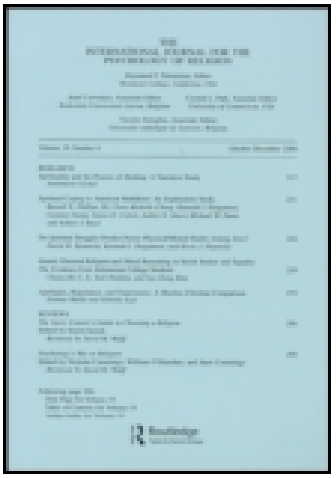

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Sabbath Keeping and Its Relationships to Health and Well-Being: A Mediational Analysis

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Prior research showing positive relationships between indicators of religiousness and health has generally defined and measured religion broadly. In addition, researchers have not given much attention to the pathways through which the relationship between religion and health is maintained. The result is a lack of specificity that fails to address questions about how and why religion is associated with health. The present study sought to address these limitations and clarify the ties between religion and health through a finer grained analysis of one specific aspect of religiousness (Sabbath keeping) and four possible mediators (religious coping, religious support, diet, and exercise) through which it might affect health. We examined data from a sample of Seventh-day Adventists in North America ($N = 5{,}411$), and bootstrapping analysis revealed that the association between Sabbath keeping and physical and mental health was partially mediated by all four mediators. Implications and limitations of the findings are discussed.

Although previous research offers substantial evidence that global indicators of religiousness are positively related to both physical and mental health, relatively little attention has been given to the relationship between specific religious practices/rituals and health. Furthermore, the mechanisms through which religion affects health have not received much attention in the literature, with some exceptions (see Pargament, Exline, Jones, Mahoney, & Shafranske, 2013). For example, collaborative religious coping was found to mediate the relationships of religiousness to well-being and distress (Fabricatore, Randal, Rubio, & Gilner, 2004). Spiritual means moderated the relationship between spiritual goals and well-being, whereas devotional means mediated the spiritual goals/well-being relationship (Fiorito & Ryan, 2007). Positive religious coping moderated the relationship between poor emotional functioning and increased obesity

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(Pirutinsky, Rosmarin, & Holt, 2012). Finally, Tix and Frazier (2005) compared Catholics with Protestants and found that the relationships between intrinsic religiousness and both anxiety and depression were moderated by religious tradition.

This study addresses the need for greater specificity and clarification of the ties between religion and health by conducting a meditational analysis of the relationship between a particular religious practice—Sabbath keeping—and physical and mental health. The research is part of a larger study (Adventist Health Study [AHS-2]; Butler et al., 2008; Lee et al., 2009) among Seventh-day Adventists (a religious community that practices Sabbath keeping) in North America.

BACKGROUND

Recently, psychologists have given growing attention to the relationship between religiosity and health, and the majority of these studies point to a positive relationship between the two variables (Koenig, 1998; Koenig, King, & Carson, 2012; Pargament, 1997). Despite the increasing number of studies involving religious variables, most of these studies have measured religion as a general or organizational construct by indices such as frequency of church attendance, religious affiliation, frequency of prayer, belief in God or a higher power, and active participation in church activities (Hill & Pargament, 2003). As a result, it is difficult to interpret the meaning of the significant correlations that have emerged between religion, mental health, and physical health. There are a number of possible explanatory mechanisms. Religion may influence individuals' health by encouraging a healthy lifestyle, prescribing healthy behaviors that prevent illness, providing support systems when faced with stressful life events, and fostering an attitude of faith and hope that sustains an individual in crisis (Aranda, 2008; George, Ellison, & Larson, 2002; Jarvis & Northcott, 1987). However, many studies suggest that religion may have a unique relationship to health (see Jones, 2004; Pargament, 2013; Pargament, Magyar-Russell, & Murray-Swank, 2005). More specific measures of religiousness and potential mediating mechanisms are needed to clarify the ties between religion, health, and mental health.

Surprisingly, studies of the association between particular religious or spiritual expressions, such as rituals and practices, and health are relatively few, though this literature has begun to grow in recent years (see Idler, 2013). The majority of studies point to a significant relationship. For example, Anastasi and Newberg (2008) found that reciting the rosary, a Catholic religious ritual, may have a beneficial association with state anxiety. Jacobs (1989) assessed the effects of a ritual practice, spiritual healing, on victims of abuse and found that participants reported increases in their sense of power and overall mental health, and reduced fear and anger. Church attendance with one's family (religious ritual) accounted for a significant portion of the variance for substance abuse, even after controlling for mental health problems and drug attitudes (Fife, McCreary, Brewer, & Adegoke, 2011) and family worship pattern was related to alcohol and drug use among youth (Lee, Rice, & Gillespie, 1997).

A larger body of research suggests a positive link between meditation and both physical health (Barnes et al., 2005; Ditto, Eclache, & Goldman, 2006; Kondwani et al., 2005; Richard, Orme-Johnson, & Schmidt-Wilk, 2005; Walton, Schneider, Salerno, & Nidich, 2005) and mental health (Lane, Seskevich, & Pieper, 2007; Oman, Shapiro, Thoresen, Plante, & Flinders, 2008;

Raingruber & Robinson, 2007; Simpson et al., 2007; Valentine & Sweet, 1999; Wachholtz & Pargament, 2008). For example, Buddhist meditative practice has been related to psychological mindfulness and general health (Wiist, Sullivan, Wayment, & Warren, 2010).

SABBATH KEEPING

One potentially important religious activity that has received little empirical attention is Sabbath keeping. Sabbath keeping is defined here as the observance of the seventh day (Saturday) as sacred, marked by abstinence from regular activities (e.g., listening to radio or TV programs that are not of religious/spiritual values, household chores). The biblical injunction for Sabbath keeping is found in Exodus 20:8–11. The command requires abstinence from work on the seventh day of the week (Sabbath) that would otherwise be appropriate on the other six days. With some variation, people who observe the Sabbath (e.g., Jews and Seventh-day Adventists) refrain from regular activities on Saturdays (e.g., employment activities, household chores, watching or listening to secular programs on television or radio, long-distant travel, study or reading of material other than those of a religious/spiritual nature). Instead, the day (24-hr period) is considered sacred and is reserved for religious/spiritual pursuits that may involve activities, such as attendance at religious meetings, prayer, or visiting the sick.

A few preliminary studies suggest that there may be an association between Sabbath keeping and better health. Anson and Anson (2000, 2001) analyzed recorded deaths of Israeli residents and found a significant reduction in the number of deaths among Jews toward the weekend, culminating in fewer deaths on Saturday (Sabbath) and more deaths on Sunday. A similar pattern was not found among the non-Jewish, Arab population, or around other national or religious festivals. Although these findings are not necessarily directly related to Sabbath keeping, they suggest a link between Sabbath keeping and the timing of death, which may be partly explained by social or communal relations. Anson and Anson (2001) suggested that Sabbath reflects the communal spirit, which allows society to dictate the organization of individual life and, to some extent, death around the Sabbath.

Indirect evidence of the potential value of Sabbath keeping also comes from studies that demonstrate relatively better health status among Seventh-day Adventists, a Sabbath-keeping conservative Christian group, as compared to many other groups in the United States (Dudley, Mutch, & Cruise, 1987; Fraser, Haller-Wade, & Morrow, 1997; Fraser & Shavlik, 2001; Hopkins, Hopp, Hopp, Neish, & Rhoads, 1998). Sabbath activities typically involve attendance at church services, family solidarity, and social gathering. For example, many Adventist churches hold potluck lunches after the Sabbath midday service and "social activities" after the evening service. Except for essential services (mostly in direct health care services), Adventists typically abstain from regular work on the Sabbath. They also do not engage in commercial activities, and extensive travel is discouraged (General Conference of Seventh-day Adventists, 2010b). In addition to Sabbath keeping, Adventists emphasize a healthy lifestyle, and many are encouraged to practice a vegetarian diet and regular exercise (General Conference of Seventh-day Adventists, 2010a).

A number of factors may account for the health benefits experienced by Seventh-day Adventists. These include higher levels of church attendance, exercise, a vegetarian diet, not smoking, and social support (Fraser, 2003). Another factor that may account for the health

advantages experienced by Seventh-day Adventists is Sabbath keeping. The view that Sabbath keeping may influence health has been expressed by some (Goldberg, 1986, 1987; Golner, 1982), but the relationship between the two variables has not received much attention.

Some preliminary studies (Lee, Morton, & Adesina, 2008; Lee, Morton, Walters, Mahoney, & Veluz, 2006) examined how Sabbath beliefs and practices relate to health among Seventh-day Adventists. The results indicated that positive feelings toward the Sabbath (e.g., Sabbath brings rest or that it builds a better relationship with God) were associated with better mental health, better general health, satisfaction with life, better sleep quality, and lower frequency of physical symptoms. Conversely, negative feelings toward the Sabbath (e.g., keeping Sabbath out of guilt) were associated with poorer mental health, poorer general health, less satisfaction with life, poorer sleep quality, and greater symptom frequency. These findings held after controlling for age, income, education, gender, and frequency of church attendance. The results suggested that the relationship between Sabbath keeping and health may be moderated by attitude regarding Sabbath.

POSSIBLE MEDIATORS LINKING SABBATH KEEPING AND HEALTH

How is it that Sabbath keeping might be related to health? Based on Ellison and Levin's (1998) typology and prior study of Adventist lifestyle (Fraser, 2003; Fraser et al., 1997), we propose four pathways through which Sabbath keeping may influence health: (a) religious coping, (b) religious support, (c) diet, and (d) exercise.

First, as a weekly 24-hr period, the Sabbath may provide opportunities to access religious coping resources. These may include opportunities to (a) work together with God to resolve problems, (b) view life and its problems as part of a larger spiritual plan, and (c) redefine stressors as benevolent and potentially beneficial. Many different groups and individuals use religious coping methods in times of stress (Pargament, Smith, Koenig, & Perez, 1998; Pargament, Tarakeshwar, Ellison, & Wulff, 2001). Empirical studies indicated that these religious coping methods have significant implications for health and well-being and predict health-related outcomes above and beyond the effects of global measures of religiousness and nonreligious coping methods (Pargament, 1997, 2011). Furthermore, they offer a clearer picture of why and how religion may relate to health and underscore the importance and promise of finer grained analyses of the ties between religion and health. Thus, religious coping may mediate the relationship between Sabbath keeping and health.

Second, Sabbath keeping may provide an opportunity to receive or be assured of receiving religious support. Adventists who expect support from their religious community, the clergy, and/or congregational members may be better able to manage and cope in the face of difficulties than their counterparts. Social support among Adventists is generally higher than among their peers (Fraser et al., 1997) and has been moderately linked to lower mortality among California Adventists (Lee, Stacey, & Fraser, 2003). Thus, the Sabbath may influence health through anticipated religious support.

Third, Sabbath keeping may promote the Adventists' dietary lifestyle (just described). A common feature of Adventist gathering on Sabbath is the potluck, in which members remain after Sabbath services to eat together. Not only do attendees share in the "Adventist diet," but they may be encouraged to adopt it as part of their lifestyle. In addition, they may receive

instructions on methods of preparing such meals. Furthermore, Sabbath keepers may receive messages through sermons and other religious programs that promote healthy dietary lifestyles.

Finally, Sabbath keeping may increase exposure to positive health choices, including exercise. For example, during the Sabbath services, a local church health and temperance director (a volunteer position in most Adventist churches) may advocate a lifestyle that includes regular exercise. In addition, time spent with family and friends during Sabbath may be an occasion for planning or encouraging light exercise such as nature walks, a behavior that is congruent with Adventists beliefs.

PRESENT STUDY

The purpose of this study is to assess one specific but neglected religious practice—Sabbath keeping—and its relationship to health. More specifically, this study examines the relationship between mental and physical health and Sabbath keeping and assesses to what extent this relationship is mediated by four variables: (a) religious coping, (b) religious support, (c) diet, and (d) exercise.

Based on the argument just presented, it is hypothesized that (a) the association between Sabbath keeping and mental health will be partially mediated by religious coping, religious support, diet, and exercise; and (b) similarly, the association between Sabbath keeping and physical health will be partially mediated by the same four variables.

METHOD

Procedure

The participants in this study were a subgroup of a larger study (AHS-2; see Butler et al., 2008) which targeted English-speaking Adventists in the United States and Canada. Participants in the AHS-2 study were recruited on a church-by-church basis within geographic regions. Local pastors and study coordinators were given information resources (promotional guidelines, brochures, videos, posters, and announcements) to promote enrollment in the study during a 7- to 8-week period. In the AHS-2 different enrollment approaches were used for the Black and non-Black churches, respectively. For the non-Black churches, participants filled enrollment forms and were then mailed a questionnaire. For Black churches, a more personal approach was taken; the questionnaires were personally distributed in church, and participants were encouraged to complete the questionnaire during group sessions. All nonrespondents, Blacks and non-Blacks, were mailed reminder postcards 4, 7, and 10 weeks following the distribution of questionnaires. For the present study a random sample of 20,000 AHS-2 participants received a 20-page religion and health questionnaire (Biopsychosocial Religion and Health Study [BRHS]; see Lee et al., 2009). About 11,000 participants completed the BRHS questionnaire.

Participants

The present study sample ($N = 5{,}411$) included those BRHS respondents who had complete data on all variables used in this study. The respondents were largely female (66%), White

(67%), and active (97%) Seventh-day Adventists, whose age (in years) ranged from 35 to 101, with a mean of 60. The majority (72%) of participants were married, 47% had a bachelor's degree or higher education, 60% reported current employment, and 54% reported income of $30,000 or less.

Measures

Sabbath keeping. Based on the definition just given, Sabbath keeping was assessed by a four-item Secular Activities subscale of the five-factor (Sabbath gives rest, Extrinsic Social Sabbath Keeping, Guilt/Shame, Helps Connect to God, and Secular Activities on Sabbath) Sabbath Belief and Activity Scale (Lee et al., 2008; Lee et al., 2006). Participants responded to how frequently they engaged in secular activities on the Sabbath by selecting one of six options ranging from *every Sabbath* to *never* ($\alpha = .65$, in this study). The items were as follows: go shopping, read secular magazines, attend secular concerts or theatrical events, and watch or listen to news programs. Sabbath keeping is indicated by not engaging in these activities. Scores on this scale were reversed coded from 1 to 6 so that high scores represent high Sabbath keeping.

Religious coping. Five items (Positive Religious Coping subscale: $\alpha = .74$, in this study) from the Religious Coping scale (RCOPE; Pargament & Koenig, 2000) were used to assess religious coping. Acceptable reliability for the RCOPE has been reported in previous research (Krumrei, Mahoney, & Pargament, 2009; Rabinowitz, Hartlaub, Saenz, Thompson, & Gallagher-Thompson, 2010). Participants indicated their use of religious coping in trying to understand and deal with major problems in their lives. Items were rated on a 5-point scale from *not at all* to *a great deal* (sample item: "Thinking about how you have tried to understand and deal with major problems in your life, to what extent has each of the following been involved in the way you cope?"; e.g., "Looked to God for strength, support and guidance"). Scores on this scale were coded from 1 to 5 so that high scores represent high religious coping.

Religious support. Three items (Anticipated Support; $\alpha = .90$, in this study) from the 12-item (four factors) Religious Support Scale by Krause (Fetzer Institute, 1999) were used to assess religious support. Participants considered people they worshiped with and responded to a 4-point scale ranging from *none* to *a great deal* (sample item: "If you were ill, how much would the people in your congregation be willing to help out?"). Scores on this scale were coded from 1 to 4 so that high scores represent high religious support.

Diet. Participants responded to a five-item ($\alpha = .72$, in this study) , vegetarian diet (fruits, vegetables, nuts, and beans) scale; a sample item was "Thinking over the last 12 months, how often do you eat the following foods: other leafy green vegetables (lettuce salads, cooked or raw spinach etc?)." The choices ranged from *never or rarely* to *more than 4 times per day.* Scores on this scale were coded from 1 to 8 so that high scores represent a healthier diet.

Exercise. Exercise was computed as the product of two questions: (a) "How many times per week do you usually engage in regular vigorous activities, such as brisk walking, jogging, bicycling, etc., long enough or with enough intensity to work up a sweat, get your heart thumping, or get out of breath?" Participants selected one of seven options ranging from *never* to *6 or more times per week*; and (b) "On average, how many minutes do you exercise each session?" Participants chose from eight options ranging from *none* to *more than an hour*. Before computing the product term, scores on both questions were recorded to reflect actual number of times engaged in exercise (range = 0–6) and actual minutes engaged in exercise (range = 0–65). Thus, the product reflects the number of minutes engaged in exercise per week.

Health. Participants responded to the health-related quality of life measure (SF-12 Version 2); the short form of the widely used SF-36. It provides two subscales assessing physical (Physical Component Summary) and mental (Mental Component Summary) health, respectively (Ware, Kosinski, Turner-Bowker, & Gandek, 2002). The 12 items include questions regarding general health, physical functioning, interference with daily activities from pain, physical and emotional health, energy, depression, calmness, and interference with social function because of physical or emotional problems. The scale has demonstrated high reliability in previous studies (Cheak-Zamora, Wyrwich, & McBride, 2009; Ware, Kosinski, & Keller, 1996). Participants responded to items having a number of different response formats (sample item: "The following questions are about activities you might do during a typical day. Does your health now limit you in these activities? If so, how much?—Lifting or carrying groceries." Participants responded *Yes, limited a lot*, *Yes, limited a little*, or *No, not limited at all*). In this study, alpha for physical health was .87, whereas alpha for mental health was .83. Composite scores for the two subscales are generated based on the algorithm given in the SF-12 manual.

RESULTS

Table 1 provides intercorrelations, means, and reliability information for all significant variables. All variables showed acceptable reliability (α = .65–.90). The average level of Sabbath keeping was high (M = 5.62, SD = .61; range = 1–6) among participants. There was a significant correlation between Sabbath keeping and mental health but not between Sabbath keeping and

TABLE 1
Pearson Correlation, Mean (Standard Deviation), Range, and Reliability of Variables

Variables	*1*	*2*	*3*	*4*	*5*	*6*	*M*	*SD*	*Range*	α
1. Sabbath	—						5.62	.61	1–6	.65
2. Mental health	.11**	—					52.31	8.85	6.68–73.58	.83
3. Physical health	.00	−.17**	—				48.91	10.74	7.25–69.45	.87
4. Religious coping	.23**	.20**	−.03*	—			4.09	.70	1–5	.74
5. Religious support	.13**	.21**	.04**	.22**	—		3.21	.76	1–4	.90
6. Diet	.11**	.12**	.09**	.19**	.08**	—	4.55	1.02	1–8	.72
7. Exercise	.01	.09**	.25**	.04**	.04**	.19**	78.92	90.35	0–390	—

*$p < .05$, **$p < .01$.

physical health. Despite an insignificant correlation between Sabbath keeping and physical health, the hunt for mediation does not cease in bootstrapping analysis (see Hayes, 2009; Preachers & Hayes, 2004, 2008), as it normally does under the Baron–Kenny (Baron & Kenny, 1986) method.

Mediation Analysis

To test for meditation, bootstrapping analysis was used to generate a quantified estimate of indirect (mediated) association between Sabbath keeping and mental and physical health (see Hayes, 2009; Preachers & Hayes, 2004, 2008). In this procedure, point estimates and 95% confidence intervals (CIs) are generated for the indirect association. Statistical computation was done using the SPSS script created by Preacher and Hayes for bootstrap analyses with multiple mediators. Demographic variables (race, gender, age, and income) were controlled for in all mediational analyses.

Figure 1 depicts the point estimates of the *a* and *b* paths in the multiple mediation models for mental health. The size and direction of the various *a* and *b* paths show that Sabbath keeping had a positive association with all four mediators, which in turn all had a positive association with mental health. The direct association (association without mediators) of Sabbath keeping with mental health (c′) was significant with a point estimate of .65, $t(5401) = 3.37$, $p < .001$. The total association (c), which is the sum of the direct association (the association without mediators) and the indirect (mediated) association of Sabbath on mental health, was significant with a point estimate of 1.39, $t(5409) = 7.25$, $p < .0001$.

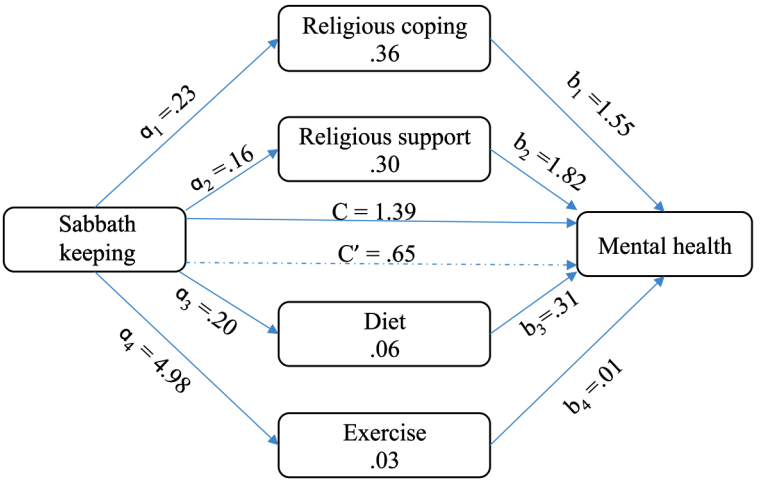

FIGURE 1 Unstandardized point estimates (shown in the mediator boxes) of the indirect effect of Sabbath keeping on mental health through mediators are the products of the respective a*b paths. *Note.* All effects are significant. c = total effect; c′ = direct effect; a_i = effects of Sabbath keeping on mediator; b_i = effect of mediator on mental health.

Table 2 gives the result of the indirect (mediated) association between Sabbath keeping and mental health. The effect size for each mediator is the product of the respective a and b paths. Taken as a set, the four mediators mediated the association between Sabbath keeping and mental health and accounted for 53% of the relationship between Sabbath keeping and mental health (effect size = .75; biased corrected accelerated [BC_a]), 95% CI [.61, .90]. Greater Sabbath keeping was associated with more religious coping, more religious support, a healthy diet, and more exercise, which in turn were associated with better mental health. An examination of the specific indirect association shows that all four mediators had a significant effect on the relationship between Sabbath and mental health. However, pairwise comparisons showed that both religious coping and religious support each had a significantly greater effect than diet or exercise. In sum, the association between Sabbath keeping and mental health was partially mediated by religious coping, religious support, diet, and exercise.

With respect to physical health, Figure 2 depicts the point estimates of the a and b paths in the multiple mediation models. The size and direction of the various a and b paths show that the Sabbath was positively associated with all four mediators. However, all mediators, except religious coping (which had a suppressing effect), were positively associated with physical health. The direct association (association without mediators) of Sabbath on physical health (c') was significant with a point estimate of .97, $t(5401) = 4.45$, $p < .0001$. The total association (c), which is the sum of the direct association (the association without mediators) and the

TABLE 2
Point Estimates and Bootstrapping Confidence Interval of the Association Between Sabbath Keeping and Health Through Proposed Mediators (5,000 Bootstrap Resamples)

	Indirect Association of Sabbath with Health					
	Indirect Association with Mental Health			*Indirect Association with Physical Health*		
		BC_a 95% CI			*BC_a 95% CI*	
Mediators	*Point Estimate*	*Lower*	*Upper*	*Point Estimate*	*Lower*	*Upper*
Religious coping (RC)	.36*	.26	.47	−.09*	−.18	−.01
Religious support (RS)	.30*	.21	.40	.09*	.03	.16
Diet (D)	.06*	.01	.11	.17*	.11	.25
Exercise (E)	.03*	.01	.07	.11*	.02	.20
Total indirect effect	.75*	.61	.90	.28*	.13	.43
Contrasts						
RC vs. RS	.06	−.07	.21	−.18*	−.30	−.06
RC vs. D	.30*	.18	.42	−.26*	−.39	−.15
RC vs. E	.32*	.22	.44	−.20*	−.33	−.07
RS vs. D	.24*	.14	.35	−.09	−.18	.00
RS vs. E	.26*	.17	.37	−.02	−.13	.09
D vs. E	.03	−.04	.08	.06	−.04	.17

Note. BC_a = bias corrected and accelerated bootstrapping confidence intervals (CIs) that include corrections for both median bias and skew.

*CIs not containing zero are interpreted as significant.

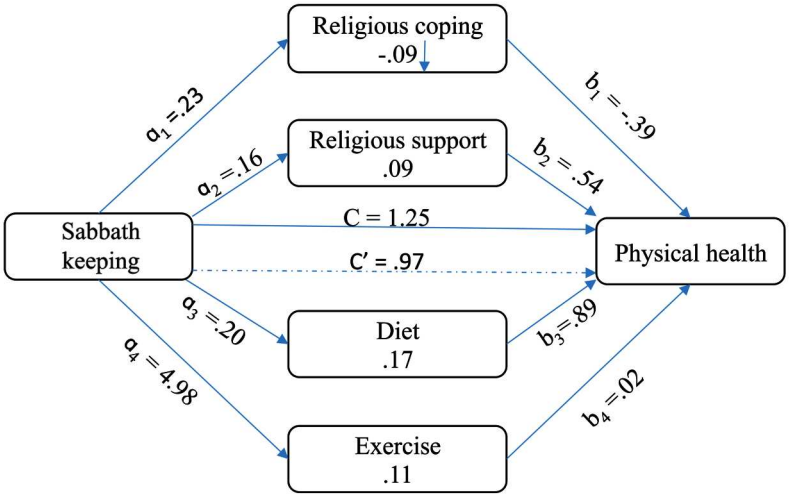

FIGURE 2 Unstandardized point estimates (shown in the mediator boxes) of the indirect effect of Sabbath keeping on physical health through mediators are the products of the respective a*b paths. *Note.* All effects are significant. c = total effect; c′ = direct effect; ↓ = suppressing effect; a_i = effects of Sabbath keeping on mediator; b_i = effect of mediator on physical health.

indirect (mediated) association of Sabbath on physical health, was significant with a point estimate of 1.25, $t(5409) = 5.72$, $p < .0001$.

All four mediators (see Table 2) significantly affected the relationship between Sabbath and physical health and accounted for 22% of the relationship between Sabbath keeping and physical health (effect size = .28), BC_a CI [.13, .44]. However, an examination of the specific indirect association shows that one mediator, religious coping, had a suppressing effect. In other words a higher level of religious coping was associated with poorer physical health. This suggests that as people experienced poorer health, they employed more religious coping. Pairwise comparisons showed that although there was no significant difference in effect among religious support, diet, and exercise, all three mediators had a significantly different effect than religious coping, which had a negative (suppressing) effect. In sum, the association between Sabbath keeping and physical health was partially mediated by religious coping, religious support, diet, and exercise, with religious coping having a suppressing effect.

DISCUSSION

Research to date has demonstrated a pattern of positive relationships between indicators of religiousness (defined broadly) and health (Koenig et al., 2012). However these studies have generally been limited in two important respects: (a) the use of "global religiousness" indicators of religiosity and (b) failure to explore the mechanisms through which this relationship is facilitated. Both limitations result in lack of specificity as to how and why religion relates to health. In the present study we sought to address these limitations and clarify the ties between

religion and health through a finer grained analysis of one specific aspect of religiousness (Sabbath keeping) and four possible paths (religious coping, religious support, diet, and exercise) through which it might affect health.

The results offer support for the first hypothesis; the association between Sabbath keeping and mental health was partially mediated by religious coping, religious support, diet, and exercise. Some mediators (religious coping and religious support) had a more salient effect than others (diet and exercise).

The results also offered support for the second hypothesis; the association between Sabbath keeping and physical health was partially mediated by religious coping, religious support, diet, and exercise. An important result of the analysis is the suppressing effect of religious coping, that is, religious coping reduced the overall effect of the mediators. Why did religious coping have a suppressing effect? Figure 2 shows that the negative effect of religious coping is explained by the b_1 path, which reveals a negative relationship between religious coping and physical health. Perhaps poor physical health involves less mobility which results in more Sabbath keeping and, in turn, greater religious coping. However, there is no significant simple correlation between Sabbath keeping and physical health in the present sample. Another explanation may be that whereas Sabbath keeping increases exposure to forms of religious coping, poor physical health triggers the use of religious coping so that as people experience poorer physical health, they rely more on religious coping. There is evidence for this "religious coping mobilization" effect in the literature (Pargament, 1997). However, this explanation raises questions as to why this is not true for mental health. Why wouldn't poor mental health, like poor physical health, trigger religious coping? Possibly, it is easier for a mentally healthy individual to recognize the need for religious coping when they are physically ill than it is for a physically healthy person to recognize the need for religious coping when they are mentally ill. Future studies are needed to help clarify the relationship between religious coping and physical health.

Further consideration of the bootstrapping analysis suggests that the independent variable (Sabbath keeping) has a direct effect on the dependent variables (mental and physical health). The direct effect is calculated by subtracting the indirect effect (c') from the total effect (c). However, caution should be used in interpreting these figures. Bivariate correlation shows no direct relationship between physical health and Sabbath keeping. A reasonable explanation of the seeming direct effect of physical health on Sabbath keeping is that it represents what is not accounted for by the proposed mediators. In other words, this effect may be accounted for by other mediators not included in the model.

Regarding mental health, bivariate correlation shows it is directly related to Sabbath keeping. However, it is important to note that although Sabbath keeping may indeed have a direct association with mental health, only four mediators were proposed. This implies that other mediators not included in the model may account for some of the relationship between Sabbath keeping and mental health, thus reducing the direct effect of Sabbath keeping on mental health. Other possible mediators may include (a) self-esteem and personal efficacy and (b) positive emotions (happiness, satisfaction, desire, peace, etc.).

Self-esteem and personal efficacy have been positively linked to health (Jackson, Tucker, & Herman, 2007; Kawabata, Cross, Nishioka, & Shimai, 1999; Macinnes, 2006) and religious involvement has been positively tied to self-esteem and personal efficacy (Smith, Weigert, & Thomas, 1979; Zalewska-Puchała, Majda, Gałuszka, & Kolonko, 2007). Sabbath keeping

may help individual Adventists think more positively of themselves and feel more empowered to cope with stressors by providing opportunities for encouragement in the development and pursuit of personal goals. Active participation and positions of responsibility (prayer, religious study, leading a meeting, among others) in church services and meetings during the Sabbath may foster a sense of empowerment.

Researchers have found a direct link between positive emotion and health (e.g., Fredrickson & Levenson, 1998; Tugade, Fredrickson, & Feldman Barrett, 2004). The Sabbath provides opportunities for expressions of positive emotions through worship, prayer, praise, and testimonies of thanks for pleasant things that have happened in the lives of members. This opportunity is available both on a congregational and individual basis. Meeting with family, friends, and congregational members on the Sabbath may foster a sense of happiness, peace, and belonging while lessening feelings of loneliness and sadness.

In sum, these findings demonstrated a significant link between Sabbath keeping and mental and physical health despite no bivariate correlation between Sabbath keeping and physical health (see Table 1). Moreover, this connection was mediated in part by religious coping, religious support, diet, and exercise. However, some of these mediators were more salient than others. These results are largely consistent with previous findings establishing a connection between religion and health (Koenig, 1998; Koenig & Larson, 2001) and assertions that the relationship may be accounted for, at least in part, by other variables (George et al., 2002; Jarvis & Northcott, 1987). However, the findings also offer some support for the argument that religion may have a unique effect on mental health (Jones, 2004; Pargament, 2013; Pargament et al., 2005) as the association between Sabbath keeping and mental health was not fully mediated by the four variables. Furthermore, two of the four mediating variables—religious coping and religious support—were themselves religious in nature.

More generally, these findings underscore the value of finer grain studies, using specific religious practices or beliefs that differentiate among those aspects of religion that have a positive effect on, those that are unrelated to, and those that have a deleterious effect on health. Some potentially important specific religious practices and beliefs include the Eucharist/Holy communion, confessions, fasting, particular concepts about God (e.g., belief in a loving and forgiving God vs. an exacting and unmerciful God), divine justice, and eschatological outlook (e.g., belief in the second coming of Jesus, belief in a bright vs. a gloomy final human destiny). Studies of these practices and beliefs may provide a clearer picture of the relationship between religion and health.

This study has some limitations that are important to consider. First, the cross-sectional design made it impossible to interpret the temporal associations between Sabbath keeping and other variables and prevented determining a causal relationship between Sabbath keeping and health. Although Sabbath keeping may promote health, the direction of the relationship may be reversed; a healthy person or one who engages in healthy behavior may be attracted to Seventh-day Adventism, and in turn Sabbath keeping, because of the denomination's emphasis on health.

Second, the sample was homogenous in several ways: The sample consisted of North American, adult Seventh-day Adventists, most of whom were active members. Furthermore, there is likely a selection bias; most participants were active members of the Seventh-day Adventist Church who were relatively easily accessible compared to others with different membership status. There was very little data on nonactive members and no data on those who

consider themselves former members. This homogeneity may be related to the low variability that was demonstrated on the Sabbath-keeping measure; most participants reported high levels of Sabbath keeping. The actual relationship between Sabbath keeping and health may be stronger than suggested in this study because of the restriction on the range of Sabbath keeping.

This lack of variability among participants calls for studies of a broader sample of Seventh-day Adventists, as well as other Sabbath-keeping groups (e.g., orthodox Jews or of Sunday keepers who treat Sunday as sacred) to shed light on the generalizability of the results. However, based on the significance of diet and exercise as mediators, we speculate that Sabbath-keeping groups, who do not place a high emphasis on health, as do Adventists, may experience a weaker association between Sabbath keeping and health. Sabbath keeping and healthy behavior (especially diet) may be a sign of religious commitment among Adventists. Thus, the size and paths of the association between Sabbath keeping and health may be different across Sabbath-keeping communities.

Finally, Sabbath keeping was measured by lack of engagement in "secular" activities. In doing so, it was assumed that nonengagement in secular activities indicated participation in what may be considered regular Sabbath activities (namely, church attendance and contact/fellowship with church members and clergy), which, in turn, increase exposure to mediating variables. Although 90% of the present sample attended religious services at least once per week, there is no assurance that nonengagement in secular activities is a reliable indicator of Sabbath-keeping commitment. As such, the present measure of Sabbath keeping may not be appropriate for all Sabbath-keeping groups.

Despite these limitations, the study adds to the literature in that it (a) suggests that the relationship between religion and health is complex and (b) gives insight into how religion works: what aspect of religion may be related to health, and the paths through which the relationship is facilitated. The results of this study do not provide definitive answers; rather, they underscore the importance of raising specific questions regarding the relationship between religion and health, and they stress the need for further clarification of that relationship. Further research should continue to examine specific manifestations of religiousness and identify alternative paths through which religiousness may be associated with mental and physical health.

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