOVA analyses compares mean levels of depressive symptoms across levels

of subjective religiosity (see Figure 2). Indeed, the patterns reveal a non-linear relationship, wherein those reporting the lowest and highest levels of subjective religiosity report more depressive symptoms compared to those reporting moderate levels of subjective religiosity (not very religious, somewhat religious) (F=3.72, p=.00). Given that OLS regression assumes a linear association, this this non-linear relationship is likely being masked in the regression results presented here.

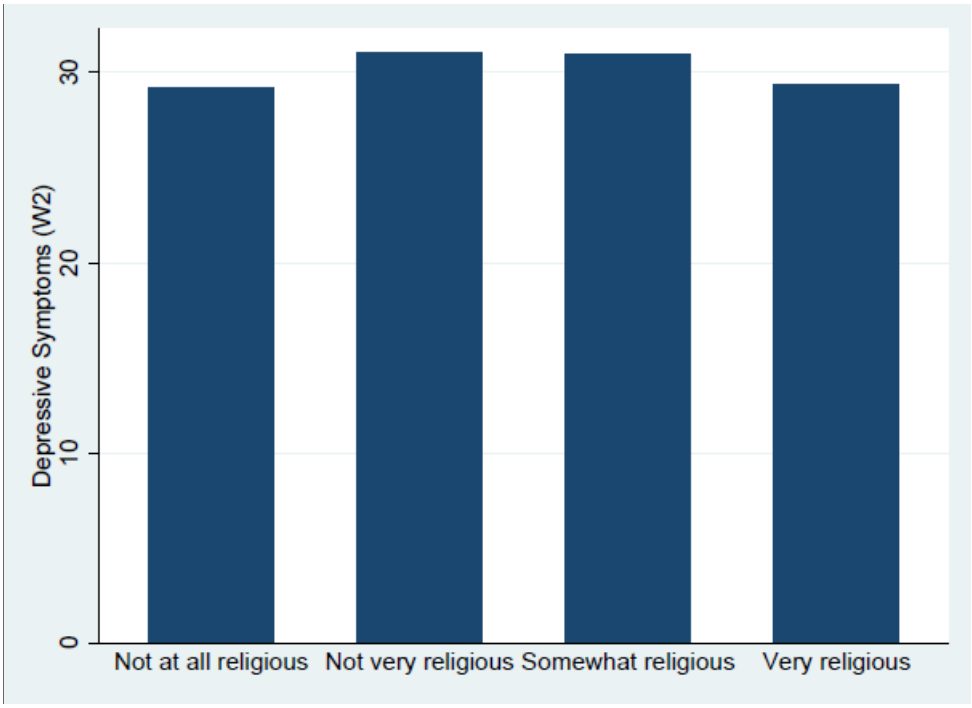

Figure 2. Mean levels of depressive symptoms by level of subjective religiosity

Hypothesis 2 stated that the relationship between prior religion and subsequent levels of depressive symptoms will be mediated by personal mastery and social support. This hypothesis was supported by showing that personal mastery partially explains the relationships between subsequent depressive symptoms and both spiritual comfort-seeking and religious service attendance. The mediation effect of mastery supports the interpretation that spiritual comfort-seeking and religious service attendance may encourage more religious individuals to embrace an exter-

nal locus of control, leading to lower personal mastery and worse mental health (O'Connor et al. 2003, Acevedo 2010, Turner et al. 2004).

Hypothesis 2 is also supported by results showing that social support from family also partially explains the relationship between religious service attendance and subsequent depressive symptoms. While this supports the argument that the mental health benefits from religious group involvement stems from increased social support (Acevedo 2010; Baetz et al. 2006; Cohen et al. 2009; Eliassen et al. 2005; Greenfield and Marks 2007), this investigation provides one of the few studies that has directly tested this mediation effect while controlling for other aspects of religion.

Results also indicate that physical disability status mediates the relationship between religious service attendance and subsequent levels of depressive symptoms. Given some research which has shown that those with a physical disability are less likely to attend religious services and more likely to report depressive symptoms (as found by Roff and colleagues, 2006), persons with a physical disability may be less likely to benefit from religious participation. Additionally, even when persons with a physical disability attend religious services they may experience greater social rejection stemming from the stigma surrounding physical disability. This explanation is consistent research indicating that among those experiencing frequent discrimination, more frequent religious service attendance was associated with higher levels of depression (Ellison et al. 2009). Another possible explanation for persons with a disability experiencing less benefit from religious service attendance is that they are unable to participate in religious services in the ways they would like, due to logistical or environmental obstacles. For example, a person who uses a wheel chair may not be able to participate in choir, access classrooms, or participate in outings unless additional measures are taken to accommodate her participation.

9 LIMITATIONS AND FUTURE DIRECTIONS

The current investigation advances prior research on the nature of the relationship between religion and mental health in several important ways. First, by analyzing different aspects of religion - both individual religiosity and religious group participation - simultaneously, the findings demonstrate that various aspects of religion impact mental health differently. Second, by employing longitudinal data, this study demonstrates that prior religion is related to subsequent mental health, adding to our understanding of the temporal order of the relationship. Third, by analyzing the mediating effects of personal mastery, social support, and physical disability the present study helps to explain possible pathways through which religion may impact subsequent mental health.

As with any study, there are several noteworthy limitations and directions for future research. First, given the localized nature of the sample, caution should be made in regard to generalizability of the findings outside the context of Miami, Florida. Second, further research is needed to investigate the temporal order between religion, mental health, and the potential mediators. For example, a study which employs three waves of data may further help disentangle the mediation effects of mastery, social support and physical disability. Third, while beyond the scope of the current investigation, future research should assess the conditional relationships between religion and mental health by gender and race-ethnicity – variables known to be associated with both religious involvement and mental health.

10 CONCLUSION

The current investigation advances prior research on the nature of the relationship between religion and mental health in several important ways. First, by analyzing different aspects

of religion - both individual religiosity and religious group participation - simultaneously, the findings demonstrate that various aspects of religion impact mental health differently. Second, by employing longitudinal data, this study demonstrates that prior religion is related to subsequent mental health, adding to our understanding of the temporal order of the relationship. Third, by analyzing the mediating effects of personal mastery, social support, and physical disability the present study helps to explain possible pathways through which religion may impact subsequent mental health.

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