

Religious Beliefs, Diet, and Physical Activity Among Jewish Adolescents

MAUREEN R. BENJAMINS

*Sinai Urban Health Institute
Mt. Sinai Hospital*

Despite a well-documented connection between religion and mortality, the link between religion and obesity-related outcomes and behaviors has not been adequately studied, particularly among adolescents. This study examines whether self-reported religious beliefs influence decisions about physical activity and diet in a sample of Jewish adolescents (n = 351). The results show that reporting a stronger influence of religious beliefs on health behaviors is associated with behaviors related to physical activity, but not diet. In adjusted regression models, individuals who report that their religious beliefs influence decisions about being physically active “a lot” have significantly more active days per week than those who say their religious beliefs do not influence such decisions. Similar effects are seen with regard to the students’ overall amount of sedentary time. The results shed light on previously documented relationships between religion and health, provide practical implications for religious organizations and leaders, and suggest areas for future research.

Keywords: *health behaviors, physical activity, diet, religious beliefs.*

INTRODUCTION

Studies continue to show religious variation in a wide range of health-related outcomes, including mental health, physical health, and mortality. Health behaviors, in addition to higher levels of social support and better coping mechanisms, are thought to explain these relationships (Ellison and Levin 1998; Idler et al. 2003; Krause and Ellison 2003; Pargament 1997). For example, attendance at religious services is associated with less smoking, excessive drinking, and drug use and more utilization of preventive health services (e.g., Benjamins 2006; Gillum 2005, 2006; Hill et al. 2006; Nonnemaker, McNeely, and Blum 2003). Although fewer in number and less consistent, some studies also link religious involvement to physical activity and diet among adults (Ayers et al. 2010; Hart et al. 2004; Hill et al. 2006; Salmoirago-Blotcher et al. 2011) and adolescents (Wallace and Forman 1998). It is believed that having support for a healthy lifestyle through informal or formal religious rules, social norms within a religious group, and other congregation- and individual-level factors leads more religious individuals to make these choices. However, there has been little research explicitly linking an individual’s religious *beliefs* to health behaviors. This article begins to address this gap in the literature by examining how the reported influence of religious beliefs on health behaviors is related to the actual behaviors in a sample of Jewish adolescents.

LITERATURE REVIEW

Religious Beliefs and Health

Although the majority of studies examining religion and health behaviors focus on the influence of religious *involvement* (and primarily religious service attendance), a small body

Correspondence should be addressed to Maureen R. Benjamins, Sinai Urban Health Institute, Mt. Sinai Hospital, RM K443, California Avenue at 15th Street, Chicago, IL, 60608. E-mail: Maureen.Benjamins@sinai.org

of work has explored the impact of religious *beliefs*. Often, religious beliefs are measured with a question that attempts to summarize the strength, or salience, of religious beliefs in an individual's life. Several studies have shown that salience is negatively related to health behaviors, including smoking, drinking, promiscuity, and use of preventive health services among adults (e.g., Assanangkornchai, Conigrave, and Saunders 2002; Benjamins 2007; Benjamins and Brown 2004; Krause 2003). Similar relationships between spirituality and substance use were also seen among adolescents (Hodge, Cardenas, and Montoya 2001; Miller, Davies, and Greenwald 2000; Nonnemaker, McNeely, and Blum 2003).

Perhaps more relevant to this study is the small body of work exploring the role of religious beliefs that are specifically related to health. One such belief that is often mentioned in the religion-health literature (e.g., Ott 1991; Sweet 1994) is the notion that the physical body is a "temple of God." Pargament and colleagues have conceptualized and measured "sanctification," or the extent to which individuals perceive the divine within a given object or practice, or attribute sacred qualities to that object or practice. They found sanctification of the body was an independent predictor of positive health practices among college students (Pargament and Mahoney 2005); however, other researchers have found that beliefs about the sanctity of the body were unrelated to the use of preventive health services (Benjamins et al. 2011) and negatively associated with having an annual physical (Ellison et al. 2008). In light of these contradictory findings, more work in this area is needed.

Another type of religious belief that may influence health behaviors involves the concepts of control and agency. Specifically, it has been suggested that the extent to which individuals believe that God has control over their life (including their physical health), as opposed to one's personal agency and responsibility in such matters, influences health behaviors and outcomes. A long tradition of research has concluded that individuals with an external locus of control tend to be less proactive and have worse outcomes in various domains compared to individuals who perceive a high level of personal efficacy or control (Rodin 1990; Zarit, Pearlin, and Schaie 2003). However, less research has specifically investigated the effects of perceived control by God on health. Although contradictory results also exist in this line of study, there is at least some evidence that persons believing in a high level of divine control—especially, but not exclusively, in the domain of health—may exhibit more desirable psychosocial outcomes, and perhaps better health behaviors, than others (e.g., Abrums 2000; Holt, Lukwago, and Kreuter 2003; Johnson, Elbert-Avila, and Tulskey 2005; Schieman et al. 2006; Wallston et al. 1999).

One additional type of belief linking religion and health was examined using a sample of Presbyterian women. Specifically, modest evidence was found that women who believe that "spiritual health is supportive of physical health" are more likely to utilize mammograms than other women (Benjamins, Trinitapoli, and Ellison 2006). While suggestive, research in other populations and with a broader array of outcomes is needed to better understand the relationship of this type of belief with health behaviors.

As alluded to above, most of the studies discussed above that support linkages between religious beliefs and health behaviors were conducted within adult samples. It is not known to what extent these relationships (e.g., between sanctification and health practices) may also be seen in adolescent populations, though the few existing studies on religion and substance use suggest that religion and/or spirituality also has a beneficial association with health behaviors among younger individuals (Hodge, Cardenas, and Montoya 2001; Miller, Davies, and Greenwald 2000; Nonnemaker, McNeely, and Blum 2003). In the same vein, a recent review of studies examining the relationship between religion and health among adolescents also found that results in this area mirror those seen among adult populations (Cotton et al. 2006). However, none of these studies focus on Jewish adolescents. Furthermore, few (if any) of the studies on adults examined the relationship between religious beliefs and health behaviors separately by religious denomination or focused on exclusively Jewish samples, although some did include Jewish respondents (as discussed below).

Judaism and Health Behaviors

Numerous studies have found that Jewish individuals utilize (or intend to utilize) more preventive health services than members of other religious denominations (Benajmins 2006; Benjamins and Brown 2004; Bowen et al. 2003). In addition, research conducted in Jerusalem has examined dietary and health behaviors among Jewish individuals and revealed differential smoking and eating patterns by level of orthodoxy (Friedlander et al. 1985; Friedlander, Kark, and Stein 1987; Shmueli and Tamir 2007). Beyond these studies, very little research explores the connection between religion and health behaviors among Jews (Levin and Prince 2011; Prince 2009).

The mechanisms proposed to explain such a connection are similar to those suggested by studies of Christian populations, such as increased social support and psychological resources. In addition, theological and scriptural explanations involve specific commandments found in the Torah and Talmud that might influence the health of those who follow these Jewish texts. For example, Jewish individuals are told to “take utmost care and watch yourselves scrupulously” (Deuteronomy 4:9). This passage is understood by rabbis as a “mitzvah” (an obligation) to diligently guard one’s physical health (Talmud Berakhot 32b; Maimonides, *Hilchot Rotzeah* 11:4; Shulhan Arukh, *Hoshen Mishpat* 427:8). According to Maimonides, the well-known Jewish rabbi and physician, this obligation not only precludes negative health behaviors such as drug use, but also prescribes positive behaviors such as physical activity and proper nutrition (Maimonides, *Mishneh Torah*, *Hilchot Deot* 4:1). More broadly, Judaic texts emphasize an orientation toward the current world (as opposed to the after-life) and numerous passages focus specifically on avoiding that which is physically harmful (Feldman 1986).

These teachings are particularly important to Orthodox Jews, the focus of this study, whose belief that every single commandment in the Torah must be followed results in strict guidelines covering almost all of one’s daily activities (Kaplan 2005). As an example of the extent of the directives for observant Jews, a popular book on how to manage an Orthodox household includes 525 pages of instruction, covering everything from keeping Kosher, to house-cleaning rules for certain holidays, to sexual relationships between spouses (Greenberg 1983). Although it is not known whether or not religious teachings, or any of the other possible mechanisms, have an impact on the health behaviors of Jewish individuals, it is suspected they may help to explain the previously documented advantages in mortality, self-rated health, and other health outcomes seen for Jewish individuals (Eberstein and Heyman 2010; Kark et al. 1996; Shkolnikov et al. 2004), particularly for those belonging to more conservative branches of Judaism (Levin 2011).

In sum, studies examining the impact of religious beliefs on health behaviors yield positive but inconsistent results and even less is known specifically about Jewish individuals. This study attempts to address these gaps in the literature by examining how the reported influence of religious beliefs on physical activity and diet is associated with the actual behaviors in a sample of Jewish adolescents.

METHODS

Data

Data come from surveys conducted in five Jewish (day) schools in a large, midwestern city as part of a larger project (Benjamins and Whitman 2010). All of the students are Jewish and the majority are Orthodox. The schools are all part of an Orthodox school system, though the degree of orthodoxy varies. The surveys were administered in class by teachers during the spring of 2009 (and the fall of 2008 for one school). The surveys for 5th–8th grade students measured eating habits, nutritional knowledge, physical activity, and attitudes related to nutrition

and physical activity. Whenever possible, validated questions were taken from existing surveys, such as the Youth Risk Behavior Survey (YRBS) (CDC 2009). Both parental consent and child assent were obtained before the surveys were conducted. The study was approved by the Sinai Health System's Institutional Review Board and by each school's administration. The response rate for this wave of surveys was 40 percent. The low rate is partially due to the fact that the largest of the participating schools chose to use "active" parental consent (i.e., opting in) instead of "passive" (i.e., opting out). Consequently, only 32 of the 240 students (13 percent) at this school completed the survey (vs. 51 percent of students at the remaining five schools). After exclusions for a small amount of missing data (less than 5 percent per variable), the sample size for the regression analyses was reduced from 395 to 351 individuals.

Measures

Independent Variables

The independent variables come from two questions that ask: "Do your religious beliefs help you decide whether to do (or not to do) the following things? Take care of yourself by being physically active. Take care of yourself by eating healthy." The response choices for both were: not at all, somewhat, or a lot.

Dependent Variables

The primary variables of interest related to physical activity were number of active days per week and daily sedentary time. All came from the YRBS (CDC 2009). Active days per week was measured with a question that asked on how many of the past seven days did the respondent participate in 60 minutes or more of physical activity (either moderate or vigorous, with a definition and examples provided). Sedentary time was calculated using two questions that asked about the number of hours spent playing computer or video games, using the computer for something other than school work, and watching television on an average school day. Dependent variables related to diet and nutrition included eating breakfast daily, drinking one or more sodas a day, eating five or more fruits and vegetables a day, and eating fast food once a week or more. The fruit and vegetable intake questions were taken from the YRBS, as well as the soda intake.

Covariates

Demographic variables include gender (0 = Male, 1 = Female) and grade (5th–8th). Several health-related covariates are also included. Weight status is assessed with a variable indicating whether or not the individual reported him- or herself as being overweight. Another variable was included to determine whether or not the respondent was dieting or exercising specifically to lose weight or to keep from gaining weight. Parental involvement was measured with two questions that asked whether or not a student's parents encouraged the student to be active and whether or not the parents were active with the student. Finally, students were asked how confident they were with their ability to exercise or be physically active every day and to choose to eat healthy foods most of the time.

Data Analysis

Data were analyzed with SAS, Version 9.2 (SAS Institute Inc. Cary, NC). The range and mean (or proportions) were provided for each variable. Next, the mean (or proportion) was provided by level of the reported influence of religious beliefs on both eating healthy and being active. An analysis of variance (ANOVA) was run to test for significant differences among these groups. Finally, multivariate regression models were used to estimate the unadjusted and adjusted relationships between the religious belief variables and related health behaviors. The physical activity outcomes (active days per week and sedentary hours per day) are both count outcomes and initial tests for overdispersion were significant. Thus, negative binomial models were run.

RESULTS

Descriptive statistics for all variables are displayed in Table 1. The distribution of the two primary variables of interest indicate that the students' religious beliefs influence them "somewhat," on average, to take care of themselves by both eating healthy and being physically active. Although not shown, 37 percent of students said their religious beliefs influenced them "a lot" to eat healthy and 36 percent said so in regard to being physically active. Not surprisingly, students who reported an influence of religious beliefs on one behavior were more likely to report an influence on the other behavior as well.

In this sample, a greater influence of religious beliefs on eating behaviors was not significantly related to the demographic, weight status, or dietary outcomes. In contrast, the influence of religious beliefs on being active was significantly related to active days per week, sedentary hours each day, being active with parents, exercising to lose or maintain weight (moderately), and confidence in one's ability to be active (moderately).

Following these bivariate statistics, multivariate regression models were run to better understand the relationships between the reported influence of religious beliefs and the key outcomes of interest. As detailed above, the primary variables of interest related to physical activity were number of active days per week and daily sedentary time, while the variables of interest related to diet and nutrition included eating breakfast daily, daily soda, eating five or more fruits and vegetables a day, and eating fast food at least weekly. The reported influence of religious beliefs was not significant in any of the adjusted models predicting the dietary outcomes. The physical activity models are described below.

Table 2 shows the unadjusted and adjusted negative binomial regression estimates for the relationship between the reported influence of religious beliefs on being active and the relevant behaviors. Model 1 reveals that, compared to those who report that their religious beliefs do not influence their activity levels, those who report that their beliefs influence activities "a lot" have significantly more active days per week ($\beta = .21, p < .01$). When the demographic control variables are added in Model 2, this association is slightly reduced but maintains significance. Those reporting a small amount of influence are not significantly different than those reporting no influence in terms of active days per week. In addition to religious beliefs, other predictors of active days include gender, grade, parental encouragement, and confidence in exercising.

The second set of models in Table 2 displays regression estimates for the relationship between the influence of religious beliefs on being active and sedentary hours per day. Model 1 reveals that individuals who report that religious beliefs influence their decision to be active "a lot" or "somewhat" have lower levels of sedentary time than those whose religious beliefs do not influence their activity levels ($\beta = -.30, p < .01$; $\beta = -.27, p < .01$, respectively). In the adjusted model (Model 2), the associations between religious beliefs and the outcome remain significant ($\beta = -.32, p < .01$; $\beta = -.28, p < .01$), along with parental encouragement, exercising to lose weight, and confidence in exercising.

DISCUSSION

This study adds to the religion and health literature by examining (perhaps for the first time) the extent to which the explicitly stated impact of religious beliefs on health behaviors are actually related to such behaviors. It is well established that religious people tend to be healthier and that this can be partially explained by healthier lifestyles (e.g., Ellison and Levin 1998). However, the evidence for a relationship between religious involvement and obesity has been less clear (Cline and Ferraro 2006; Gillum 2006; Shmueli and Tamir 2007). Furthermore, our understanding of how religion is associated with obesity-related behaviors is limited, despite the growing importance of these behaviors given the rise of obesity in the United States and elsewhere. Thus, this study is valuable for generating hypotheses regarding such a connection.

Table 1: Means or proportions of covariates by the level of influence of religious beliefs on eating healthy and being active ($n = 351$)^a

	Total Sample		Religious Beliefs Influence Eating			Religious Beliefs Influence Activity			F-test	
	Range	Mean or Proportion	Not at All	Somewhat	A Lot	F-test ^b	Not at All	Somewhat		A Lot
Religious beliefs influence eating	1-3	2.16	-	-	-		1.27	2.12	2.88	***
Religious beliefs influence activity	1-3	2.09	1.15	1.96	2.77	***	-	-	-	
Female	0-1	.58	.54	.58	.61		.54	.60	.58	
Grade	5-8	6.28	6.11	6.32	6.33		6.20	6.41	6.22	
Overweight	0-1	.30	.33	.30	.29		.31	.33	.26	
Daily breakfast	0-1	.58	.67	.53	.55					
Daily soda	0-1	.13	.15	.14	.11					
Five fruits/vegetables daily	0-1	.28	.23	.26	.34					
Fast food weekly	0-1	.37	.37	.35	.39					
Dieting to lose weight	0-1	.44	.38	.40	.50					
Confidence in eating healthy	1-3	2.62	2.58	2.56	2.90					
Active days	0-7	4.05					3.83	3.58	4.73	***
Sedentary time	0-8	2.00					2.44	1.87	1.81	**
Parents encourage activity	0-1	.26					.22	.23	.32	
Active with parents	0-1	.59					.58	.51	.67	*
Exercising to lose weight	0-1	.57					.49	.55	.64	+
Confidence in exercising daily	1-3	2.71					2.65	2.66	2.81	+

^aThe number of cases may vary slightly due to missing data.

^bANOVAs are used to test the significance of the differences in means (or proportions) across groups.

+ $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$.

Table 2: Estimating the unadjusted and adjusted associations between the influence of religious beliefs on being active and two measures of physical activity ($n = 351$)^a

	Active Days		Sedentary Time	
	Model 1	Model 2	Model 1	Model 2
Religious beliefs influence activity (not at all) ^b				
A lot	.21**	.16*	-.30**	-.32**
Somewhat	-.07	-.04	-.27**	-.28**
Female (male)		-.28***		-.03
Grade		-.09***		.03
Parents encourage activity		.15*		.19*
Active with parents		.02		.02
Exercising to lose weight		-.003		.18*
Confidence in exercising daily (not)				
Confident		.55***		-.35*
Neutral		.12		-.25
<i>Log-likelihood</i>	583.73	632.77	-207.05	-201.34
<i>AIC</i>	1, 573.27	1, 489.19	1, 208.74	1, 211.32

^aNegative binomial regression estimates.

^bReference group in parentheses.

* $p < .05$; ** $p < .01$; *** $p < .001$.

To begin, the results presented here indicate that the reported influence of religious beliefs on eating healthy and being physically active is inconsistently associated with such behaviors. As expected, reporting a stronger influence of religious beliefs on one's behaviors was positively related to healthy behaviors and negatively related to unhealthy ones. Moreover, in adjusted regression models, the students' assessments of the influence of religious beliefs on their activity level was significantly related to the number of days they were physically active, as well as to their overall amount of sedentary time. In contrast, reporting a strong influence of religious beliefs on eating healthy was unrelated to actual dietary practices in the regression models. It is not clear why these conflicting results were found.

Previous studies have also shown inconsistent relationships between religious beliefs and health behaviors. For example, although numerous studies of both adults and adolescents have shown that salience is related to health-related behaviors (e.g., Assanangkornchai, Conigrave, and Saunders 2002; Benjamins and Brown 2004; Hodge, Cardenas, and Montoya 2001; Krause 2003; Miller, Davies, and Greenwald 2000; Nonnemaker, McNeely, and Blum 2003), one of the few existing studies on obesity-related behaviors neglected to find a relationship between intrinsic religiosity and diet (Hart et al. 2004). Perhaps health-related beliefs, such as believing one's body to be a gift from God versus believing in the ultimate control of God on one's life, cancel each other out. Or, perhaps the motivation to eat healthy is there (as reported), but the countervailing forces that exist in a student's life (including school, friends, parents, media, and other environmental factors) prove to be too strong to overcome.

Explaining the positive relationship between the influence of religious beliefs on physical activity and actual levels of activity is also not straightforward. In particular, it is not necessarily one's religious beliefs, or even the beliefs of one's chosen denomination, that actually matter. Behavioral differences might also be associated with social factors such as increased involvement with a religious organization or community. For example, previous studies of Korean women in California revealed that hearing antidrinking messages from fellow members of one's church was related to a lowered likelihood of drinking and that obesity-related messages from congregants,

in conjunction with messages from religious leaders, was associated with a lower probability of being overweight or obese (Ayers et al. 2010). Faith-placed or faith-based health-promotion activities might also influence individuals to be more active by providing the health education, motivation, and actual opportunities for exercise, in addition to influencing social norms to be more supportive of an active lifestyle within a congregation. Although 10 percent of U.S. congregations report explicitly providing health-related programs (Trinitapoli, Ellison, and Boardman 2009), little is known about how these programs affect individual relationships between religion and health. Obviously, more research into these complex relationships is needed.

As a first step, the analyses done here need to be replicated in more representative samples that include individuals of all ages and members of all religious denominations. This research should address basic questions, such as what percent of adolescents and adults report that their religious beliefs influence their health behaviors? Additional research is also needed to explore these relationships in conjunction with other measures of religious beliefs and involvement, as well as with different health behaviors. This study found a relationship between a reported influence of religious beliefs and physical activity outcomes, but not eating outcomes. It would be interesting to see if this was true in other populations, and to investigate possible reasons for these inconsistent findings. More investigation into possible mechanisms is not only needed for the relationships seen here but, more broadly, to identify the pathways connecting other aspects of religion to health behaviors. Obviously, studies that are able to use longitudinal data to investigate the impact of religious beliefs on health behaviors would be able to provide more support for a causal relationship. Finally, more exploration into the aspects of Jewish scripture, teachings, and cultural norms related to health behaviors and outcomes would be helpful to provide more context to this growing line of research. As just one example, differences in the relationships between religion and health within different branches of Judaism could be examined.

There are also some practical implications of this type of research. For example, religious organizations and leaders may want to be more cognizant of the potential benefits of relating religious teachings and values to health behaviors. Focusing on religious teachings related to health from the pulpit or supporting health-related educational efforts may be effective ways to motivate congregants to take part in healthy activities such as exercise (Ayers et al. 2010). Specifically, for the population covered by this study, perhaps it would be worthwhile for synagogues to incorporate health-related programs or structures often seen in other religious organizations, such as wellness ministries or parish nurses. Jewish day schools may also want to emphasize the religious basis for health-promoting activities as a part of school wellness programs or health education classes. Given the prevalence of obesity among children and adolescents, more attention needs to be paid to religion as one factor that may help individuals to prevent weight gain, facilitate weight loss, and/or maintain a healthy weight.

As with all studies, certain limitations of this study should be taken into account. Most obviously, the sample is not representative of all adolescents or even of all Jewish adolescents. The individuals enrolled in the schools participating in this study are most likely different from the general population as well as from individuals who identify themselves as Jewish. Specifically, they are almost all Orthodox and, thus, are differentiated by specific beliefs, religious guidelines, and social norms. A second limitation is that all behaviors (and other measures) are self-reported. More accuracy could be attained through measures such as accelerometers, food logs, or body mass index measurements, for example. Moreover, as alluded to above, the data are cross-sectional, which precludes the determination of causality. Finally, unmeasured variable(s), such as parental religiosity, could help to explain the associations found here and more work is needed to explore these relationships.

Despite these limitations, this study supports previous research that finds a connection between religious beliefs and health behaviors. Specifically, the findings suggest that the majority of these Jewish adolescents are motivated by their religious beliefs to be physically active and eat healthy. It is not just this self-reported motivation that is important, but also the fact that the reported motivation is significantly associated to levels of physical activity. More research is

needed to better understand this intriguing finding. These types of studies may help to explain the generally salutary effects of religion on health outcomes, and may lead to more effective interventions for adolescent well-being.

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